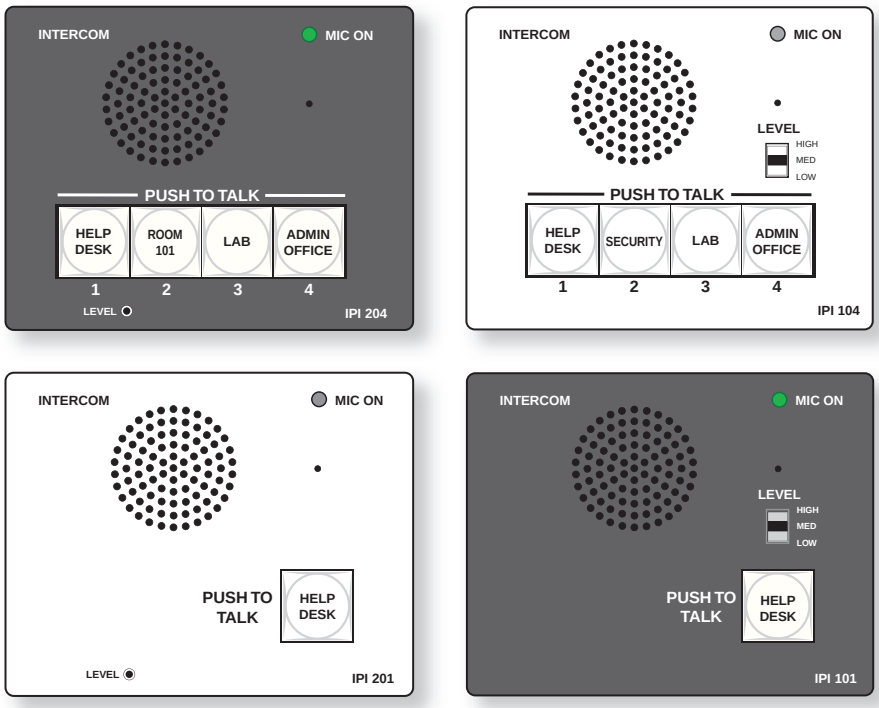
Extron® Electronics

INTERFACING, SWITCHING AND CONTROL

User's Manual



IPI 100 and IPI 200 Series

MediaLink™ IP Intercom™ Interfaces

68-1170-01
Rev. D 09 09

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.

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.

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.

Conserver 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.

Eviter 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.

Avertissement

Alimentations• 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'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

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 Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall 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.

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 Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese 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, aus der externen Stomversorgung (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 dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere 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.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

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.

Precaucion

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 especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

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 puentearia ni eliminaria.

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 sobrecalientamiento 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.

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暴露的危险电压，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。

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. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The Class A 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 with FCC emissions limits.*

Table of Contents

Table of Contents, cont'd

68-1170-01
Rev. D
09 09

Chapter One

Before you get Started

About This Manual

About the IP Intercom Modules

Features

System Requirements

UL Requirements

Preface

About this Manual

This manual describes how to configure and operate the following Extron MediaLink™ IP Intercom® Modules:

- IPI 101 AAP
- IPI 104 AAP
- IPI 201 Series
- IPI 204 Series

NOTE *The IPI 201 and IPI 204 series include AAP and 2-gang version intercoms.*

Terms and symbols used in this manual

The following terms are used throughout the manual and carry the following meanings:

- The terms "IPI" and "intercom" are used interchangeably in this manual to refer to all models.
- The term "100 Series" refers to both the IPI 101 and IPI 104.
- The term "200 Series" refers to both the IPI 201 models (AAP or 2-gang version) and both the IPI 204 models.
- The term "console" refers to a PC that is running the IP Intercom HelpDesk™ software and is connected to one or more IPI Intercom Systems (MLC 226 IP with IPI 104/101 AAP or stand-alone IPI 201/204 AAP or 2-gang models) via a local area network.
- "MLC" refers to an MLC 226 IP MediaLink Controller.
- "WAV" refers to a Waveform audio file, which has a ".wav" file extension.

The following symbols are used in this manual and have the following meanings:

NOTE *A **Note** icon draws attention to important information.*

CAUTION *A **Caution** icon warns of things that might damage the equipment.*

TIP *A **Tip** provides a suggestion to make setting up or working with the device easier.*

WARNING *A **Warning** icon warns of things that might cause injury, death, or other severe consequences.*

*A **Dangerous** icon 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.*

*A **Important** icon warns of important operating and maintenance (servicing) instructions in the literature provided with the equipment.*

Additional reference material

The following documents are referred to in this manual. They are available at www.extron.com.

- *MLC 226 IP User's Manual*
- *IP Intercom brochure*
- *IP Intercom System Frequently Asked Questions*
- *IP Intercom Network Impact Statement*
- *IP Intercom Best Practices*
- *IP Intercom Help File* (automatically downloaded and installed along with the IP Intercom HelpDesk software)
- *Global Configurator Help File* (automatically downloaded and installed along with the Global Configurator software)

About the IP Intercom Modules

The Extron MediaLink IPI 104 AAP and IPI 204 (four-button modules) and the IPI 101 AAP and IPI 201 (one-button modules) are for use with Extron's two-way IP Intercom System.

The IP Intercom System helps with room-to-help desk or room-to-room communications within a building, a group of buildings, or even greater distances as long as the intercoms are part of the same network. It provides enhanced support using a standard local area or wide area IP network.

For an IP Intercom System, each room requires an IPI 201 or IPI 204 intercom, or an MLC 226 IP MediaLink Controller connected to an IPI 104 AAP or IPI 101 AAP.

NOTE *The IPI 201 and IPI 204 are stand-alone units that do not require a connection to a MediaLink controller.*

Connections between the IPI 101 AAP and IPI 104 AAP intercoms with MLC 226 IP and the network are via existing standard network twisted pair cables.

NOTE *The MLC 226 IP to which the IPI 100 Series intercoms are connected must have been shipped after November 16, 2005 and also have firmware version 1.05 or later to support the IPI. Examine the rear panel of the MLC 226 IP. If there is a second RJ-45 connector, labelled "Intercom" and an audio output (see page 2-2), it is capable of supporting an IP Intercom station.*

To set up the IPI you must use the IP Intercom HelpDesk software. The Windows®-based MediaLink IP Intercom HelpDesk software is installed on a central office or help desk PC to set up, manage, and monitor IP Intercom System operations. The software also provides the ability for:

- faster call response by any available help desk in the system
- enhanced staff use by consolidation of monitoring operations
- secure administrator configuration and operator log-in
- making announcements to all intercoms simultaneously

The paging feature allows the help desk operator to page a single room or group of rooms simultaneously.

A line level output is available on the back of each MediaLink Controller and stand-alone IPI model to mix into a local sound system in each room.

Security features

The IP Intercom permits real-time audio monitoring by the help desk of any room where an IPI is installed. Using the IP Intercom HelpDesk software, intercom calls and pages can be logged and date/time-stamped on the help desk computer. Event logs can be accessed and archived for record keeping and tracking purposes.

NOTE *In some states it is illegal to listen in on rooms. To satisfy legal and privacy requirements, the intercom can play a recurring tone during room monitoring. This tone can be turned on or off in the HelpDesk Preferences.*

The status monitoring capablities of the MLC 226 IP and the audio monitoring capabilities of the intercom can be combined to monitor the status of equipment for each room. GlobalViewer software can be configured to automatically notify a help desk operator or security personnel via e-mail. Help desk operators or other authorized personnel can then use the IP Intercom's audio monitoring capability to listen to the activity in this room, helping them determine if security personnel should be dispatched to investigate.

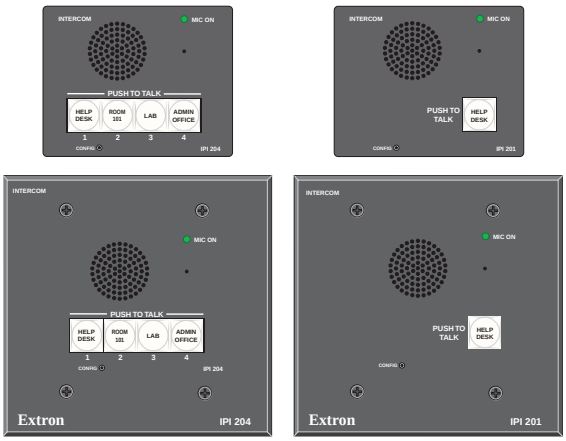
Features

- Two-way, half-duplex voice communications over an IP network
- Compatibility with IP Intercom-enabled MLC 226 IP MediaLink Controllers (IPI 101 AAP and IPI 104 AAP)
- Backlit, configurable Push To Talk buttons
- Integrated speaker and microphone
- Three-position switch to adjust speaker volume levels (IPI 101 AAP and IPI 104 AAP only)
- LED indicator to show when the room is being monitored
- Four space Architectural Adapter Plate (AAP) and 2-gang opening (IPI 200 series only) mounting
- Connection via existing network cable drops (one drop per MLC-IPI pair, IPI 101 AAPs and IPI 104 AAPs, only)

System Requirements

The IP Intercom HelpDesk software is available at no charge via the Extron Web site (www.extron.com) or the DVD that comes with your IPI. To install and run IP HelpDesk, you need a PC that meets the following minimum requirements:

- Microsoft® Windows XP
- Pentium® 4, 2 GHz or faster microprocessor
- At least 512 MB RAM
- 500 MB or more available hard disk space
- Windows-supported sound card, microphone, and speakers
- Microsoft Direct X version 9.0c or later
- Microsoft .NET framework, version 2.0 or later
- Network card and a network connection



UL Requirements

WARNING *Installation and service must be performed by authorized personnel only. This product should be used with a UL approved electrical box.*

1. This unit is not to be connected to a centralized DC power source or used beyond its rated voltage range.
2. The IPI 100 AAP or IPI 200 AAP must be installed in a UL listed junction box.

