IP Link® Pro Products

IPL Pro Series

IP Link Pro Control Processors

Extron Electronics

INTERFACING, SWITCHING AND CONTROL

Safety Instructions

Safety Instructions • English

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

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

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

Instructions de sécurité • Français

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

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

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

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:** 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.

Battery Notice

This product contains a battery. Do not open the unit to replace the battery. If the battery needs replacing, return the entire unit to Extron (for the correct address, see the Extron Warranty section on the last page of this guide).

> **CAUTION:** Risk of explosion. Do not replace the battery with an incorrect type. Dispose of used batteries according to the instructions.
>
> **ATTENTION :** Risque d'explosion. Ne pas remplacer la pile par le mauvais type de pile. Débarrassez-vous des piles usagées selon le mode d'emploi.

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

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

> **ATTENTION:**
> - Risk of property damage.
> - Risque de dommages matériels.

> **NOTE:** A note draws attention to important information.

> **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] RØØØ4ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
```

> **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 section covers the following basic information you should know about this guide and the product before installation:

- **Before You Begin**
- **About the IPL Pro Series**
- **Application Diagrams**
- **Device Control**
- **About Global Configurator (with GC Professional and GC Plus Modes)**
- **PC System Requirements**

Before You Begin

What This Guide Covers

This user guide provides instructions for an experienced installer to install an Extron IP Link Pro Control Processor. This guide provides detailed information and best practices recommendations about cabling the control processor, a brief overview of the configuration process, and reference information.

You configure the control processor using Extron Global Configurator software running in Global Configurator Professional (GC Professional) or Global Configurator Plus (GC Plus) mode. This guide does not contain instructions on detailed software-related setup steps or details of configuration within the software: those are covered in the *Global Configurator Help* file and help files for related programs. The software help files describe how to use each program to download drivers, add AV devices to a configuration, configure basic functions, and set up schedules, macros, e-mail alerts, touchpanel button configurations, and the like.

Conventions Used in This Guide

Throughout this guide the IPL Pro Series products are also referred to as the "IPL," "IPL Pro," or "control processor." Global Configurator software is referred to as "GC," which can be run in Global Configurator Professional mode ("GC Professional") or Global Configurator Plus mode ("GC Plus"). The GlobalViewer Enterprise application is sometimes referred to as "GVE." Unless otherwise noted, in images of software or Web pages, circled numbers correspond to the like-numbered procedural steps.

Important Information You Need Before Installation

The IPL Pro Series control processors and TouchLink Pro touchpanels **work differently** from the previous generation of IP Link products. The order and types of setup tasks are important. Pay close attention to them. Follow the setup checklist in the **Hardware Features and Installation** section starting on page 6.

About the IPL Pro Series

The IPL Pro Series Control Processors integrate Ethernet connection into AV systems to allow users to remotely control, monitor, and troubleshoot AV equipment, including display devices and switchers, source devices, and various other items such as lights, a projector lift, or a screen motor. They can be used in a distributed control system environment or as stand-alone control processors.

Figure 1. IPL Pro S1 (left), IPL Pro S3 (center), IPL Pro S6 (right)

Figure 2. IPL Pro CR88 (left), IPL Pro IRS8 (right)

An IPL Pro Series control processor is the centerpiece of a control system that features Extron TouchLink Pro Touchpanels. The IPL supports multiple TouchLink Pro touchpanels over a standard Ethernet network. The touchpanels provide a convenient interface for controlling the IPL, which, in turn, controls the other system components.

> **NOTE:** GUI Designer is used to design the user interface layout of any Extron TouchLink Pro touchpanel that is used with the IPL.

The IPL is configured completely via Global Configurator software. Once you have set up how you want it to work (set up IP addresses and functions and assigned drivers to ports, configured relays and contact input), that information is saved to a project configuration file that is built and uploaded into the IPL and to any optional TouchLink touchpanels.

The IPL Pro Series integrates seamlessly with Extron GlobalViewer Enterprise (GVE) software and the GlobalViewer Web-based AV resource management tool for remote control applications.

Features

General features

Flexible options for device control — The various IPL Pro models all offer TCP/Ethernet control and monitoring, and, depending on the model, serial (RS-232) or infrared (IR)-based control, relay device control, and event monitoring via contact input ports.

Rack mountability — The IPL Pro S1 has a one inch high, quarter rack wide enclosure, and the other models are housed in a standard 1U high, quarter rack wide enclosure. They are easily rack mounted or can be installed in or under furniture with an optional mounting kit.

Support for Power over Ethernet (PoE) — The IPL supports power over Ethernet, which allows the control processor to receive both power and an Ethernet connection over a single connector.

Support for an external power supply — The IPL also supports connection to an external 12 VDC power supply (included).

Network and configuration features

- **Global compatibility** — The IPL uses industry standard Ethernet communication protocols, including DHCP, DNS, HTTP, HTTPS, ICMP, NTP, SFTP, SMTP, SNMP, SSH, TCP/IP, and UDP/IP.

- **Embedded Web pages** — The IPL embedded Web pages include online diagnostics and monitoring of basic features.

- **Remote equipment management** — The IP Link Pro connection allows you to remotely manage, monitor, and control several Ethernet-enabled products such as projectors, cameras, video conferencing equipment, switchers, and other AV equipment. The IPL provides support for the following:

  - TCP, UDP, and HTTP connections
  - Password protection using secure communication
  - Up to 32 (GC Professional) or 8 (GC Plus) Ethernet devices at a time depending on the configuration mode
  - Connection via IP address or host name

- **Multi-level password protection** — Allows security to be set based on user roles.

- **System asset management** — The configured system and control processor allow you to control, monitor, and schedule various functions of devices in the system.

- **E-mail notification** — The IPL can be set up to send e-mail notifications, such as a notice that a projector has been disconnected or the projector lamp has been used for a designated number of hours.

Application Diagrams

The following figures show examples of types of devices that can be connected to some of the ports on the IPL Pro Series control processors.
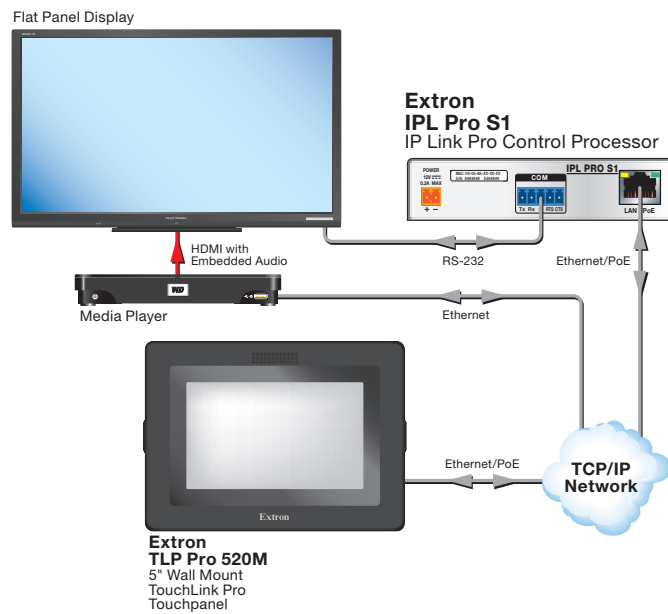
Figure 3.   An IPL Pro S1 Application
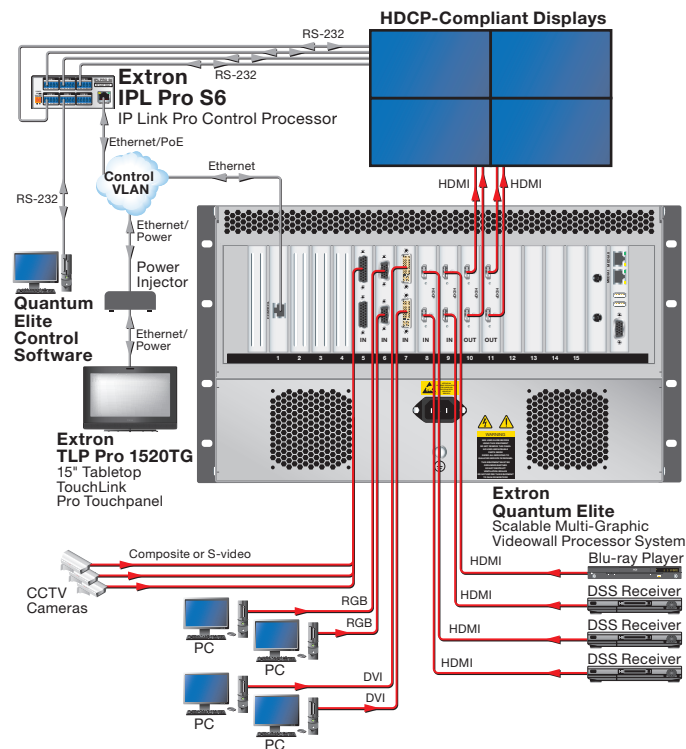
Figure 4.   An IPL Pro S6 Application

Device Control

The IPL must be configured in one of the following ways before it can send commands to a projector, display, or other device:

- An RS-232 or Ethernet driver file can be downloaded from the Extron website (**http://www.extron.com/download/index.aspx**). The driver is saved to a folder and commands from the driver are incorporated into the GC configuration file for the control processor and any touchpanels that will work with it. The configuration file is built and uploaded to the IPL via GC.

- If a driver is not already available, RS-232 or Ethernet command strings can be entered directly from a host computer using Global Configurator. These can then be incorporated into controls within the GC project.

See the *Global Configurator Help* file (which comes with the software) for details on setting up the IPL and for downloading, programming, or learning device control commands.

About Global Configurator (with GC Professional and GC Plus Modes)

Global Configurator is the software tool for network setup and configuration of an IPL Pro control processor. Global Configurator:

- Loads device drivers for monitoring the status of and controlling devices within the AV system.

- Uploads GUI Designer layouts to touchpanels and third-party touch interfaces.

- Creates the configuration containing all the settings for the control processor and the products with which it interacts in the AV system.