   The UL approved electrical wall box (junction box) is not included with the IPI; the installer is responsible for obtaining and installing the box.
3. The unit must be installed in accordance with the National Electrical Code and with local electrical codes.

Chapter Two

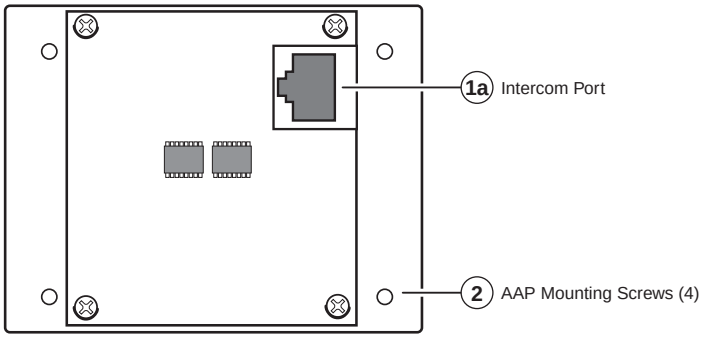
Installation

IPI Rear Panel Features and Cabling

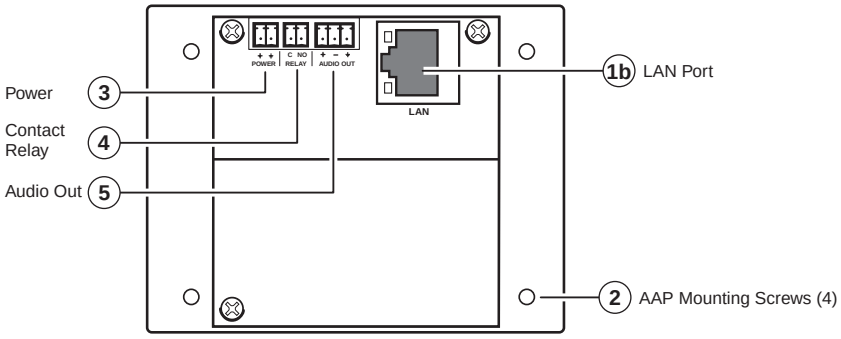
MLC Audio Connection

Sample Applications

IPI Rear Panel Features and Cabling

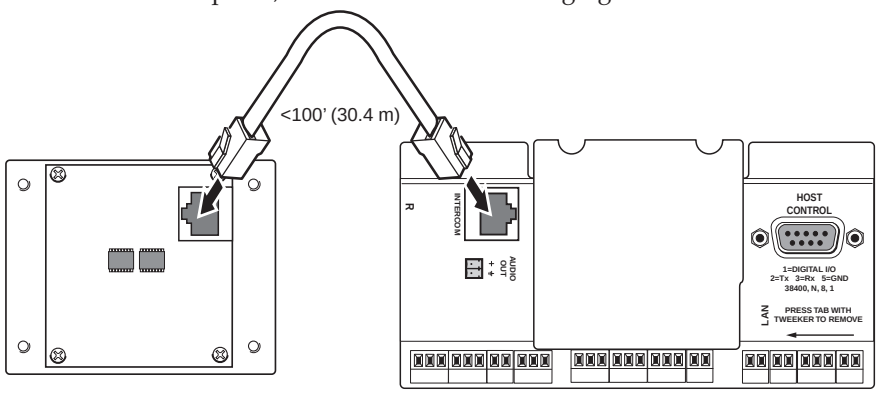


IPI 104 AAP, IPI 101 AAP Rear Panel



IPI 204 AAP, IPI 201 AAP Rear Panel

1a **Intercom port** (IPI 101 AAP and IPI 104 AAP only) — This port is used for power, control, and voice data communication with the MLC. Plug one end of a standard, straight through, CAT 5, CAT 5e, or CAT 6 cable terminated with RJ-45 connectors into this port. Plug the other end of the cable into the Intercom connector on the MLC 226 IP's rear panel, as shown in the following figure.



IPI 101 AAP or IPI 104 AAP Rear Panel

MLC 226 IP Rear Panel

CAUTION *This is not an Ethernet LAN connection. Do not connect these ports to the Ethernet.*

NOTE *A 12 inch (30.5 cm) CAT 6 cable is included with each IPI. If you choose to terminate your own cable, the cable must be no longer than 100 feet (30.4 m). Cables must be terminated to the T586A or T586B standard and both ends of a cable must be wired to the same standard (see cable wiring on the next page).*

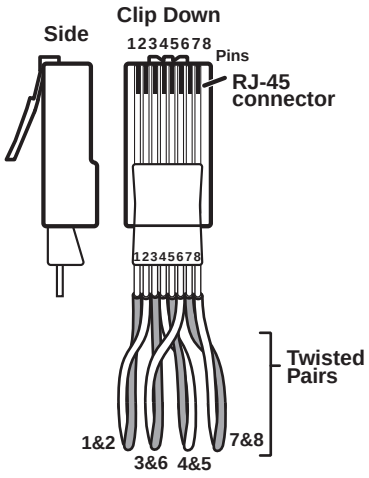
1b **LAN port** (IPI 201 AAP and 204 AAP only) — Plug an RJ-45 jack into the LAN connector to connect to a network. The blinking yellow LED indicates LAN activity. The green LED lights to indicate a good LAN connection.

Patch (straight-through) cable

Side 1		Side 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

Crossover cable

Side 1		Side 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



2 **AAP mounting screws —** These four screws are permanently attached to the IPI's faceplate. They are used for mounting the faceplate into another device (such as an MLC 226 IP AAP) or a mounting frame.

NOTE **Items** ③ *to* ⑤ *apply only to the IPI 201 and IPI 204 models.*

3 **Power —** Connect a cable between the 2-pole, 3.5,mm captive screw connector and a 12 VDC, 1 A power supply (included).

CAUTION *The power supply shall not be permanently fixed to the building structure or similar structures.*

The power supply shall not be located within environmental air handling spaces or within the wall cavity.

The installation shall be in accordance with the applicable provisions of the National Electrical Code ANSI/NFPA 70, Article 725 *and the* Canadian Electrical Code, Part 1, Section 16.

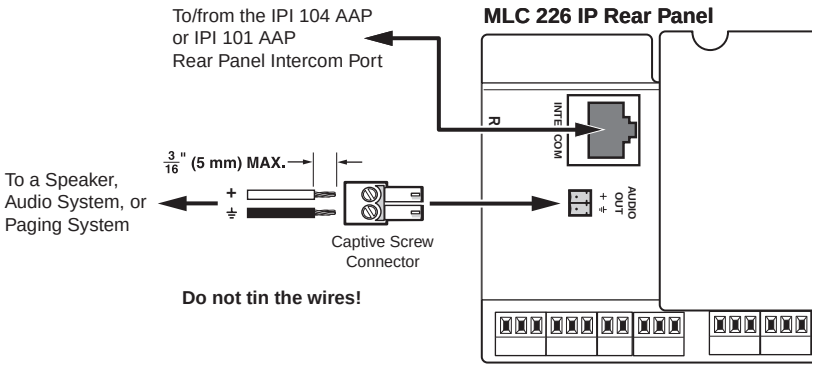
The power supply is to be located within the same vicinity as the Extron equipment in an ordinary location, Pollution Degree 2, secured to the equipment rack within the dedicated closet, podium or desk.

4 **Contact Relay —** The 2-pole, 3.5,mm captive screw contact relay connector is used to control items such as room lighting, window coverings, and door locks. The contact may be used to control any equipment as long as the contact specifications of 24 VDC at 1 A are not exceeded.

5 **Audio Out —** A 3-pole, 3.5 mm captive screw connector is used for audio output connection. It provides a -10 dBV balanced or unbalanced signal that can be connected to local, powered speakers or to any audio or paging system.