- Generates a graphical user interface called GlobalViewer (GV) that is uploaded to the control processor (a GlobalViewer host device) along with the completed configuration and can be accessed as a Web page.

To obtain Global Configurator (GC Professional, GC Plus) software, you must have an Extron Insider account and contact an Extron support representative. Extron provides training to our customers on how to use the software. Access to Global Configurator Professional is available to users who successfully complete Extron Control Professional Certification.

PC System Requirements

To find the minimum hardware and software requirements for the PC you use to configure the IPL Pro Series:

- Visit the Download page (**http://www.extron.com/download/index.aspx**) on the Extron website and navigate to the Web page for the specific software package (such as Global Configurator and GUI Designer). Minimum system requirements are listed in the description section. In some cases, minimum device firmware version requirements are also listed there.

- If system requirements are not listed on the software package Web page, contact an Extron support representative.

Hardware Features and Installation

This section covers the following material:

- **Setup Checklist: How to Proceed With Installation** — A checklist of tasks to guide you through installation
- **Network Communication Setup** — A flowchart guide to network settings configuration
- **Front Panel Features** — Locations and some descriptions of items on the front panel
- **Mounting the IPL Pro Series** — Brief guidelines for mounting
- **Rear Panel Features and Connections** — Locations, descriptions, and cabling notes for rear panel features and corresponding front panel indications
- **Resetting the Unit** — Information about the available reset modes and how to reset the IPL

The IPL Pro Series control processors **work differently** from the previous generation of IP Link products. Pay careful attention to the order and types of setup tasks. Follow the setup checklist in this guide or in the setup guide and keep it with you for reference throughout the installation and configuration process.

Setup Checklist: How to Proceed With Installation

Get Ready

☐ Familiarize yourself with the features of the control processor (see **Front Panel Features** on page 9 and **Rear Panel Features and Connections** on page 11) and of any TouchLink Pro touchpanels that are part of the system.

☐ Download and install the latest version of the following:

- **Global Configurator (GC) software** — for setting up and configuring the control processor. GC includes a link to the **Toolbelt** software, and a way to upgrade the firmware of the control processor if the need arises.
- **Toolbelt software** — for setting up and configuring the control processor
- **IP Link Pro device drivers** — for use with GC, to make control of other devices possible
- **GUI Designer software** — for designing layouts for Extron TouchLink Pro touchpanels and third-party touch interfaces

All are available from **www.extron.com** (see **Locating Software, Firmware, and Driver Files on the Extron Website** on page 23).

☐ Obtain network information for the unit from the network administrator. You need the following details for each IP Link Pro device (IPCP Pro, TouchLink Pro, IPL Pro):

☐ DHCP setting (on or off)	☐ Gateway IP address
☐ Device IP address	☐ User name
☐ Subnet mask	☐ Passwords

☐ Write down the MAC address of each IP Link Pro device to be used.

☐ Obtain model names and setup information for devices the IPL will control.

Mount and Cable All Devices

☐ Mount the unit to a rack or furniture (see **Mounting the IPL Pro Series** on page 10).

☐ Cable devices to the control processor (see **Rear Panel Features and Connections** starting on page 11).

☐ Connect power cords and power on all the devices.

Set up the Control Processor and Touchpanels for Network Communication

☐ Connect the PC to be used for setup, the control processor, and touchpanels to the same Ethernet subnetwork. For control processor LAN connections, see **LAN/PoE (IP) connectors and LEDs** on page 15.

☐ Start Global Configurator and Toolbelt, and use Toolbelt to set the IP address, subnet, gateway IP address, DHCP status, and related settings (see the flowchart in **Network Communication Setup** on page 8).

> **NOTE:** When setting up DHCP during network configuration or if using a host name instead of an IP address, the user must enter a qualified host name (*Username.HostName.Domain*). For example: `somename.extron.com`.

Configure the Control Processor and Touchpanels

The most basic steps are outlined below in the recommended order.

> **NOTES:**
> - See the *Global Configurator Help* file and *GUI Designer Help* file as needed for step-by-step instructions and detailed information. The help file for GC includes an introduction to the software and how to start a project and configuration.
> - You must successfully complete Extron Control Professional Certification training to obtain GC Professional.

☐ If TouchLink Pro touchpanels are part of the system, start and use GUI Designer to **design, save, and build the graphical user interface (GUI) layout** for the touchpanels (see the *GUI Designer Help* file for instructions).

☐ Using GC, **create a new GC Professional or GC Plus project and configure the control processor and other IP Link Pro devices**. The configuration tells the control processor how its ports function; how to control other products; which touchpanels to interact with; what to monitor; when to do things; and whom to notify, how, and under what circumstances.

    ☐ Configure ports on the control processor.

        - Select device drivers and link them to each serial, IR/serial, or Ethernet port.

        - Select settings (serial protocol, relay behavior, contact input behavior) as needed.

        - Select settings (serial protocol) as needed.

    ☐ Set up monitors, schedules, macros, and local variables.

    ☐ Add touchpanels and set them up:

        - Upload the GUI configuration to the touchpanels using Global Configurator.

        - Assign any appropriate functions, monitors, or schedules to the touchpanels and their buttons.

☐ Save and build the project.

☐ Upload the system configuration to the control processor.

Test, and Troubleshoot

☐ Test the system. See the **Troubleshooting** section starting on page 26 for an outline of items to check during system troubleshooting.

☐ Make adjustments to wiring or configuration as needed.

Network Communication Setup

Network setup is essential prior to configuration. Use the flowchart as a guide to setting up the control processor for network use.

Network Communication Setup, Connected/Online Method

Connect the control processor and PC to the same LAN and apply power.

↓

Open the Toolbelt software either from within Global Configurator (GC Professional or GC Plus mode) or from the stand-alone application.

ToolBelt displays a list of all IP Link Pro devices connected to the network.

↓

Using the MAC address, locate the desired device in the list and select it.

↓

Enable DHCP **or** you must type in the IP address, subnet address, and gateway, then configure other network settings as needed.

Figure 5.   Network Setup, Online Method

Front Panel Features

Examples of front panel features are shown at right. The quantity and location of ports and corresponding front panel LEDs differ among IPL models. However, the functions of each type of port and their LEDs are identical for all models.

Most of the features and LED indications are described and shown in the "Rear Panel Features and Connections" section paired with the descriptions of the corresponding rear panel ports.

NOTE: The control processor must be set up in order to function. See the **Software-based Configuration and Control** section starting on page 21 and the *Global Configurator Help* file for information about Global Configurator, which you must use to set up the unit.

Reset Features

Reset button and LED — Pressing this recessed button causes various product settings to be reset to the factory defaults. The green power LED flashes depending on the selected reset mode (see **Resetting the Unit** on page 18 and the **reset modes table** on page 18 for details).

IR Learning Receiver

In most cases, Extron has already produced a driver file for controlling the projector, display, or source device you plan to use. If a device driver file is not available, you can create your own using Extron IR Learner software, the remote control of the projector or display, and the IR learning receiver sensor on the IPL, shown on the next page.

NOTE: Numbers adjacent to LEDs correspond to the like-numbered rear panel ports.
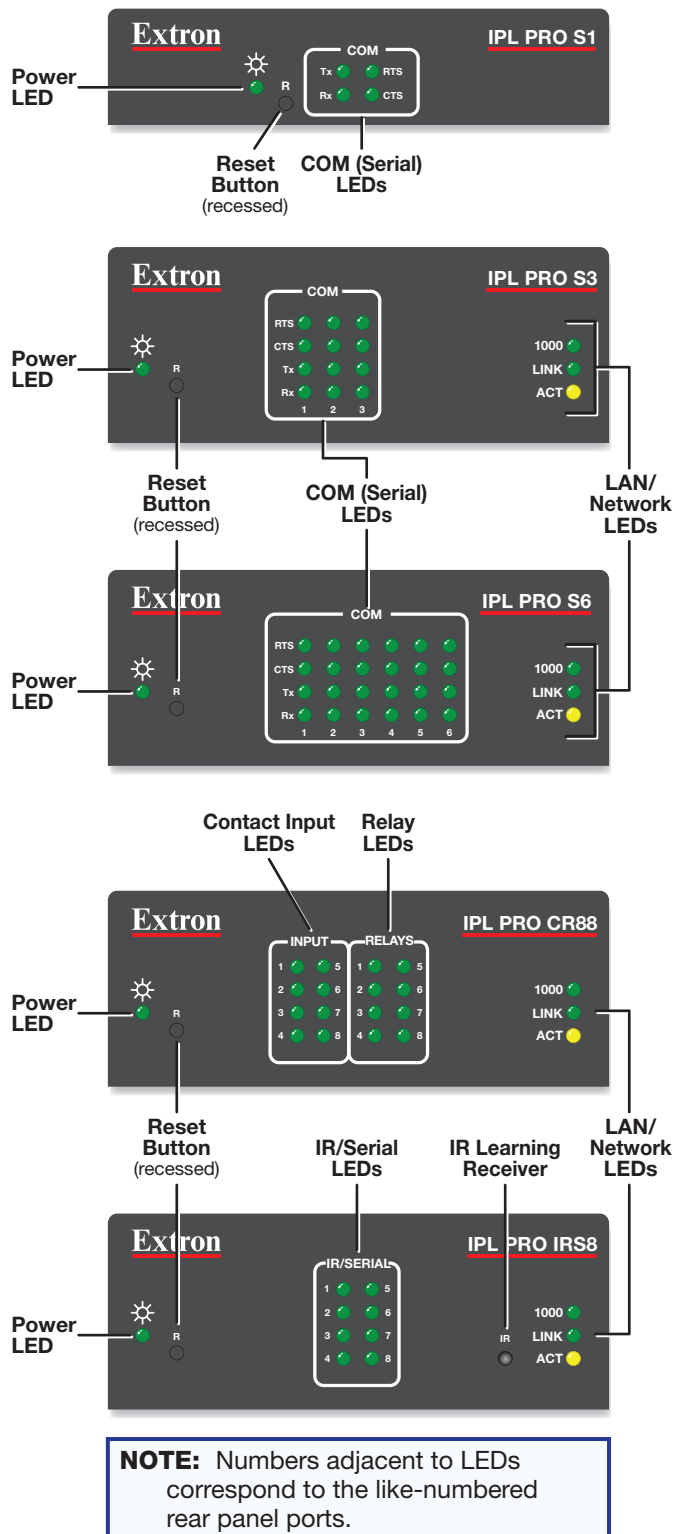
Figure 6.   IPL Pro Series Front Panels

This receiver accepts infrared signals of from 30 kHz to 300 KHz. The IR remote control must be pointed directly at the receiver for best results. The diagram at right indicates the best distances and angles at which to hold the remote control.

IR Receiver
IR Learning Angle and Distance

15° 15°

2–12"
(4–30 cm)
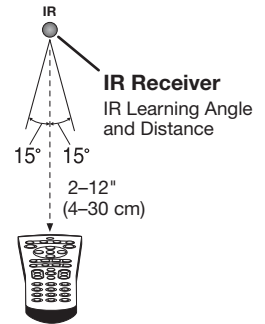
Mounting the IPL Pro Series

Mounting Options

Optional 1U high rack shelves and a variety of rack mounting bracket kits and furniture mounting kits are available for use with the IPL. The one inch high model requires different brackets than the 1U high models. Visit the product-specific page on the Extron website for a list of compatible accessories for mounting your control processor or call a support representative to find out which kit to order for your installation. Read the instructions that are included with the rack shelf or mounting kit for installation procedures and see the UL rack mounting guidelines.

UL Rack Mounting Guidelines

The following **Underwriters Laboratories (UL)** guidelines pertain to the safe installation of the IPL Pro Series in a rack.

1. **Elevated operating ambient temperature** — If 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 IPL in an environment compatible with the maximum ambient temperature (Tma = +122 °F, +50 °C) specified by Extron.

2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.

3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.

4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

5. **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 use of power strips).

Rear Panel Features and Connections

> **ATTENTION:**
> - Installation and service must be performed by experienced personnel.
> - L'installation et l'entretien doivent être effectués par du personnel expérimenté.

The quantity of ports and corresponding front panel LEDs differs among IPL models, but the functions of each type of port and their LEDs are identical for any model that includes that type of port.
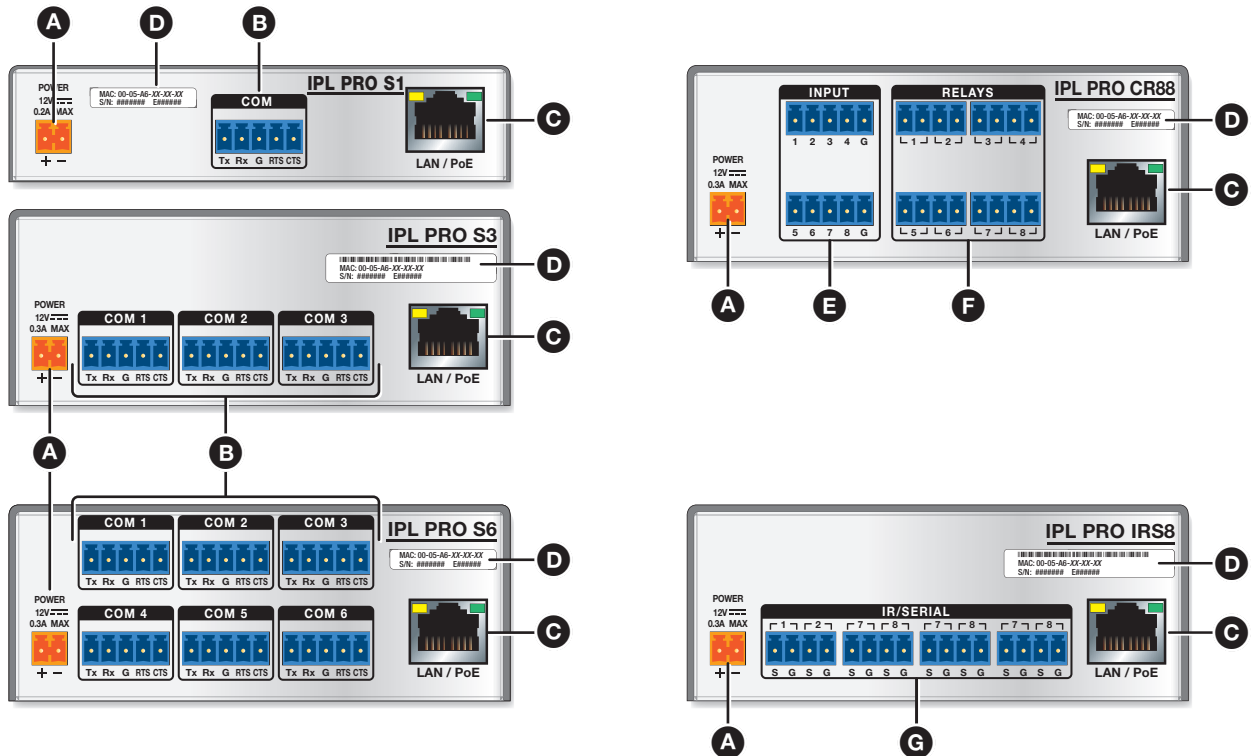
Figure 7.   IPL Pro Series Rear Panels

Ⓐ **Power input connector** (external power supply) (page 12)

Ⓑ **5-pole COM RS-232/RS-422*/RS-485* ports** (page 14)

Ⓒ **LAN (Ethernet) connectors and LEDs** (page 15)

Ⓓ **MAC address** (page 15)

Ⓔ **Contact input ports** (page 16)

Ⓕ **Relay ports** (page 16)

Ⓖ **IR/serial output ports** (page 17)

Power Connections

(A) Power input connector (external power supply) — Connect the IPL to the included 12 VDC power supply (part number 28-071-57LF) here, then connect the external power supply to a 100 to 240 VAC power source.

Extron

Power Input, External Power Supply
- Connect to included 12 VDC power supply.
- Front panel LED (●) blinks during boot-up and remains lit when the IPL is powered and operational.

Rear Panel

POWER
12V⎓
X.XA MAX
+ −

3/16" (5 mm) Max.

Tie Wrap

+ Smooth **−** Ridged

+ −
− Return
+12 VDC input

Ridged

Smooth

Ground all devices.

External Power Supply (12 VDC, 1 A max., Extron P/N 28-071-57LF)

Front Panel

NOTE: Check the polarity of the power supply before connecting it to the IPL.

Figure 8. Connecting an External Power Supply

ATTENTION:

- Always use a power supply supplied or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the unit.

- Utilisez toujours une source d'alimentation fournie par Extron. L'utilisation d'une source d'alimentation non autorisée annule toute conformité réglementaire et peut endommager la source d'alimentation ainsi que l'unité.

- If not provided with a power supply, this product is intended to be supplied by a UL Listed power source marked "Class 2" or "LPS" and rated output 12 VDC, minimum 1.0 A, or 48 VDC (PoE), minimum 0.35 A.

- Si ce produit ne dispose pas de sa propre source d'alimentation électrique, il doit être alimenté par une source d'alimentation certifiée UL de classe 2 ou LPS et paramétré à 12 VDC et 1,0 A minimum, ou 48 VDC (PoE) et 0,35 A minimum.

- 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 AC/DC ne sont pas appropriés pour une utilisation dans les espaces d'aération ou dans les cavités murales.

- 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 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. La source d'alimentation ne devra pas être fixée de façon permanente à une structure de bâtiment ou à une structure similaire.

NOTE: The IPL Pro Series control processors accept power over Ethernet (PoE) through the LAN/PoE port (**C**) in addition to network communication (see the **cabling and details** information on page 15). Both an external power supply and PoE can be connected to the control processor simultaneously. The IPL uses PoE when it is available but can switch seamlessly to the external 12 VDC power supply if the PoE connection is dropped.

ATTENTION:

- Power over Ethernet (PoE) is intended for indoor use only. It is to be connected only to networks or circuits that are not routed to the outside plant or building.

- L'alimentation via Ethernet (PoE) est destinée à une utilisation en intérieur uniquement. Elle doit être connectée seulement à des réseaux ou des circuits qui ne sont pas routés au réseau ou au bâtiment extérieur.

Bidirectional Control and Communication Connections and Features

B **5-pole COM ports, RS-232/RS-422*/RS-485*** —
Use COM ports for serial control of a display or other device and to receive status messages from the connected devices. These ports can send commands from a driver file. RS-232 is the default mode of operation.

IPL Pro Series serial protocol:
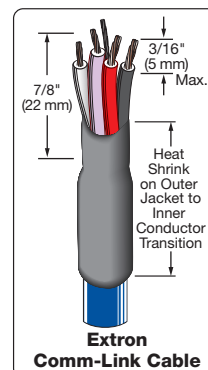
- 300 to 115200 baud (9600 baud = default)
- 8 (default) or 7 data bits
- 1 (default) or 2 stop bits
- No parity (default), even, odd, mark, or space parity
- Flow control support (default = none): hardware and software (XON, XOFF)

TIP: Comm-Link (CTL and CTLP) cable, shown at left, is recommended for these connections. For best results and to avoid short circuits, use shielded wires or wires insulated using heat shrink (instead of bare wires) for the common/drain wires.

3/16" (5 mm) Max.
7/8" (22 mm)
Heat Shrink on Outer Jacket to Inner Conductor Transition

Extron Comm-Link Cable

*Supported serial formats vary depending on the model and the COM port, as shown at right.

Use the following diagram as a wiring guide to cable the IPL to other devices.

Serial Options

Model	COM Port	RS-232 Only	RS-232, RS-422, or RS-485
IPL Pro S1	1	✔	
IPL Pro S3	1		✔
	2, 3	✔	
IPL Pro S6	1		✔
	2, 3, 4, 5, 6	✔	

Rear Panels

COM 1
Tx Rx G RTS CTS

COM 4
Tx Rx G RTS CTS

Serial (COM) Ports

5-pole COM
(RS-232, RS-422*, RS-485*)
*See the Serial Options table for which port supports which standards.

Select protocol via software.
COM port default protocol:
- 9600 baud   • 1 stop bit
- 8 data bits   • no flow control
- no parity

NOTE: The 5-pole COM ports support both hardware and software flow control.

Front Panels

COM
RTS
CTS
Tx
Rx
1 2 3 4 5 6

RTS = Request to Send
CTS = Clear to Send
Tx = Transmitting Data
Rx = Receiving Data

COM
Tx   RTS
Rx   CTS

To 5-pole COM port

CTS Clear to send
RTS Request to send
G   Ground
Rx   Receive
Tx   Transmit

Transmit (Tx)
Receive (Rx)

Heat Shrink Over Shield Wires

Heat Shrink

Strip wires 3/16" (5 mm) max.

Projector, Panel Display, PC, or Other RS-232, RS-422, or RS-485 Device

5-pole COM Pin Configurations

Pin	RS-232	RS-422*	RS-485*
1 (Tx)	Tx	Tx-	Data- (pins 1 & 2 tied together)
2 (Rx)	Rx	Rx-	
3 (G)	Ground	Ground	Ground
4 (RTS)	RTS	Tx+	Data+ (pins 4 & 5 tied together)
5 (CTS)	CTS	Rx+	

*See the Serial Options table of supported formats for each port.

NOTE: If you use cable that has a drain wire, tie the drain wire to ground at both ends.

Figure 9.   Wiring COM ports for Serial Control

For bidirectional serial communication, the transmit, ground, and receive pins must be wired at both the IPL Pro Series and the other device. Each projector or other device may require different wiring. For details, see the manual for that equipment or read the Extron device driver communication sheet, which is included with the drivers.

NOTE: Maximum distances between the IPL and the device being controlled are generally up to 200 feet (61 m) but may vary based on factors such as cable gauge, baud rates, environment, and output levels (from the IPL and the device being controlled).

C **LAN/PoE (IP) connectors and LEDs** — To connect the IPL to an Ethernet network (so you can configure and control the IPL and the devices connected to it), plug a cable into the LAN RJ-45 socket and connect the other end of the cable to a network switch, hub, router, or PC connected to a LAN or the Internet. For details of communication protocols, ports, and services used, see **Network Port Requirements** on page 27

The IPL Pro Series control processors accept power over Ethernet (PoE) through the LAN port (see the **Power over Ethernet (PoE) Attention statement** on page 13). Both an external power supply and PoE can be connected to the control processor simultaneously. The IPL uses PoE when it is available but can switch seamlessly to the external power supply if the PoE connection is dropped.

Cabling:
* For 10Base-T (10 Mbps) networks, use a CAT 3 or better cable.
* For 100Base-T (max. 155 Mbps) or 1000Base-T networks, use a CAT 5 or better cable.

You must configure this port before using it. Configure the settings via Global Configurator. See **Software-Based Configuration and Control starting on page 21** of this guide for basic information on configuration.

Activity LED (connector and front panel) — This yellow LED blinks to indicate network activity.
Link LED (connector and front panel) — This green LED lights to indicate a good network connection.
1000 LED (front panel) — This green LED lights when the unit is connected to a gigabit network connection.