MLC Audio Connection

The MLC 226 IP Series controllers that support IPI intercom panels also have a rear panel, line level audio output port that can be connected to local, powered speakers or to any audio or paging system. See the wiring guide in the illustration below.



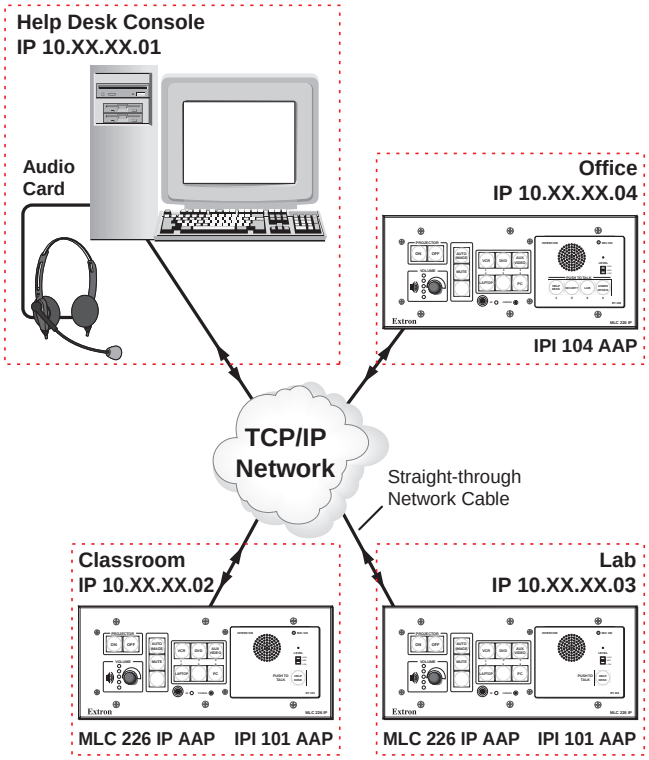
NOTE *The volume for this audio output can be adjusted via software only.*

Sample Applications

There are several ways to make use of an IP Intercom System. To see what you can do with the IPIs, look at the sample scenarios provided in this section.

Single PC to panel

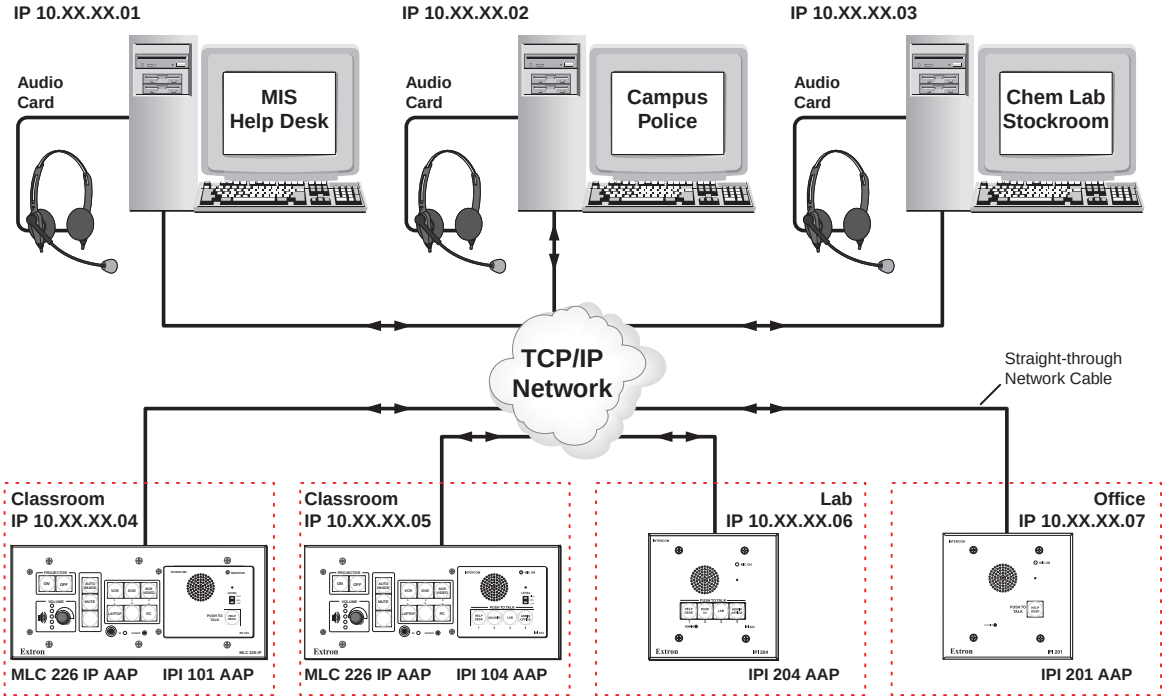
For a simple intercom system, connect one or more panels to a PC that serves as the help desk console.



1. Connect one or more IPI 201, IPI 204 units, or MLC 226 IP(s) with one or more IPI 101 AAP and/or IPI 104 AAP units to a network using straight-through cable.
2. Using a PC in the network, configure the IPI systems, assigning the PC's IP address to one button on each IPI, using Global Configurator, the unit's Web pages, or the ARP command (see chapter 4). The button light changes from red to low amber to indicate it is configured and connected to the PC.
3. The intercom user presses and holds the button assigned to the PC to initiate talk mode. The button glows bright amber, and the Mic On LED lights.
4. The user speaks into the intercom. Audio is output through the PC speakers at the help desk console.
5. The intercom user releases the button when done speaking.
6. The console operator clicks the Talk button (in the software) or presses the PC's space bar to respond.

Multiple PCs to panel

Some facilities may require a system with two or more console PCs. One may be staffed by a computer applications expert, another by security personnel, and a third by resource aides or lab stockroom staff. Each console is configured to connect with several intercoms, and each intercom is configured to contact up to four consoles.



1. Connect one or more PCs to the network and install the IP Intercom HelpDesk Software on each PC. If call forwarding is used, Extron recommends that no more than six PCs should be set up for call forwarding.

   See chapter 5 for instructions on how to install and use the software.

2. Connect up to a maximum of 250 intercoms (per help desk PC) to a network using straight-through cable. Extron recommends that large systems should be segmented, so that no more than 60 intercoms are associated with a single help desk.

3. Configure the intercoms and set up the intercom list for each console PC. Each console could be set up to monitor a different group of intercoms, but most likely the lists will overlap.

   In the example shown above, an installation in one building of a college campus, each room (classroom, lab, or office) contains an intercom. Configure one button on each intercom to contact the computer help desk. For IPI 104 or IPI 204 models, configure a second button on each intercom to contact the campus security department. However, only the intercoms located in physical sciences classrooms and laboratories have a third button configured to contact the PC console in the lab stockroom. Only the intercoms installed in offices have a button configured to call the registration department's console.

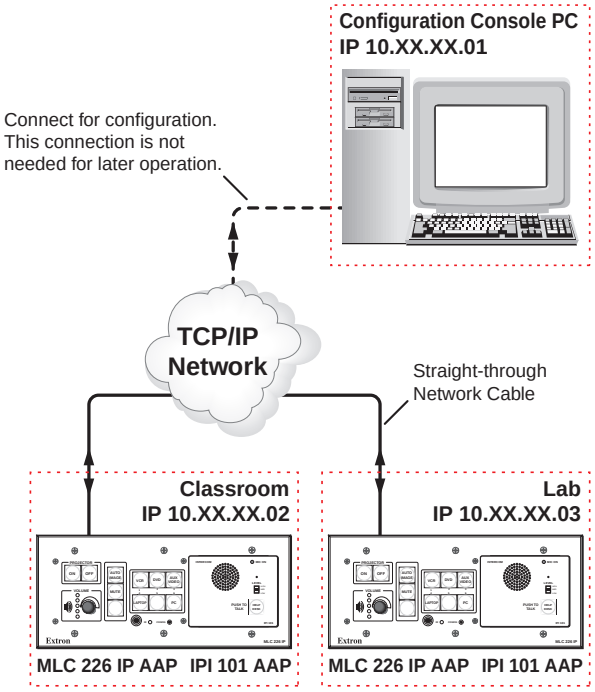
4. Once the system is configured, each intercom user presses and holds a button to initiate talk mode. The button glows bright amber, and the Monitor LED lights.

5. The user speaks into the intercom. Audio plays through the speakers or headset at the console the pressed button was configured to call.
6. The intercom user releases the button when done speaking.
7. The console operator clicks the Talk button (in the software) or presses the PC's space bar to reply.

Panel-to-panel mode

You do not need to include a console PC as a permanent part of an IP Intercom System. Here is an example in which panels are configured to "talk" to each other. The software does not need to be running during intercom system operation.

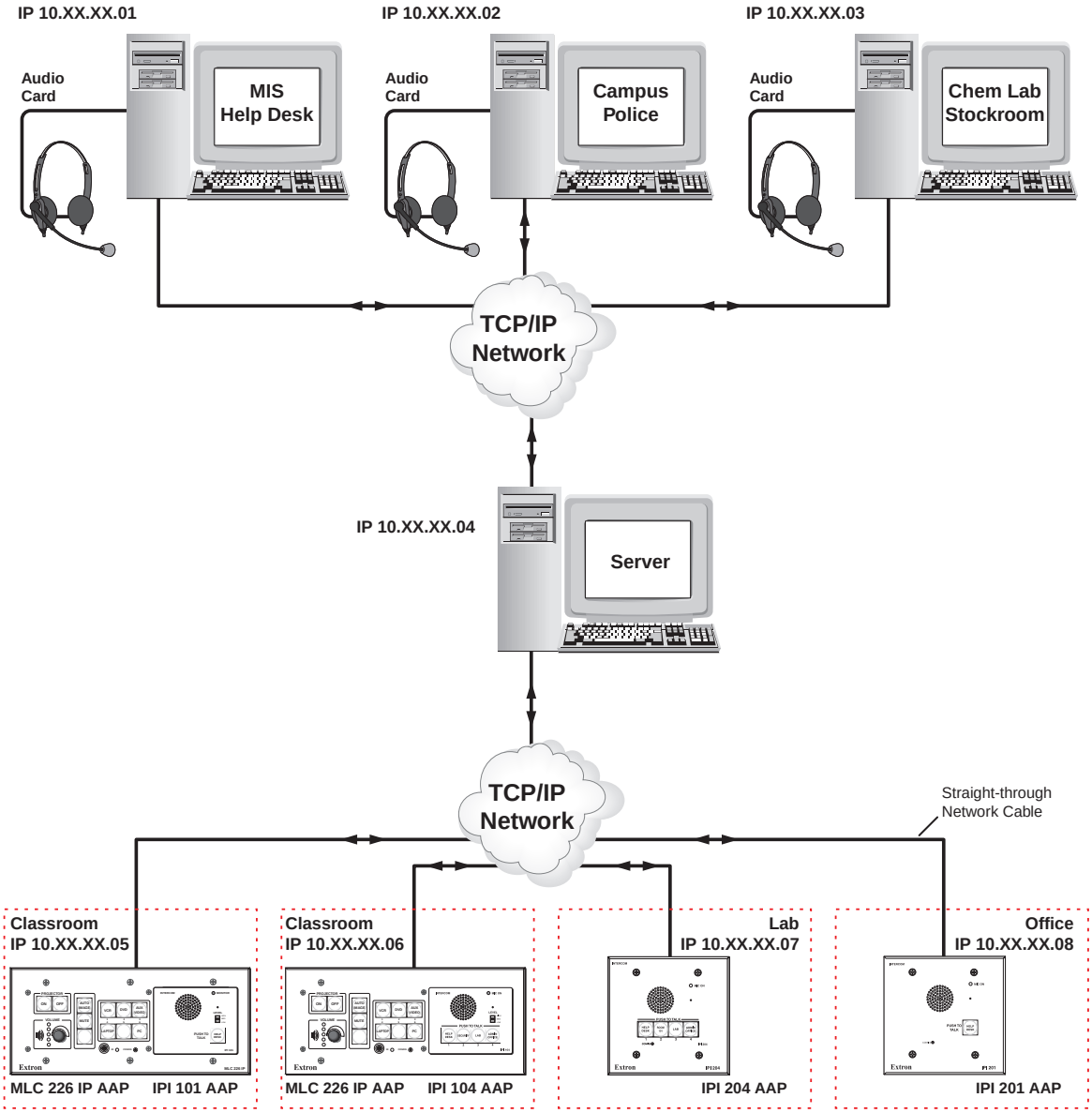
NOTE *Panel to panel mode will only work when both panels are in the same network subnet.*



1. Connect two IPI 101 AAPs and their MLC 226 IPs to a network using straight-through cable.
2. Using a PC connected to the same network (as shown in the figure above), configure the two IPI systems. Read chapter 5 for instructions on how to use the HelpDesk software for configuration.
3. Close the configuration program. The PC can be disconnected from the network or used for other functions.
4. Push the button on one IPI to contact the other IPI. On the calling IPI, the microphone is enabled, the Mic On LED lights, and the button's light changes from low amber to bright/high amber. On the IPI being called, the button's light changes from low amber to bright/high amber.

Server mode

A single PC can act as a server to control the communication between the intercoms and the Help Desks. For complete instructions about using the HelpDesk software to configure a computer as a server or as a client help desk, see chapter 5.



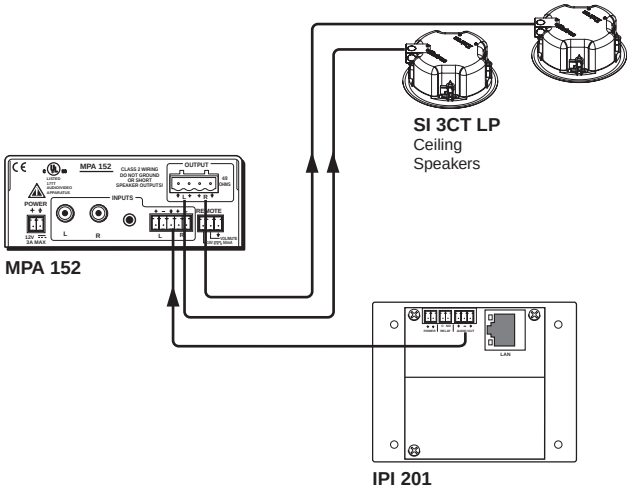
1. Configure one computer as a server. Ensure that all intercoms are listed in the intercom list of the server and each Help Desk. Also ensure that all Help Desks in the system are on the server's list of Cooperating Help Desks.
2. Configure one of the buttons on each intercom to communicate with the server.
3. Configure all of the Help Desk PCs so that only the server is listed on the list of Cooperating Help Desks.
4. Set the server to server mode and restart the IPI program on the server.

Any call from an intercom will now be routed by the server to an available Help Desk. For complete instructions on setting up server and client PCs, see chapter 5, "Setting up one PC as a server".

Intercom with amplifier

The MLC's Audio Out 2-pole captive screw connector outputs a -10 dBV audio signal that can be routed to an MPA 152 or any external audio amplifier, then to speakers.

1. Cable the system as shown in the following diagram.



2. Power on the equipment.
3. Make fine adjustments to output level using the **Remote Line** slider in the **Advanced Settings** part of the HelpDesk software. The external amplifier (the MPA 152 in this example) must be adjusted properly to avoid any audio signal clipping or audio distortion.
4. If desired, use the software to adjust to minimum levels the IPI's speaker output.

3

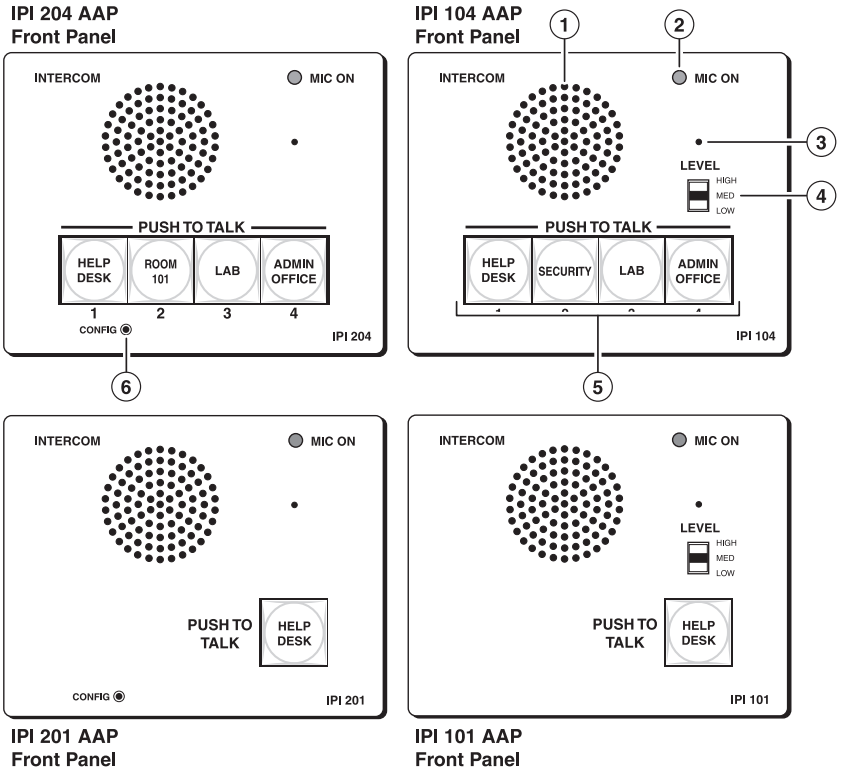
Chapter Three

Operation

Front Panel Features and Operation

Button Operation

Front Panel Features and Operation



① **Speaker** — This integrated speaker provides mono output at the IPI panel.