Straight-through Cable
(for connection to a switch, hub, or router)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-orange
2	orange	2	orange
3	white-green	3	white-green
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	green
7	white-brown	7	white-brown
8	brown	8	brown
TIA/EIA-T568B		T568B	

Crossover Cable
(for direct connection to a PC)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-green
2	orange	2	green
3	white-green	3	white-orange
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	orange
7	white-brown	7	white-brown
8	brown	8	brown
T568B		T568A	

NOTE: DHCP is off by default.

LAN/PoE (Ethernet)

Default protocol:
* IPL IP address: 192.168.254.**250**
* Gateway IP address: 0.0.0.0
* Subnet mask: 255.255.255.0
* DNS address: 127.0.0.1
* DHCP: off
* Link speed and duplex level: autodetected
* Data rates: 10/100/1000Base-T

Power over Ethernet (PoE):
If PoE is available, the IPL uses PoE. If PoE is dropped (disconnects), the IPL switches seamlessly to the external 12 VDC power supply, if it is installed.

Default login credentials:
* Username: **admin**
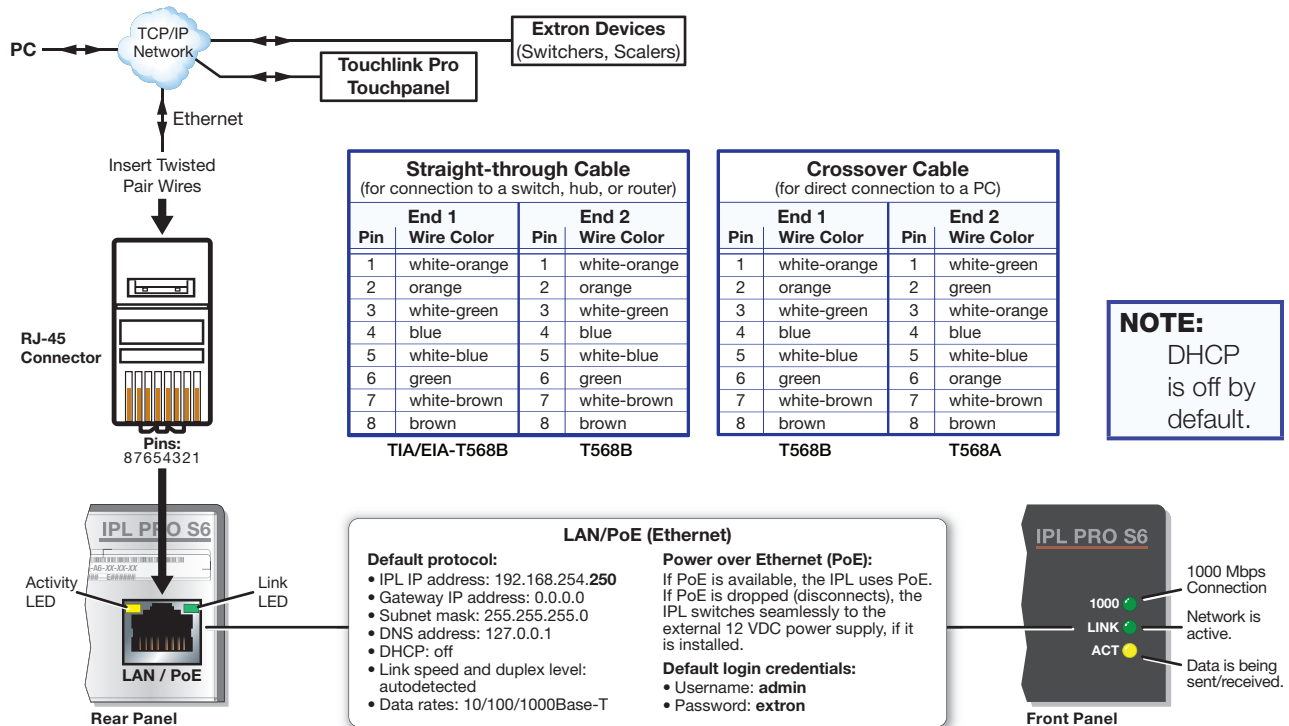* Password: **extron**

Figure 10.   LAN Connector and LEDs

* Use a **straight-through cable** for connection to a switch, hub, or router.
* Use a **crossover cable** or **straight-through cable** for connection directly to a PC. Wire the connector as shown in the tables above.

D **MAC address** — This is the unique user hardware ID number (MAC address) of the unit (for example, 00-05-A6-05-1C-A0). You may need this address during configuration.

MAC: 00-05-A6-*XX-XX-XX*
S/N: ######   E######
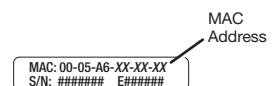
Unidirectional Control and Communication Connections

E **Input (contact closure input) ports** — To allow the IPL to monitor devices to trigger events, connect a switch, sensor, or similar item to one of these ports. Wire the ports as shown below.
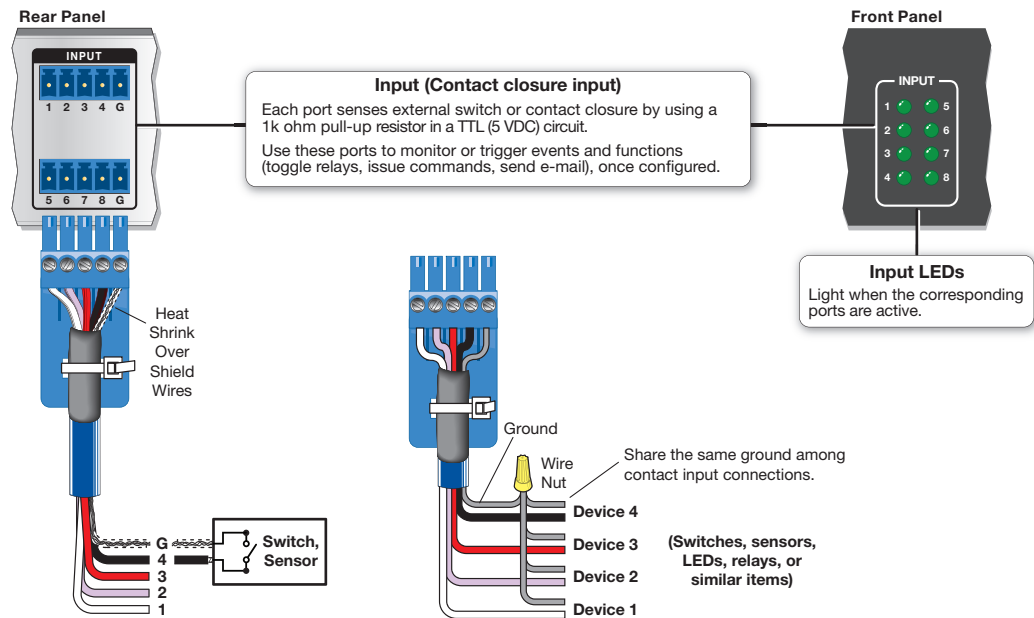
Rear Panel

INPUT

1 2 3 4 G

5 6 7 8 G

Input (Contact closure input)

Each port senses external switch or contact closure by using a 1k ohm pull-up resistor in a TTL (5 VDC) circuit.

Use these ports to monitor or trigger events and functions (toggle relays, issue commands, send e-mail), once configured.

Front Panel

INPUT

1 5
2 6
3 7
4 8

Input LEDs
Light when the corresponding ports are active.

Heat Shrink Over Shield Wires

Ground

Wire Nut

Share the same ground among contact input connections.

G
4
3
2
1

Switch, Sensor

Device 4
Device 3
Device 2
Device 1

(Switches, sensors, LEDs, relays, or similar items)

Figure 11.   Wiring the Contact Input Ports

A 1k ohm pull-up resistor in a TTL (5 VDC) circuit senses external switch or contact closure. After these ports have been configured, when the circuit between a signal pin and a ground pin is closed, each port can trigger events (such as toggling relays, issuing commands, or sending an e-mail).

F **Relay ports** — Relay ports provide control for power, screen/projector lifts, window coverings, and similar items, when trigger events occur.

Rear Panel

RELAYS

1 2 3 4

5 6 7 8

Relays
• Connect devices for relay control.
• Do not exceed a total of 24 V at 1 A for each port.

Front Panel

RELAYS

1 5
2 6
3 7
4 8

Relay LEDs
Light when the corresponding relays are closeed (tied to GND).

Normally Open

Common

All relays are normally open.
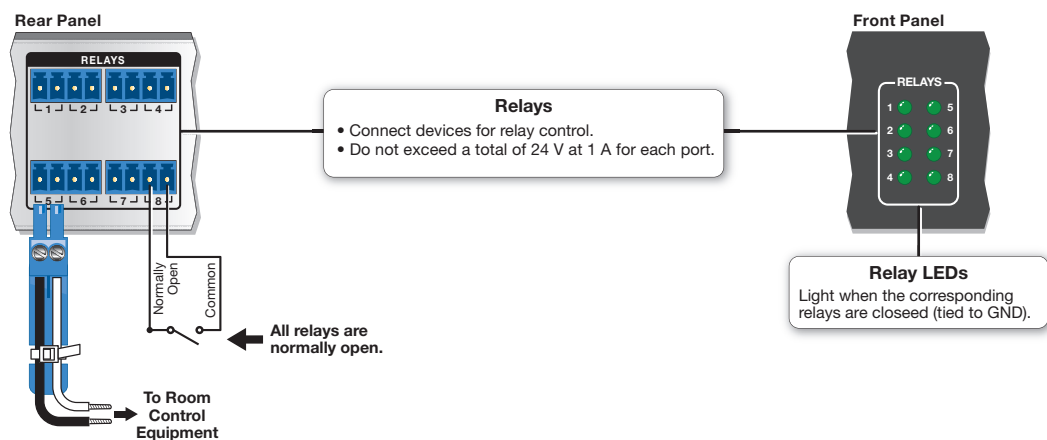
To Room Control Equipment

Figure 12.   Cabling Relay Ports

These relay contacts may be used to control any equipment as long as the contact specifications of a total of 24 volts at 1 ampere are not exceeded for each port. These relays are normally open by default.

When activated, the open contacts close. They can be set up to operate in one of two ways:

- **Latching** (brief or indefinite period contact) (press to close, press to open), or
- **Pulsed** (timed cycle) (press to close, timeout to open, with automatic repeat).

In pulse mode the default timeout period (hold time) is ½ second (500 ms). Use Global Configurator to change the length of the timeout period.

> **NOTE:** The pulse function is absolute: it always sets the relay state to closed, times out (briefly), then opens the contact. It overrides the previously selected setting (on state, off state, or toggle).

G **IR/Serial output ports** — An IPL Pro Series controller with these ports can use infrared signals or unidirectional RS-232 serial signals to control various devices (up to four per port for IR) via these ports. Set output signal type (IR or serial) during configuration. The figure below shows wiring examples.
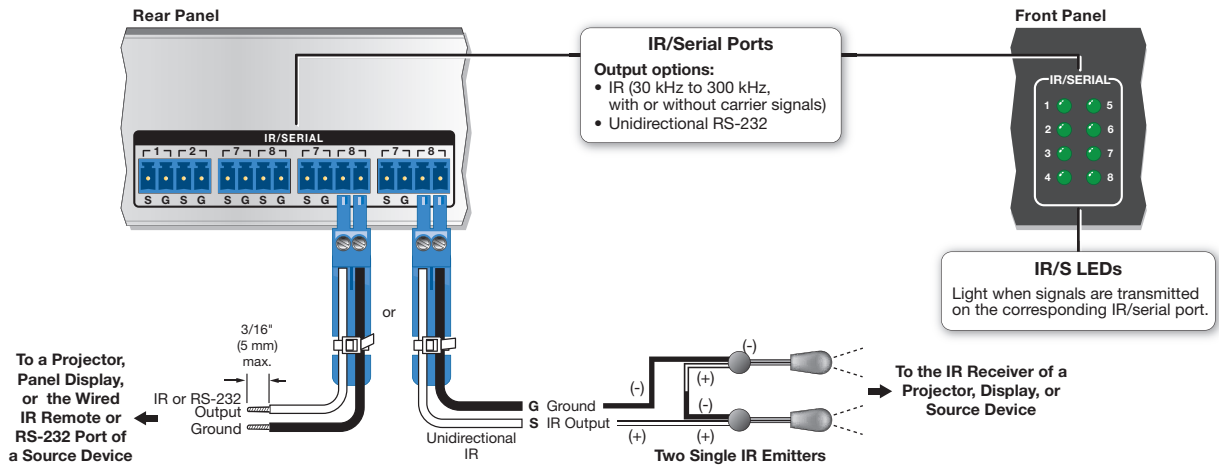

Figure 13.   Wiring the IR/Serial Ports

Serial control: Connect one of these ports to the serial control receive (Rx) and ground pins of the device to be controlled. These ports have the same **serial protocol** options (see page 14) as the COM ports.

IR control: Connect one of these ports directly to the wired IR port of another device. Or insert the wires from up to four IR Emitters into an IR port and place the heads of the emitters over or next to the IR signal pickup windows of the devices. For wiring, see the following diagrams or the *IR Emitter Installation Guide* (available on **www.extron.com**).

> **NOTE:**   Each emitter must be within 100 feet of the IPL for best IR control results.

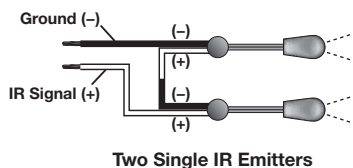**Installing One Single Emitter**

One Single IR Emitter
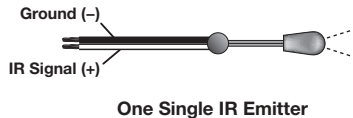
Installing One Dual Emitter

Dual IR Emitter

Installing Two Single Emitters
When installing only single emitters, tie them **in series** as shown below.

Two Single IR Emitters

Resetting the Unit

There are four reset modes that are available by pressing the Reset button on the front panel. The Reset button is recessed, so use a pointed stylus, ballpoint pen, or Extron Tweeker to access it. See the **reset modes table** below and on the next page for a summary of the modes.

Extron

Power LED   Reset Button
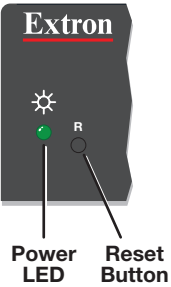
ATTENTION:
- Review the reset modes carefully. Using the wrong reset mode may result in unintended loss of flash memory programming, port reassignment, or a unit reboot.
- Étudier de près les différents modes de réinitialisation. Appliquer le mauvais mode de réinitialisation peut causer une perte inattendue de la programmation de la mémoire flash, une reconfiguration des ports ou une réinitialisation de l'unité.

NOTE: If you hold down the reset button continuously, the LED blinks every 3 seconds, and the unit enters a different mode, from the Reset all IP Settings mode through the Reset to Factory Defaults mode. For Reset to Factory Defaults mode the LED blinks three times, the third blink indicating the last mode. The modes are separate functions, not a continuation from one mode to the next.

IPL Pro Series Control Processor Reset Mode Summary			
Mode	**Use This Mode to...**	**Activation**	**Result**
Use Factory Firmware	Temporarily boot up the unit with factory-installed firmware for a single power cycle in the event that a firmware update has failed or if incompatibility issues arise with user-loaded firmware	To start the Use Factory Firmware reset mode and replace firmware: 1. On the control processor, hold down the recessed `Reset` button while applying power to the unit. Hold the button down until the `Power` LED flashes twice, then releases the button. The control processor enters factory firmware mode, and the LED blinks quickly. 2. Upload new firmware to the unit as desired (see **Updating the Firmware** on page 32 for details). **NOTE: Do not** continue to operate the IPL Pro control processor using the factory firmware version. If you want to use the factory default firmware version, you must upload that version again. See the *Global Configurator Help* file for firmware upload instructions.	**The control processor reverts to the factory default firmware.** Event scripting does not start if the unit is powered on in this mode. All user files and settings such as drivers, adjustments, and IP settings are maintained. **NOTE:** To return the unit to the firmware version that was running prior to the reset, cycle power to the unit.

	IPL Pro Series Control Processor Reset Mode Summary		
Mode	**Use This Mode to...**	**Activation**	**Result**
Project Recovery	Recover project configuration and program files if passwords have been lost	**For devices with firmware version 1.04 and lower**	

		To start the Project Recovery reset mode and recover a project:
		1. On the PC, open Global Configurator.
		2. Click the **Tools** menu and select **Project Recovery**. The `Recovery Mode` dialog box opens.
		3. Enter the IP address or host name of the target device for which you want to perform project recovery.
		4. Click **Recover**. The software allows indefinite time to establish a connection (until a connection is made or the user clicks **Cancel**).
		5. On the control processor, hold down the recessed Reset button while applying power to the unit. Hold the button down until the Power LED blinks twice, then release the button. The control processor enters project recovery mode for 20 seconds, during which time the `Power` LED blinks quickly
		GC automatically connects to the control processor, then opens and retrieves the project from the unit.
		6. Cycle power to the control processor to exit project recovery mode.
		7. Perform the **Reset to Factory Defaults** reset on the control processor.
		8. Open Toolbelt, start device discovery, select the desired control processor from the list and click **Manage**.
		9. Click the **Network Settings** tab and set the IP address of the control processor.
		10. Click the **User Management** tab and change the password of the control processor.
		11. Close Toolbelt.
		12. In GC, add the new password to the recovered project.
		13. Save the project.
		14. Upload the project from GC to the control processor.
			Project Recovery mode stops regular operation and allows a connection to be made to the unit via GC software without requiring password entry so that project files can be retrieved and saved.
			• During product recovery mode, events are stopped, and so is communication with AV devices.
			• While the control processor is in this mode, use the GC software to recover project files.
			• If the software does not initiate project recovery within 30 seconds after the control processor enters this mode, the control processor exits recovery mode.
			• Upon exiting project recovery mode:
			  • The unit returns to its pre-recovery mode state and settings.
			  • The Power LED returns to being steadily lit.

		For devices with firmware version 1.05 and higher	

		To start the Project Recovery reset mode and recover a project:
		1. On the PC, open Global Configurator.
		2. Click the **Tools** menu and select **Project Recovery**. The `Recovery Mode` dialog box opens.
		3. Enter the IP address or host name of the target device for which you want to perform project recovery.
		4. Click **Recover**. The software allows indefinite time to establish a connection (until a connection is made or the user clicks **Cancel**).
		5. On the control processor, press the **Reset** button three times within one second. The control processor enters project recovery mode for 30 seconds, during which time the `Power` LED blinks quickly
		GC automatically connects to the control processor, then opens and retrieves the project from the unit.
		6. Cycle power to the control processor to exit project recovery mode.
		7. Perform the **Reset to Factory Defaults** reset on the control processor.
		8. Open Toolbelt, start device discovery, select the desired control processor from the list and click **Manage**.
		9. Click the **Network Settings** tab and set the IP address of the control processor.
		10. Click the **User Management** tab and change the password of the control processor.
		11. Close Toolbelt.
		12. In GC, add the new password to the recovered project.
		13. Save the project.
		14. Upload the project from GC to the control processor.
			Project Recovery mode stops regular operation and allows a connection to be made to the unit via GC software without requiring password entry so that project files can be retrieved and saved.
			• During project recovery mode, events are stopped, and so is communication with AV devices.
			• While the control processor is in this mode, use the GC software to recover project files.
			• If the software does not initiate project recovery within 30 seconds after the control processor enters this mode, the control processor exits recovery mode.
			• Upon exiting project recovery mode:
			  • The unit returns to its pre-recovery mode state and settings.
			  • The `Power` LED returns to being steadily lit.

IPL Pro Series Control Processor Reset Mode Summary

Mode	Use This Mode to...	Activation	Result
Run/Stop Program	Toggle stop/ start program	To stop or start a program: 1. Hold down the **Reset** button for about 3 seconds, until the `Power` LED blinks once. 2. Release and press the **Reset** button momentarily (for <1 second) within 1 second*. *Nothing happens if the momentary press does not occur within 1 second. **NOTE:** This reset mode is supported on firmware version 2.00.0002-b004 and higher.	• The LED flashes 2 times if the program is starting. • The LED flashes 3 times if the program is stopping.
Reset All IP Settings	Reset IP settings and port maps to factory defaults without affecting user-loaded files	To reset all IP settings: 1. Hold down the **Reset** button for about 6 seconds until the `Power` LED blinks twice (once at 3 seconds, again at 6 seconds). 2. Release and press the **Reset** button momentarily (for <1 second) within 1 second*. *Nothing happens if the momentary press does not occur within 1 second.	**Reset All IP Settings mode:** • Sets the IP address back to factory default (192.168.254.250) • Sets the subnet back to factory default (255.255.255.0) • Sets the default gateway address to the factory default (0.0.0.0) • Sets domain and host names to factory default • Sets port mapping back to factory default • Turns DHCP off • Turns events (user-created schedules, macros) off.

Reset to Factory Defaults	Start over with configuration and uploading	To reset the unit to all factory default settings:
		1. Hold down the **Reset** button for about 9 seconds until the `Power` LED blinks three times (once at 3 seconds, again at 6 seconds, again at 9 seconds).
		2. Release and press the **Reset** button momentarily (for <1 second) within 1 second*.
		*Nothing happens if the momentary press does not occur within 1 second.
			Reset to Factory Defaults mode performs a complete reset to factory defaults (except the firmware).
			• Does everything Reset All IP Settings mode does
			• Removes (clears) all user-loaded files and configurations from the control processor:
			  • Clears driver-port associations (IR, serial, Ethernet) and port configurations
			  • Removes button/touchpanel configurations
			  • Removes schedules, settings, macros

Software-Based Configuration and Control

This section of the guide is divided into the following topics:

- **Configuration and Control: an Overview**
- **Basic Setup Steps: a Guide to this Section and Other Resources**
- **Downloading the Software and Getting Started**
- **Troubleshooting**

Configuration and Control: an Overview

An IPL must be configured before use in order to recognize and accept commands and pass them on to the controlled devices. It can be configured and controlled via a host computer connected to the same network as the control processor. See **LAN/PoE (IP) connectors and LEDs** starting on page 15 for details about LAN port and cabling to connect the control processor to the network.

- Configure the control processor by using the Global Configurator software in GC Professional or GC Plus mode. See the Extron **website** for full system hardware and software requirements.

- The default Web pages embedded within the control processor provide a means to view general hardware information, network settings, and, if configured, project information. The embedded Web pages can also be used to update the IPL firmware. You cannot configure the control processor via the embedded Web pages.

Basic Setup Steps: a Guide to this Section and Other Resources

> **NOTE:** GC projects can be created offline and uploaded to the hardware at a later date.

Follow the steps in **Setup Checklist: How to Proceed With Installation** starting on page 6. The overall process for setting up a control processor is as follows:
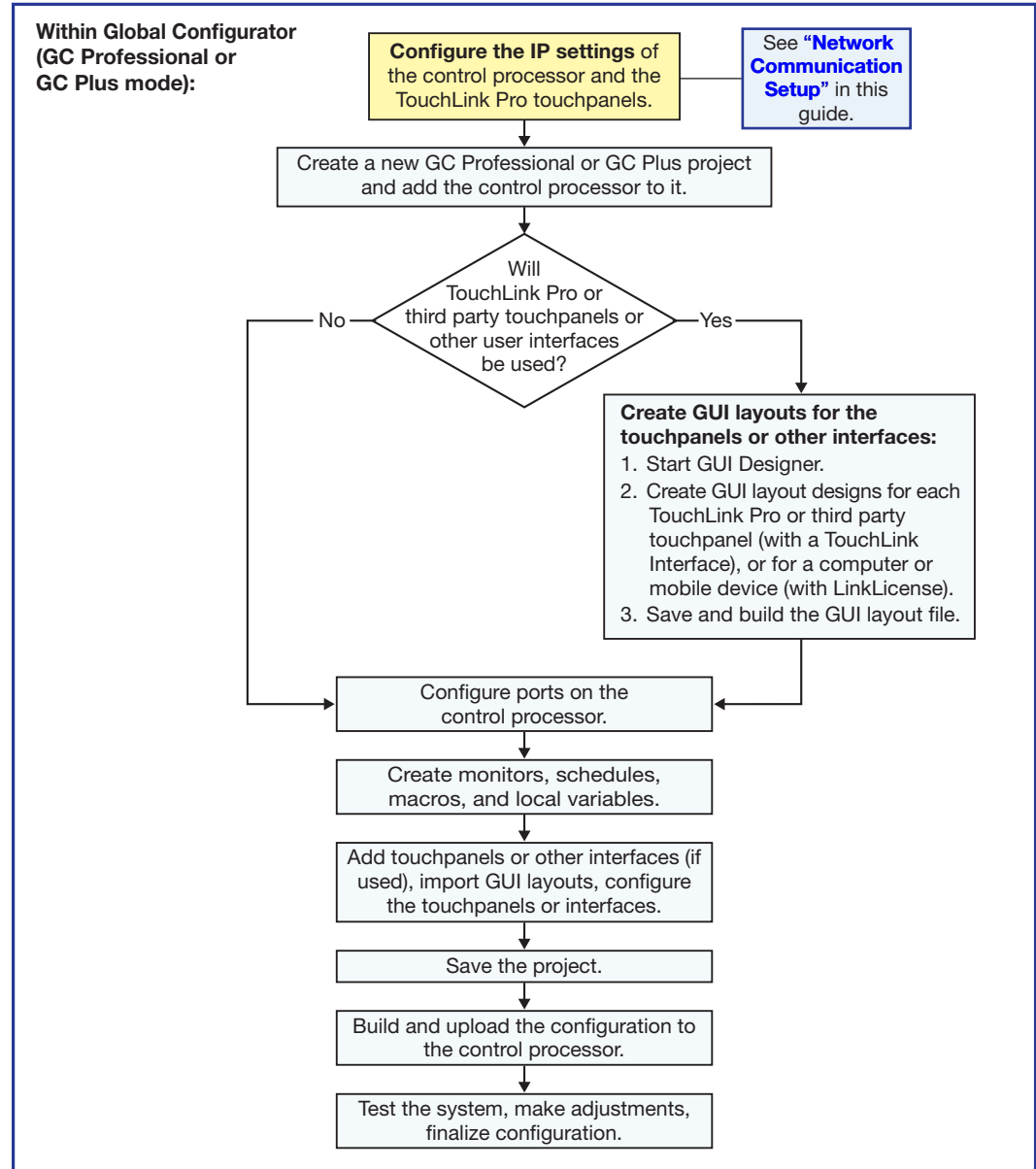

Figure 14. Overall Configuration Steps

Downloading the Software and Getting Started

GC software updates and a large variety of device drivers can be downloaded from the `Download` page on the Extron website (**http://www.extron.com/download/index.aspx**). When you locate the desired software or driver package, follow the on-screen directions to download and install it.

> **NOTE:** **New RS-232 and Ethernet drivers are required**. You must use serial and Ethernet drivers developed specifically for the IP Link Pro platform. With the exception of IR device drivers, drivers used for the previous generation IP Link (non-Pro) control processors are not compatible.

Locating Software, Firmware, and Driver Files on the Extron Website

There are three main ways to find software, firmware, and device drivers within **www.extron.com**:

- Via links from the Web page for the specific product
- Via the **Download Center** page (Click on the `Download` tab at the top of any page within the Extron website.)
- Via links from search results

> **NOTE:** For some software you have the option to click the `Download Now` button to begin downloading the software file. For other software there is a link for contacting an Extron support representative who can provide you access to the latest version.
>
> To obtain Global Configurator (GC Professional, GC Plus) software, you must have an Extron Insider account and contact an Extron support representative. Extron provides training to our customers on how to use the software. Access to Global Configurator Professional is available to users who successfully complete Extron Control Professional Certification.

Via links from the Web page for the specific product

1. Navigate to the Web page for the specific product model by either...
   - Typing the model name into the search field in the upper right of any Extron Web page and clicking the magnifying glass icon
     or