② **Mic On LED** — This LED lights under two circumstances:

- When a configured Push to Talk button is pressed.
- To indicate that someone at the help desk console is listening and that the intercom is in monitoring mode. Monitoring mode permits hands-free operation: the user does not have to press the Push to Talk button to speak into the intercom. It also lets help desk staff monitor what is happening to determine whether to send security personnel to that room.

③ **Microphone** — Push one of the butttons and talk. The microphone is behind this opening.

④ **Level switch** — This three-position switch lets you change the speaker's loudness level (IPI 100 series, only).

⑤ **Push to Talk button(s)** — The IPI 101 AAP and IPI 201 units include one of these buttons, and the IPI 104 AAP and IPI 204 units have four.

NOTE *The MLC and IPI intercoms must be configured (via software) to associate each button with the IP address of a specific console PC or intercoms. Once configured, the IPI 101 AAP and IPI 201 can communicate to one location (one IP address). The IPI 104 AAP and IPI 204 can communicate with up to four different locations.*

⑥ **Config Port (IPI 200 Series only)** — This 2.5 mm port is used to configure the IPI 201 and IPI 204 and to upload firmware when necessary.

Button Operation

Push to talk operation

Press a Push to Talk button to call the help desk or another console. That enables the microphone, causes the Mic On LED to light, and enables communication to the location associated with that button. When pressed, the button lights bright amber.

- If the console PC being called is busy, the IPI plays a .wav file to tell the caller that the line is busy. A "call received" message appears at the help desk console PC to indicate that the intercom is calling. For informaton about .wav files, see page 5-12 for information about using .wav files.
- If the console PC being called is not connected to the network, the IPI plays a .wav file stored on its local MLC to notify the intercom user that the connection is not available. Also, the button lights red instead of amber.
- Once a call is successfully connected, press and hold the button when you speak, and release it to allow the other party to speak.

NOTE *You must press and hold an IPI's button to speak and to call the help desk or another intercom. When you release the button, the intercom's microphone turns off unless the help desk is listening (see page 510).*

Indication (lighting)

Button Color	Indication
Amber (dim)	• The button is in standby. • The device at the IP address associated with that button is turned on and is connected to the network. If that device gets disconnected or if the help desk software is not running on that PC, the button lights red. Once it is reconnected, the button returns to dim amber lighting.
Amber (bright)	• The IPI is communicating with the location the button is configured to call. This happens during a call, a page, or when receiving an announcement from the console PC.
Red	• The device (console) associated with the button is disconnected from the network or is turned off. • The software is not running or has been closed.

Operation

Chapter Four

Initial Configuration

Before you Begin

Setting the IP Address by Global Configurator

Setting the IP Address Using Embedded Web Pages

Setting the IP Address Using the ARP Command

Initial Configuration

The IPI 100 Series units must be connected to a MLC 226 IP MediaLink controller with a valid IP address. See the *MLC 226 IP User's Manual* for information about configuring the MLC controller's IP address.

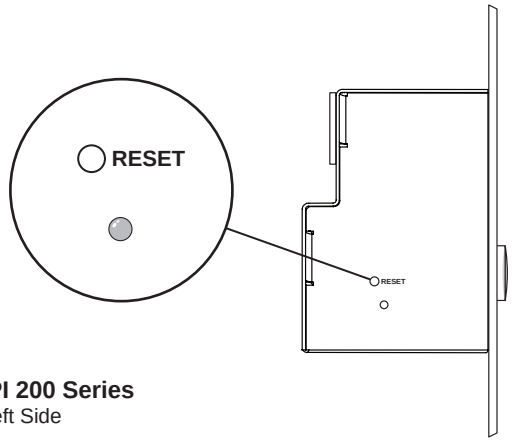
The IPI 200 Series units have a factory default IP address of 192.168.254.254. This IP address must be changed to an address that will operate on your local network.

There are three ways to change the IP address setting:

- Global Configurator
- IPI 200 Series unit's embedded Web pages
- Address Resolution Protocol (ARP) command

Before you Begin

1. Obtain a valid IP address for your IPI 200 Series device from your A/V system's network administrator.
2. Write down the unit's MAC address (a 12-digit number) found on a label on the rear panel of the unit (ex: 00-05-A6-01-0A-74).
3. If the unit's IP address has been changed from the factory default (192.168.254.254), before setting a new IP address, the default IP address must be restored by performing a Mode 4 reset:



IPI 200 Series
Left Side

   a. Hold down the Reset button on the left side of the unit (see figure above) until the Power LED blinks twice (6 seconds), then release.

NOTE *The Reset button is recessed. Activate it with an Extron Tweeker or similar tool.*

   b. Press and release the Reset button again within 1 second.

      The Power LED blinks quickly four times, confirming the Mode 4 reset, which returns the unit to its factory default IP address.

Setting the IP address using Global Configurator

The preferred method for setting a unit's IP address is to use Extron's Global Configurator (GC) application.

If you have Global Configurator installed on a local PC, and have a GC project file open, proceed with the steps below. If you do not have Global Configurator installed, it is available as a free download from www.extron.com. The GC help file steps you through the process of creating a new GC project file, and provides an illustrated version of the procedure below.

The IPI 200 Series intercom unit must be:

- physically connected to the network or connected directly to a computer via the front panel Config port.
- at its factory default IP address

To set an IP address with a GC project file open:

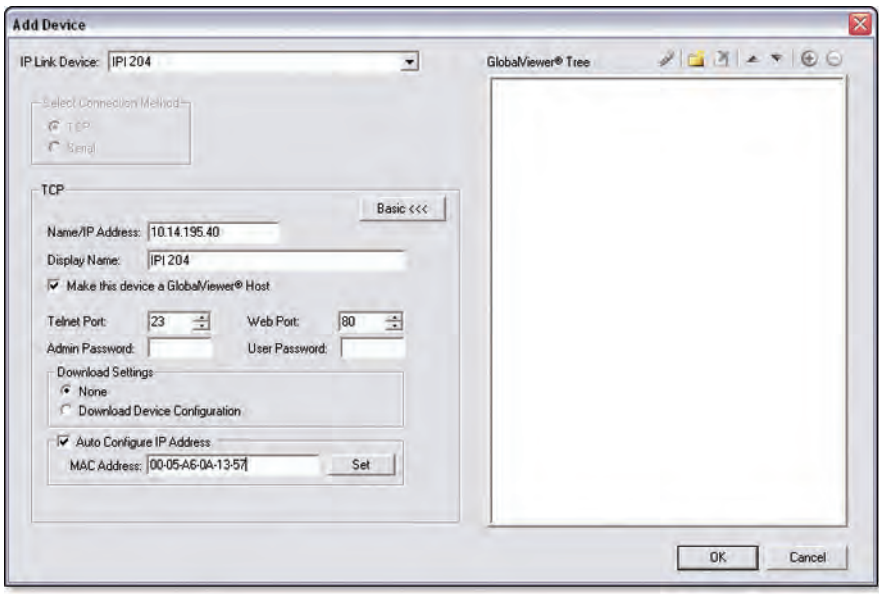
1. From the Edit menu, select **Add Device**.

   The Add Device dialog box opens (see the figure below).

2. Select the appropriate device type (e.g. **IPI 204**) in the IP Link® Device drop-down list.
3. Enter the new IP address (ex: **10.14.195.40**) in the Name/IP Address field.
4. Enter a unique device name in the Display Name field.
5. Click the **Advanced >>>** button.

   The Advanced options of the Add Device dialog are displayed, and the "Advanced >>>" button name changes to "Basic <<<".

6. Click the **Auto Configure IP Address** checkbox.
7. Enter the unit's MAC address in the MAC Address field. The first six digits (00-05-A6) are pre-populated, and identify this unit as an Extron device. You only need to enter the final six digits. Dashes between digits are auto-filled.
8. Click the **Set** button. The Auto Configure Successful dialog box opens.
9. Click **OK**.



Setting the IP address using embedded Web pages

Each IPI 200 Series intercom unit contains an on-board Web server with interactive pages that can be used to configure the device.

The intercom unit must be at its factory default IP address.

To set an IP address via embedded Web pages:

1. Connect an Ethernet crossover cable between the device and a local PC.
2. On the PC, locate the TCP/IP Properties dialog box.

   On Windows XP, the TCP/IP Properties dialog box is found at:

   Start > My Network Places > right-click to **Properties > Local Area Connection > right-click to Properties > Internet Protocol (TCP/IP) > Properties**.
3. Record the current IP address, subnet mask, default gateway and DHCP settings. You will need this information later to return the PC to its original TCP/IP settings.

   IP Address:

   . . .