   - Selecting the model name from the `Product Shortcuts` drop-down list in the upper left of the Extron home page or Products page.

2. Click the `Downloads` tab in the middle of the product page. A list of available software, firmware, and documents for that model appears on screen.

3. Click on the name of the desired software or firmware to start downloading the file, or click on the link for device drivers to navigate to a page from which you can select either a driver package or specific drivers for individual devices.

   For Global Configurator in GC Professional mode, you must first attend Extron training, pass a proficiency test, and achieve Extron Control Professional Certification before being able to download that program.

Via the Download Center page

1. Click on the `Download` tab at the top of any page within the Extron website to access the **Download Center**.

2. Click on the link for the desired software product category (such as IP Link Pro software, TouchLink software, or device drivers) in the center of the screen. A page opens that allows you to make more specific selections from within that category.

3. For **software**, click on the link for the specific software that you need. A software product page opens that provides a description of the software package, a list of system requirements, a list of features, and access to the release notes, in addition to a download link.
   For **drivers**, select a product name from the drop-down list.

4. For some software you have the option to click the `Download Now` button to begin downloading the software file. For other software, such as Global Configurator in GC Professional mode, there is a link for contacting an Extron support representative who can provide you access to the latest version.

   For **drivers**, navigate through the alphabetically arranged list to select and download a driver for a specific device.

Via links from search results

1. Type the specific name of the software package (such as Global Configurator or GUI Designer) into the search field in the upper right of the page and click the magnifying glass icon. A search results page appears.

2. Click on the name of the software package. A software product page opens that provides a description of the software package, a list of system requirements, a list of features, and access to the release notes, in addition to a download link.

3. For some software you have the option to click the `Download Now` button to begin downloading the software file. For other software, such as Global Configurator with GC Professional mode, there may be a link for contacting an Extron support representative who can provide you access to the latest version.

Obtaining Control Drivers

Extron provides an extensive selection of device drivers available on the Extron website. Ethernet, serial, and infrared (IR) device drivers (for controlling projectors, displays, DVD players, document cameras, and so forth) are available as individual device driver files. Prior to configuration, download driver files for products to be used in the installation.

> **NOTE:** For serial or Ethernet devices, IPL Pro Series control processors require IP Link **Pro** drivers. They do not support serial or Ethernet drivers that were created for IP Link (non-Pro) products. However, existing Extron IR driver files are supported.

If the system requires a driver that is not already available, you have an additional option: request a new serial (RS-232) or Ethernet driver from Extron.

Things to Do After Installing GC and Before Starting a Project

- Read the *Global Configurator Help* file for details and step-by-step procedures on how to start a GC Professional or GC Plus project and perform basic setup tasks for a control processor.

- Obtain network addresses and related information from your network administrator.

- Set up the IP address for the control processor. See **Network Communication Setup** on page 8 for an overview of how to set up the network properties of the unit. For details, see the GC help file or Toolbelt help file, which contains instructions on how to set the IP address, gateway IP address, subnet mask, mail server IP address, domain name, Web port, SMTP username, and SMTP password so that the IPL is able to communicate with the network.

Using GC: Helpful Tips

Resources and Notes

- The *IPL Pro Series Setup Guide* is shipped with the unit, and it lists available resources (software, drivers, instructions). It includes a quick reference to the front and rear panel features, and covers basic hardware installation.

- The *Global Configurator Help* file provides a wealth of information on settings and how to use the software, itself. The help file, included with the software, covers basic setup steps and includes examples of how to use the features of GC and step by step instructions for typical configuration tasks.

- See **Front Panel Features** on page 9 and **Rear Panel Features and Connections** on page 11 in the "Hardware Features and Installation" section of this guide for features and settings for the ports you are configuring.

- If you will configure the IPL at the installation site, Extron recommends downloading drivers for all the devices in the installation **before** you go out into the field.

- The Global Configurator project file (*`.gcpro` or *`.gcplus`) contains configuration settings and it can be saved to a directory or folder for backup or for installation on another IPL Pro control processor. Saving a configuration is recommended before you perform a firmware upgrade.

- The IPL can be set up to allow configuration access only to administrators to prevent other users from making changes to settings, events, and controls.

- IP address, subnet mask, and gateway address are required during network setup of the control processor.

- The unit name is any name (for example, Room680-IPLProS6 or ConfRmSystem) that you want to use to label a specific IPL unit. The default is a combination of the product name and part of the hardware (MAC) address. This can be changed to your choice of alphanumeric characters and hyphens (-). The following rules apply:

  - Spaces are not permitted within the name of a unit.

  - Underscores (_) are not permitted.

  - Valid characters are A-Z, a-z, 0-9, and - (hyphen).

  - The name cannot start with a number or a hyphen, and it cannot end with a hyphen.

  - Maximum name length is 128 characters.

Troubleshooting

Turn on the input devices (DVD players, VCRs, PCs, and other sources), output devices (display screens, projectors), the IPL Pro control processor, and the PC and touchpanel. Touch a configured button on the touchpanel.

If an input or output AV device cannot be remotely controlled (does not respond as expected), check the following:

Power Connections

- Ensure that all devices are plugged in.
- Make sure that each device is receiving power. The IPL front panel power LED lights if the device is receiving power.

Data Connections

1. Check the cabling connections and make adjustments as needed. The Link LEDs on the IPL and on the touchpanel or PC should be lit solid green if a network connection is detected. If these LEDs are not lit, either the cable is faulty or not plugged in, or the wrong type of cable is being used (see **LAN/PoE (IP) connectors and LEDs** on page 15).

2. Try to "ping" the unit by entering `ping 192.168.254.25Ø` at the command prompt, or use the IP or Web address provided to you by your system administrator. If you get no response:

   - Make sure your unit is using the appropriate subnet mask (check with your system administrator).
   - Make sure your PC and network do not have a software firewall program that might block the IP address of the IPL unit.

3. If contact is established with the unit, but the IPL Web pages cannot be accessed by your Web browser, verify (via an Internet network options or preferences menu) that your Web browser is configured for direct network connection and is not set up to use a proxy server.

Device Control Connections and Configuration

- Verify that ports are wired correctly and that ground (earthing) wires are connected to the proper pins on the control processor and, if applicable, on the controlled device. Ensure that each IR emitter head is placed adjacent to or directly over the IR pickup window on the controlled device.
- Verify that the appropriate drivers were used while creating the GC Professional or GC Plus configuration file and that the correct commands and signal types (IR, RS-232, Ethernet) are associated with the appropriate ports on the IPL and on the other devices.
- Verify that input current at any contact input port does not exceed 250 mA.

If you are still experiencing problems, call the **Extron S3 Sales & Technical Support Hotline** or the Extron S3 Control Systems Support Hotline (1.800.633.9877).

Reference Information

This section of the guide includes the following reference items:

* **Network Requirements**
* **File Types: a Key to Extron-specific File Names**
* **Licensed Third-Party Software Used in the Control Processors**

Full product specifications are available via the IPL Pro Series product pages at **www.extron.com**.

Network Port Requirements