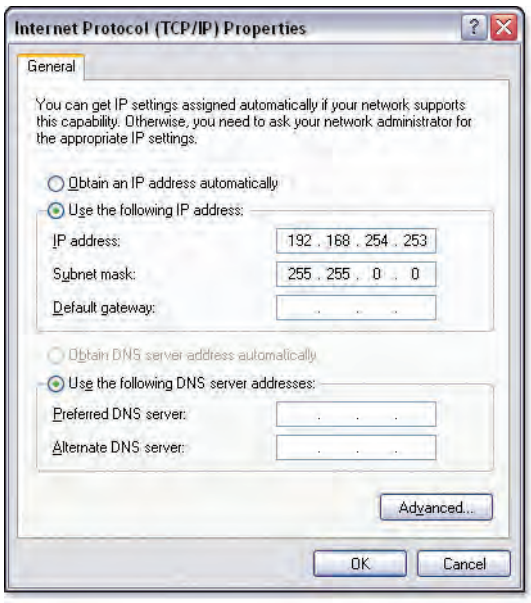
   Subnet Mask:

   . . .
4. Enter the following:

   IP address: 192.168.254.253

   Subnet mask: 255.255.0.0

   Default gateway: <blank>
5. Click **OK**.



6. Open a Web browser on the local PC.
7. Enter 192.168.254.254 in the browser's Address field and press the Enter key.

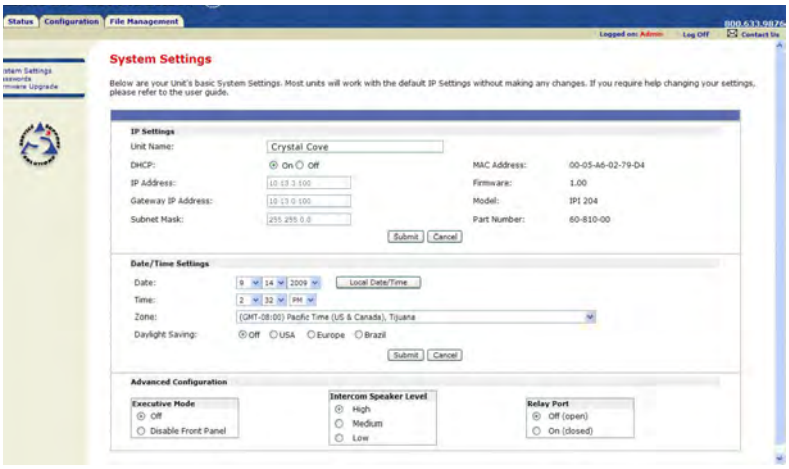
   The intercom unit's embedded Web page is displayed.
8. Click the **Configuration** tab.

9. Change the IP Address and Subnet Mask fields to the desired IP address and subnet mask.

10. Click the **Submit** button.

    The new IP address and subnet mask are assigned to the device, and the Web browser connection is immediately lost.

    The device, with its new IP address and subnet mask is now ready to be connected to your A/V network.



To return the local PC to its original TCP/IP settings:

1. Close the Web browser.

2. Disconnect the Ethernet crossover cable from the PC and the device.

3. Return to the TCP/IP Properties dialog box on the PC.

4. Return the IP address, Subnet mask, Default gateway, and DHCP fields to their original settings.

5. Reboot the PC.

Setting the IP address using the ARP command

An IPI 200 Series unit's IP address can be set using the DOS Address Resolution Protocol (ARP) command.

The IPI 200 Series unit must be:

- physically connected to the network
- at its factory default IP address

To set an IP address using the ARP command:

1. Open a command prompt window on a local PC. On Windows XP, a command prompt window can be found at:

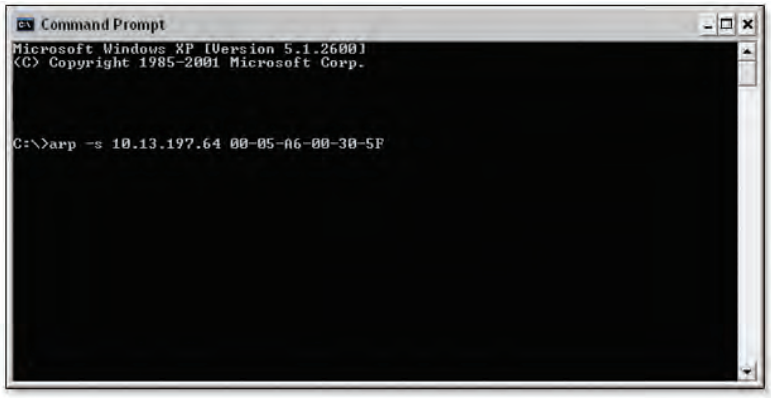
   Start > All Programs > Accessories > Command Prompt

2. At the command prompt type:

   arp - s <IP address> <MAC address>

   example: C:\>**arp -s 192.168.254.254 00-05-A6-00-30-5F**

   The example command assigns IP address 192.168.254.254 to the device that has a MAC address of 00-05-A6-00-30-5F.



3. To confirm the new IP address is active, perform a **ping** command to the new IP address.

   example: C:\>**ping 192.168.254.254**

   If the IP address setting was successful, the device replies 3 or more times:

   Reply from <IP address>: bytes=32 time <1ms TTL=64

5

Chapter Five

HelpDesk Software

Introduction to the Software

System Requirements

Installing the Software

Starting the Program

Configuring the IPI Intercom System

HelpDesk Software

Introduction to the Software

The IP Intercom System requires a PC running the IP Intercom HelpDesk software and an IP Intercom unit. The HelpDesk program (provided on the software disk) has a management and monitoring application (the main screen) and a configuration utility.

If an IPI 100 series unit is used, it must be linked to an MLC 226 IP controller. The IPI 200 series are stand-alone units that do not need to be connected to another MediaLink device.

The PC, the IPI 200 series unit, and the MLC 226 IP, when used with an IPI 100 series unit, must all be connected to the Local Area Network (LAN) and each must have a unique IP address. Consult with your IT department to ensure that IP addresses have been correctly allocated.

Network and IT administrators should use information from the following white papers, which can be found on the Extron Web site (www.extron.com), to ensure optimal network configuration and compatibility for the IP Intercom system:

- *IP Intercom Network Impact Statement*
- *IP Intercom Best Installation Practices*

Extron recommends that the IP Intercoms and the HelpDesk be on the same LAN with a static IP address and not be separated by a firewall. If the IP addresses are on different subnets, it is best to set up a dedicated VLAN. If a firewall is required, the following ports need to be open: UDP port 3121 (audio traffic), TCP telnet port 23 (control and status), UDP port 3122 (inter-helpdesk communication), and UDP ports 1230 and 1231 (auto discovery).

If you are using an IPI 100 series unit, linked to an MLC 226 IP controller, you must configure the MLC for network communication before you can install and use the intercom system software. For more information about configuring the MLC, see:

- "Software-and Web Page-based Setup and Control" in the *MLC 226 Series User's Manual*
- The *Global Configurator Help File* (automatically downloaded and installed along with the Global Configurator software)

System Requirements

Before installing the IP Intercom program, ensure that your computer system meets the minimum requirements, which are shown on page 1-5.

Installing the Software

To install the IP Intercom software on the hard drive:

1. Locate and select the IPI Intercom software from the Extron Product Software disk or the Extron Web site.
2. Click **Install** (Extron product software disk) or **Download** (Extron Web site) and follow the on screen instructions to download and install the program.

The installation procedure:

- Creates and installs the files in a directory (C:\Program Files\Extron\IPI).
- Adds an IPI icon to the desktop
- Adds program shortcuts to the Start menu in a group named "Extron Electronics".

NOTE *Do not change or rename the directory where these files are installed.*

Starting the Program

Click the desktop icon (or use Windows Explorer or the Start menu to navigate to the IPI folder).