Network administrators may find it useful to know which ports, protocols, and services are used by the IP Link Pro control processors, TouchLink Pro Touchpanels, Global Configurator Plus and Professional software, Toolbelt, and Extron Control for iPad (for IP Link Pro control sytems). The following tables provide that information as a reference for network planning and troubleshooting. The following definitions apply:

* Inbound — The Extron control hardware listens for inbound traffic on the specified port.
* Outbound — The Extron control hardware sends outbound traffic to the specified port.

IP Link Pro Control Processors

Ports and Protocols for Control Processors				
Inbound/ Outbound	Port	Protocol	Service	Description
Inbound	80	TCP	HTTP	Port redirects to HTTPS
Inbound/ Outbound	123	UDP	NTP	NTP service
Inbound	443	TCP	HTTPS	Default Web pages, GlobalViewer, Extron Control for Web
Inbound/ Outbound	4502	UDP	Discovery	Broadcast network discovery
Inbound	4503	TCP	SSH	Internal system messaging
Outbound	4504	UDP	Trace	Extron trace messages
Inbound	4522	TCP	SFTP	File transfer
Outbound	5555 (config- urable)	UDP	GVE	GVE protocol
Outbound	Various	TCP/UDP	Drivers	Outbound connections for Ethernet device control

TouchLink Pro Touchpanels

Ports and Protocols for Touchpanels				
Inbound/ Outbound	Port	Protocol	Service	Description
Inbound	80	TCP	HTTP	Port redirects to HTTPS
Outbound	123	UDP	NTP	NTP service
Inbound	443	TCP	HTTPS	Default Web pages, Extron Control for Web
Inbound/ Outbound	4502	UDP	Discovery	Broadcast network discovery
Inbound/ Outbound	4503	TCP	SSH	Internal system messaging
Inbound	4522	TCP	SFTP	File transfer

Global Configurator Plus and Professional Software with Toolbelt

Ports and Protocols for GC				
Inbound/ Outbound	Port	Protocol	Service	Description
Inbound/ Outbound	4502	UDP	Discovery	Broadcast network discovery
Outbound	4503	TCP	SSH	Internal system messaging
Inbound	4504	UDP	Trace	Extron trace messages
Outbound	4522	TCP	SFTP	File transfer

Extron Control for iPad (for IP Link Pro Control Sytems)

Ports and Protocols for Extron Control for iPad				
Inbound/ Outbound	Port	Protocol	Service	Description
Inbound/ Outbound	4503	TCP	SSH	Internal system messaging
Inbound	4522	TCP	SFTP	File transfer, for Extron Control for iPad versions prior to 2.3.0
	443	TCP	HTTPS	File transfer, for Extron Control for iPad version 2.3.0 and up

File Types: a Key to Extron-specific File Names

A basic understanding of the types of files used by the control processor is helpful in order to decide what (if anything) to do with them.

- ***.eff** — This is an Extron firmware update file. See the **Firmware Updates** section starting on page 31 for details on firmware updates.

- ***.eir** — These are IR driver files containing infrared commands. There is a separate `.eir` file for each device the IPL controls via infrared communication. This is also the type of file created during IR learning. Via Global Configurator, these files can be imported and associated with one of the IR ports on a control processor.

- ***.ell** — This is a LinkLicense file. It appears in systems that use a LinkLicense for using a third-party device as a control interface instead of an Extron TouchLink Pro touchpanel.

- ***.gc2** or ***.gcz** — These are configuration files from older versions of Global Configurator (GC versions 3.x and earlier) that are used by Global Configurator only, not by the control processor. They contain configuration settings that must be processed by Global Configurator to create device configuration and event files for the IPL.

- ***.gcplus** — This is a Global Configurator Plus configuration file.

- ***.gcpro** — This is a Global Configurator Professional configuration file.

- ***.gdl** — This is a GUI Designer layout created for TouchLink Pro a touchpanel or third-party touch interface.

- ***.glta** — This is a GUI layout template.

Licensed Third-Party Software Used in the Control Processors

The control processors use various licensed third-party software packages during operation. To view details about third-party packages and associated licensing, click the **License Information** button in the internal Web pages of the control processor. A `License Information` window opens.

To view a copy of a listed package license, in the `License Information` window, click the link in the **License** column for the relevant package. This opens a copy of the package license in a separate window.

The following table lists the licensed third-party software packages used by the control processors.

> **NOTE:** Licensed software packages used by the control processors are subject to change without notice.

Licensed Third-Party Software			
Package	**License**	**Package**	**License**
aufs2-util	GPL v2	lighttpd	BSD
avahi	LGPL v2.1	linux-kernel	GNU GPL v2
bstrib	BSD	linx-pam	BSD
busybox	GPL v2	lua	MIT
bzip2	BSD	luafilesystem	MIT
can-utils	GPL v2	luasocket	MIT
cjson	MIT	minicom	GPL v2
devmem2	GPL v2	mtd	GPL v2
expat	MIT	ncurses	MIT
fcgi	fcgi	netsnmp	BSD
gnupg-1.4.7	GPL v2	ntp	MIT
gpgme-1.3.0	LGPL v2.1	openssh	BSD
i2c-tools	GPL v2	openssl	OpenSSL
ifplugd	GPL v2	pcre	BSD
json4lua	MIT	pexpect	MIT
libassuan-2.0.1	LGPL v2.1	popt	MIT
libcgicc 3.2.3	LGPL v2.1	psmisc	GPL v2
libcurl	ICS	python3	PSF
libdaemon	LGPL v2.1	qt	LGPL v2.1
libdnet	BSD	socat	GPL v2
libfcgi	fcgi	spawn-fcgi	BSD
libffi	libaffi	sqlite	public domain
libgpg-error	LGPL v2.1	tcpdump	BSD
libnl	LGPL v2.1	tzdata	public domain
libpcap	BSD	uboot	GPL v2
libsocketcan	LGPL v2.1	udev	GPL v2
libssh2	BSD	xinetd	BSD
libusb	LGPL v2.1	zlib	zlib

Firmware Updates

If the need arises, you can replace the IPL firmware without opening the unit or changing firmware chips. This section covers the following aspects of how to do that:

- **Determining the Firmware Version**
- **Updating the Firmware**

Determining the Firmware Version

There are several ways to check which version of firmware the control processor is using:

- View the device information in Toolbelt.
- View the general status information section of the IPL embedded Web pages.
- View the GlobalViewer (GV) Web pages (if the control processor has already been configured and the GV Web pages have been generated, built, and uploaded to the control processor).

Before using any of those methods, connect the control processor and the PC to the same network. For details see the **Hardware Features and Installation** section starting on page 6, the **Software-Based Configuration and Control section** starting on page 21, and the *IPL Pro Series Setup Guide*.

Using Global Configurator and Toolbelt

1. Start Global Configurator in either GC Professional or GC Plus mode.
2. Open the Toolbelt software.
3. Either add the desired control processor manually or start device discovery and select the desired processor from the list of discovered devices.
4. Click **Manage** in the row for the desired control processor and view the device information that appears in that section.

Using a Web Browser

The control processor comes with a set of factory default embedded Web pages. Also, after configuration, the GlobalViewer (GV) application could be installed in the unit, providing a different set of Web pages. See the *Global Configurator Help* file for information on how to use that software and the resulting Web pages. Either type of Web page (factory default or GV) can be used to find the firmware version and part number of the unit.

1. Start a Web browser program.
2. Type the IP address of the control processor into the address field of the browser and log on to the internal Web page or to the optional GlobalViewer Web page stored in the control processor (see the *Global Configurator Help* file for details).
3. Look for the general device or status information section.

Updating the Firmware

Firmware upgrade tools require the PC and the control processor to both be connected to an Ethernet network. The instructions for each method of updating the IPL firmware assume you have installed the appropriate software on your PC first.

> **NOTES:**
> - You should save the existing configuration to a file (see the *Global Configurator Help* file for instructions) before replacing the firmware. If the file is saved, the configuration can be restored to the IPL later using GC.
> - Check the Extron website for firmware-related documents, instructions, patch files, and new firmware files before loading new firmware into the control processor. We recommend that you read the firmware release notes (available from **www.extron.com**) before beginning the firmware update.

Locating and Downloading the Firmware

1. Visit the Extron website to find the latest firmware file for the control processor. The easiest way to locate files is through the **Downloads** tab on the Web page for the specific model.

2. Download the executable installer file (`*.exe`) from the website and run the installer program. The program automatically stores the firmware file on the PC in `C:\Program Files\Extron\Firmware` within a folder specific to that version.

3. Write down the firmware filename and location for later use. The filename ends in *.eff* such as `49-247-5Ø-x.xx.xxxx-yyyy.eff` where `x.xx.xxxx` is the version number.

> **NOTE:** The firmware update file must have a filename extension of `.eff`. If the file does not have that extension, it does not work properly.

Installing Firmware

Firmware can be replaced by using one of the following:

- Global Configurator (using the link to Toolbelt)