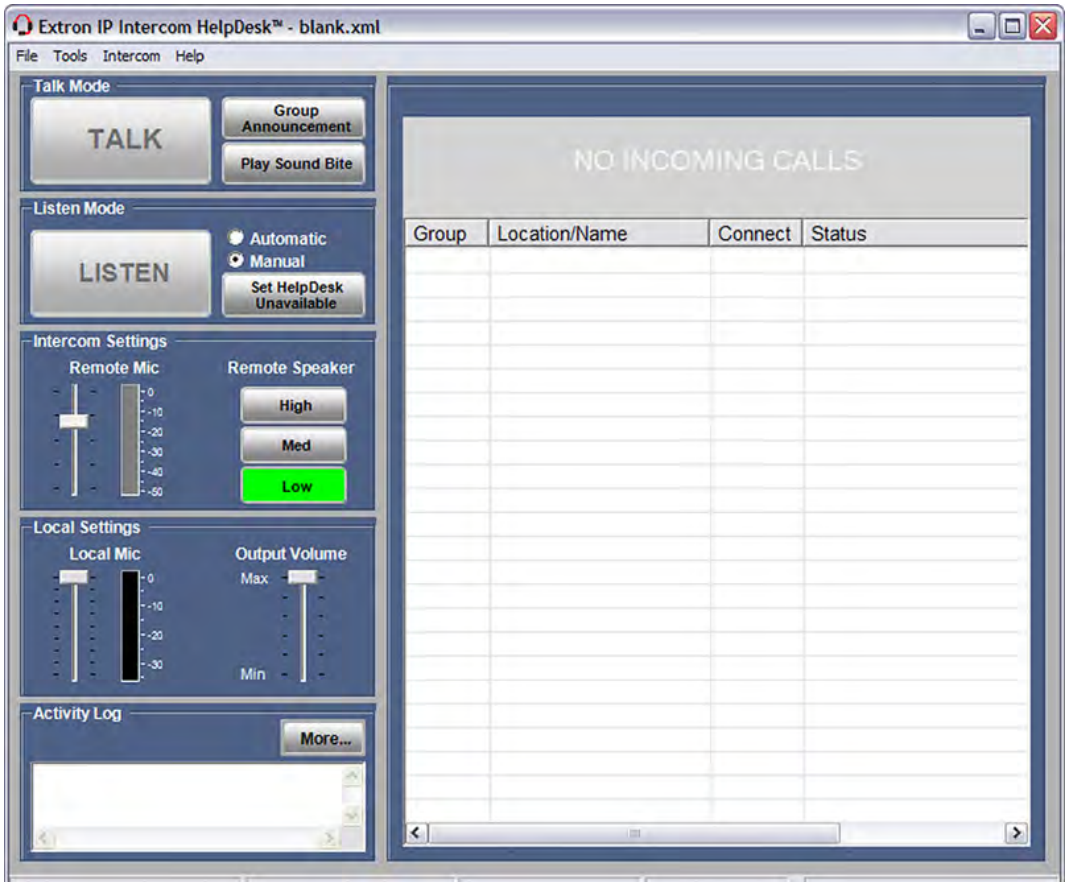
The program opens with the Getting Started pop-up screen displayed:

Use the scrollbar to find basic information about:

- Log-in as User
- Log-in as a HelpDesk Administrator
- Change the Password
- Set Up Intercom-equipped Extron Devices

To close the pop-up window, click **OK**.

The main program window can now be seen:



The following section provides step by step procedures for some of the IP Intercom system's most common operations. For details about operations not shown here, the user should refer to the HelpDesk help file, which can be accessed by clicking **Help** in the Help menu or by pressing the F1 key from within the HelpDesk program.

Configuring the IP Intercom System

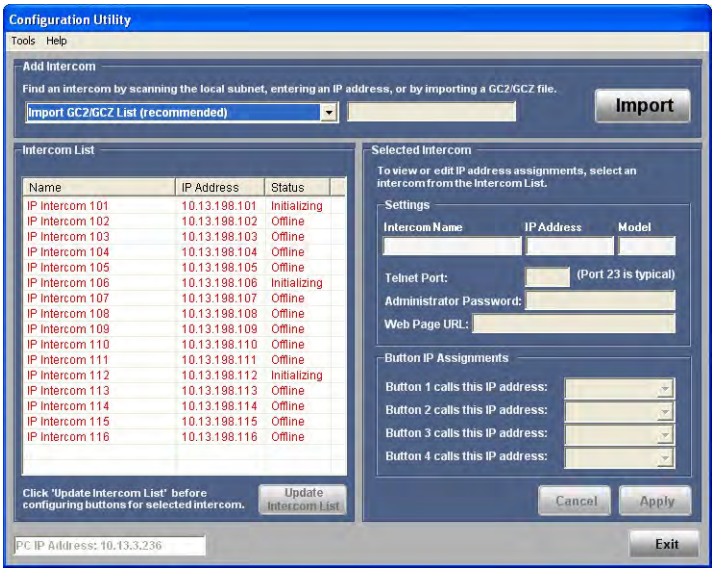
This section takes you through the step-by-step procedures for carrying out certain basic tasks. The examples in this chapter specifically describe the IPI 204 devices but apply to all IP Intercom models.

For information about more advanced setup and configuration, consult the IP Intercom HelpDesk help file. Click the **Help** option in the Help menu or press F1 from within the HelpDesk program.

Basic Configuration

Using the Configuration Utility

1. In the Tools menu, select **Configuration Utility**. The first time the utility is used after opening the program a password pop-up box appears. Enter a password in the pop-up box that opens. The default password is `extron` (all lower case letters).
2. The Configuration Utility window opens:

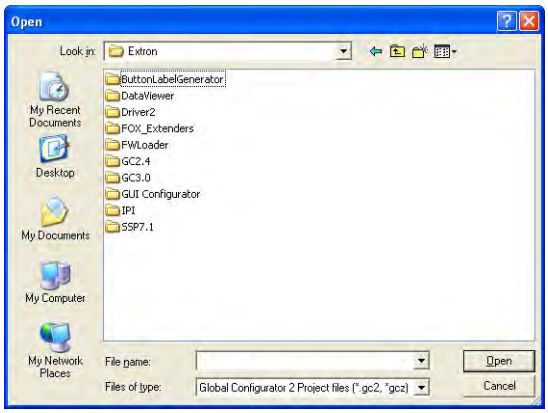


3. Create a list of intercom devices. This can be done by
   - Importing a .gc2 or .gcz (Global Configurator) file
   - Entering IP addresses manually
   - Automatically by scanning the local subnet

   Use the drop-down menu to select the appropriate option.

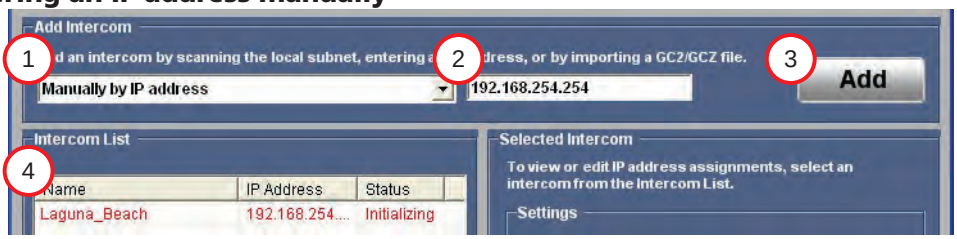
Importing a GC2/GCZ file

1. Select **Import GC2/GCZ List (Recommended)** from the drop-down menu.
2. Click **Import**. A Windows "Open" dialog box opens.



3. Navigate to the folder where you have saved the Global Configurator file and select it.
4. Click **Open**. The Intercom List is updated using devices from the Global Configurator file.
5. Go to "Configuring an IP device with the configuration utility" (see page 5-8).

Entering an IP address manually



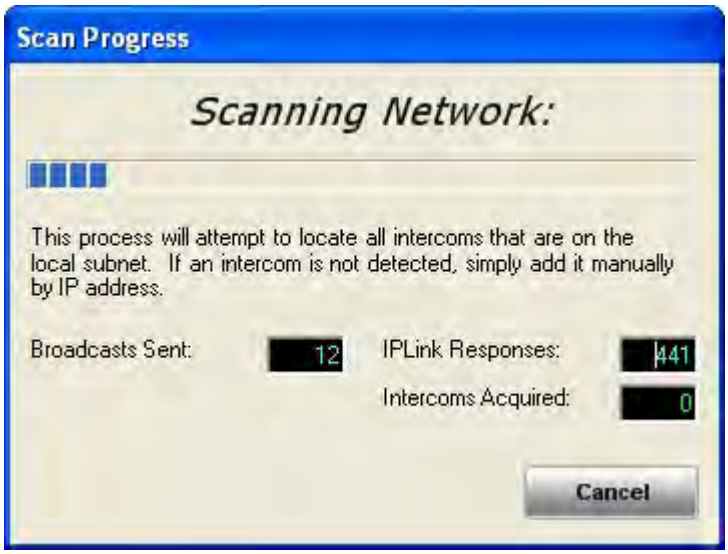
1. Select **Manually by IP Address** from the drop-down menu.
2. Enter an IP address in the text box
3. The "Import" button is renamed "Add". Click **Add**.
4. The new IP address appears on the Intercom list and you are prompted to give the device a name.
5. Click **Update Intercom List** to save the device.
6. Go to "Configuring an IP device with the configuration utility" (see page 5-8).

Scanning the local subnet

1. Select **Automatic (Local Subnet Only)** from the drop-down menu.
2. The "Add" button is renamed to "Scan". Click **Scan**.