- Toolbelt
- The firmware uploader feature in the default embedded Web page

Both methods allow you to browse to find and select the appropriate `.eff` file on your PC and then click an **Upload** button to initiate the firmware upload to the control processor. Allow at least a couple minutes for the firmware to finish uploading. At the end of the upload process, the unit partially reboots and loses its connection to the PC. Therefore, to continue using the Web page or Toolbelt you need to refresh the Web page or reconnect via Toolbelt after the firmware update.

Glossary

10/100Base-T Ethernet which uses unshielded twisted pair (UTP - CAT 5, CAT 5e, CAT 6) cable, where the amount of data transmitted between two points in a given amount of time is equal to either 10 Mbps or 100 Mbps.

1000Base-T, gigabit Ethernet
An Ethernet standard that transmits at 1 Gbps over twisted pair wire.

Custom Web page Any file that can be loaded into an IPL and served by the internal Web server. The IPL can be used for various Web-based tasks. The Web page provides a way to control the IPL and other devices attached to it without use of the software, and with or without an accompanying event script. Any number and size of graphics can be used. If they are too large to fit in the nonvolatile memory of the IPL, Web pages can be created so that they can be served from another Web server using Microsoft Internet Information Services (IIS).

DHCP (Dynamic Host Configuration Protocol)
A standardized client-server communications protocol that enables a server to automatically assign unique network addresses (IP address, subnet mask, gateway) to a device using a defined range of numbers configured for the network.

DNS (Domain Name System)
DNS is the application layer protocol that locates and translates an Internet domain name (such as www.extron.com) into a numerical Internet Protocol (IP) address. A domain name is an easy-to-remember "handle" for an Internet address.

Driver A software package that controls the interface between the control processor and peripheral devices.

Ethernet A network protocol that uses MAC addresses instead of IP addresses to exchange data between computers. Using ARP (see above) with TCP/IP support, Ethernet devices can be connected to the Internet. An Ethernet LAN typically uses unshielded twisted pair (UTP) wires. Ethernet systems currently provide transmission speeds of 10 Mbps, 100 Mbps (fast Ethernet), or 1000 Mbps (gigabit Ethernet).

FTP (File Transfer Protocol)
A protocol that is used to transfer files from one host to another host over a TCP-based network (such as the Internet). Also see Secure File Transfer Protocol (**SFTP**) for the version that incorporates security features.

HTTP (Hypertext Transfer Protocol)
A network protocol based on TCP/IP that is used to retrieve hypertext objects from remote Web pages and allows servers to transfer and display Web content to users.

HTTPS (Hypertext Transfer Protocol Secure)
A communications protocol for secure communication over a computer network. It allows Web servers to transfer and display Web content to users securely. All transferred data is encrypted so that only the recipient is able to access and read the content. It is not a protocol, itself, but rather a combination of Hypertext Transfer Protocol (HTTP) on top of the SSL/TLS protocol, which adds the security capabilities of SSL/TLS to standard HTTP communications.

ICMP (Internet Control Message Protocol)

ICMP is an Internet protocol is used by network devices (routers, switches, and the like) to send error messages or relay query messages. Typically ICMP messages are used for diagnostic or control purposes or are sent to the source IP address in response to IP operations errors. Error messages include notices that a device is not available or that a host or router could not be reached.

IP (Internet Protocol)   The protocol or standard used to send information from one computer to another on the Internet.

IP address   A unique, 32-bit, binary number (12 digit decimal number, xxx.xxx.xxx.xxx) that identifies each device or device port (an information sender and/or receiver) that is connected to a LAN, WAN, or the Internet. IP addresses can be static (see **static IP**) or dynamic (see **DHCP**).

IP net mask/subnet mask — See subnet mask.

MAC (Media Access Control) Address

A unique hardware number given to devices that connect to a network such as the Internet. When a computer or networking device (router, hub, interface, and the like) is connected to a LAN or the Internet, a table (which is used in ARP) relates the IP address of the device to its corresponding physical (MAC) address on the LAN. This protocol allows for several terminals or network nodes to communicate within a multi-point network, typically a local area network (LAN).

NTP (Network Time Protocol)

NTP is an Application layer networking protocol that synchronizes clocks among computers and other devices over networks.

Ping   A utility/diagnostic tool that tests network connections. It is used to determine if the host has an operating connection and is able to exchange information with another host.

Port number   A preassigned address within a server (such as the control processor) that provides a direct route from the Application to the Transport layer or from the Transport layer to the Application of a TCP/IP system.

SFTP (Secure File Transfer Protocol)

Similar to FTP, this protocol adds encryption and requires credentials for file transfers.

SMTP (Simple Mail Transfer Protocol)

SMTP is an Internet standard for e-mail transmission. By default, SMTP uses TCP port 25. SMTP connections secured by SSL, known as SMTPS, default to port 465.

SNMP (Simple Network Management Protocol)

SNMP is an Application layer protocol that facilitates the exchange of basic network management information between network devices. It helps in monitoring of operations and factors such as bandwidth, memory usage, remote password resets, and collection of error information. This protocol collects (and configures) information from network devices (such as servers, hubs, switches, and routers) on an Internet Protocol (IP) network.

SSH (Secure Shell)   SSH is a network protocol for secure data communication and providing various secure network services between two networked computers. SSH creates a secure channel over an insecure network to connect client and server devices. It allows confidential communications of passwords and similar data over public or otherwise insecure networks.

Static IP   An IP address that has been specifically (instead of dynamically—see **DHCP**) assigned to a device or system in a network configuration. This type of address requires manual configuration of the actual network device or system and can only be changed manually or by enabling DHCP.

Subnet — See subnetwork.

Subnet address   The portion of an IP address that is specifically identified by the subnet mask as the subnetwork.

Subnet mask   A 32-bit binary number (12 digit decimal number, xxx.xxx.xxx.xxx) used on subnets (smaller, local networks) to help routers determine which network traffic gets routed internally (within the subnetwork) to local computers and which network traffic goes out to the rest of the network or the Internet. It is an address mask used to identify the bits of an IP address that are used for the subnet address. Using a mask, the router does not need to examine all 32 bits, only those selected by the mask.

Subnetwork   A network that is part of a larger IP network and is identified by a subnet address. Networks can be segmented into subnetworks to provide a hierarchical, multilevel routing structure.

TCP (Transmission Control Protocol)
          A connection-oriented protocol at the Transport layer of the Open Systems Interconnection (OSI, ISO/IEC 7498-1) reference model. It provides reliable end-to-end data delivery from one network device to another.

TCP/IP (Transmission Control Protocol/Internet Protocol)
          The communication protocol of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.

Tool tip   Text that appears when the mouse pointer hovers over a button or other item on screen.

UDP (User Datagram Protocol)
          A connectionless, Internet transport layer protocol that sends packets (datagrams) of information across networks using "best-effort" delivery. It is a relatively simple protocol that does not include handshaking. It is faster than TCP and is often used for broadcast and multicast communication, but it does not include data verification to ensure that all packets arrived at their destination.

URL (Uniform Resource Locator)
          The address (such as www.extron.com) that lets a resource on the internet be identified, located, and accessed.

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.

Europe and Africa:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

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

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

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

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

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 | **Europe**: | 31.33.453.4040 |
> | **Asia**: | 65.6383.4400 | **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.