NOTE *The computer only scans the local subnet for available intercoms.*

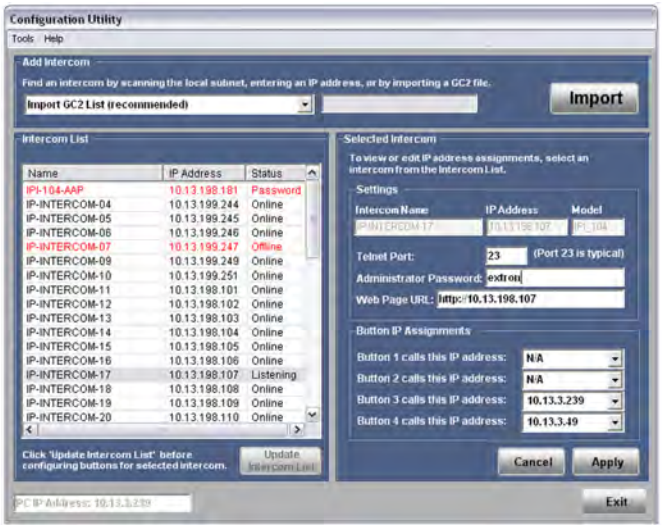
3. A Scan Progress dialog box opens, indicating the progress of the scan.



4. The scan detects only intercoms that are on the same local subnet and adds them to the Configuration Utility's Intercom List.
5. Click **Update Intercom List** to save the devices that have been added to the list.
6. Go to "Configuring an IP device with the configuration utility" (see page 5-8).

Configuring an IP device with the configuration utility

1. Open the configuration utility and select one of the IP devices in the Intercom List.
2. When it is highlighted, its information is displayed in the Selected Intercom pane:



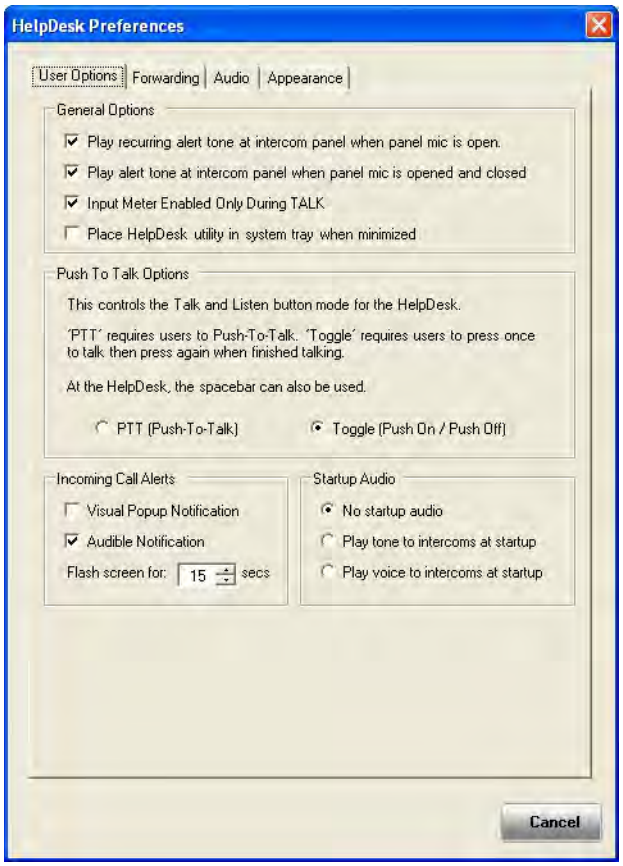
3. In the Selected Intercom pane, the unit's Administrator Password and the IP addresses associated with each of the four buttons on the intercom can be changed.
4. Click Apply to save the changes.
5. Click exit to close the Configuration Utility.

Talk mode

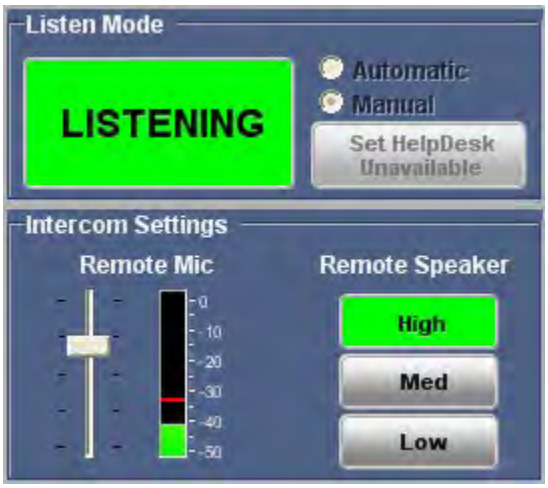
1. Select one of the IP devices on the Active Intercom List in the main screen.
2. Activate the Talk button by clicking the **Talk** button and holding down the mouse button or by pressing and holding down the keyboard spacebar.
3. Speak into the headset's microphone. The Local Mic VU meter will oscillate in response to the audio being picked up by the microphone.
4. End talk mode by clicking on the **Talking** button, or by releasing the mouse or the spacebar.

Listen mode

1. Under the Tools menu open the Help Desk Preferences dialog box, click on the **User Options** tab. Ensure the **Play recurring alert tone at intercom panel when panel mic is open** option and **Play alert tone at intercom panel when mic is opened or closed** options are checked (they are checked by default). Close the Help Desk Preferences dialog box.



2. If necessary, select one of the IP devices on the Active Intercom List.
3. Activate the Listen button. The intercom button turns from low amber to high amber color, two audible signals of different frequencies are heard at the intercom to indicate that the intercom's mic is opened, and the intercom's green Mic On LED lights.
4. Start speaking. While the Listen button is active, an audible signal is heard every ten seconds.
5. Deselect the Listen button. The button on the intercom returns to a low amber color. A single audible signal is heard at the intercom.

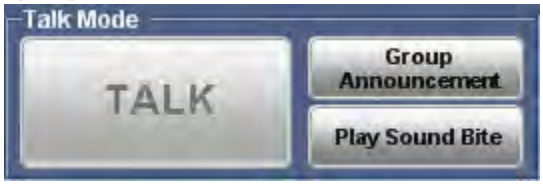


6. Press and hold the intercom button. It turns to a high amber color and the Mic On LED lights green. On the PC monitor, the Listen button is activated, the "Incoming Call Alert" indicator flashes, and two audible signals of different frequencies are heard at the intercom.
7. Release the intercom button. It turns to a low amber color and the Mic On LED turns off.

Group announcement

1. Decide which IP devices on the Active Intercom List you wish to group together. Select each device one at a time and use the Group drop-down menu to assign all of them to the same group.

NOTE *Each device on the Active Intercom List can only belong to one group.*



2. Click the **Group Announcement** button.
3. The Group Selection pane becomes visible. Groups that are available are listed in black text; groups that are not available are grayed out. Select an available group or **All Intercoms**.

4. The selected button turns green and the intercom devices belonging to that group are highlighted in the Active Intercom List.
5. Activate the Talk mode (see step **2** of Talk Mode on page 5-9). When you have finished talking inactivate the Talk mode (see step **4** of Talk Mode on page 5-9).

   or

   Click the **Play Sound Bite**. A list of available sound bites appears. (For information about managing the Sound Bites list, see Loading a pre-recorded .wav file on page 5-12) Select the sound bite and click on the **Play to Intercom(s)** button. The button turns green and the text is changed to **Stop Playing**.

6. When the sound bite has finished playing, click on the **Exit** button.
7. Close the Group Selection pane by clicking on the **Exit** button.

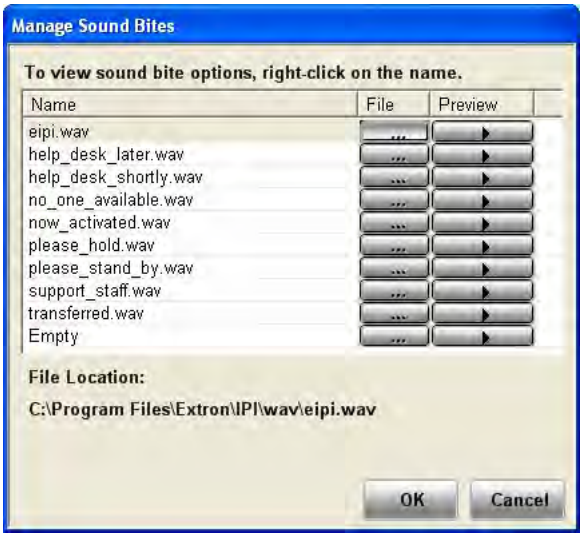
Loading a pre-recorded .wav file

The software allows you to load up to ten pre-recorded .wav files. The software comes with a library of .wav files in the C:\Program Files\Extron\IPI\wav folder. You can use these .wav files or record your own messages. For example, non-English speakers may find it easier to have the files in their native language. After recording the .wav file, it should be saved in the same folder.

NOTE *The .wav file must be saved as 8 kHz, 16 bit, mono audio in PCM format.*

To load a pre-recorded file:

1. Open the Configuration Utility. Under the Tools menu, select the **Manage Sound Bites** option.



2. Click on the file button ... and go to **C:\Program Files\Extron\IPI\wav** folder. Select the .wav files that you wish to be available.
3. Click **OK** to close the Manage Sound Bites box and then click **Exit** to close the Configuration Utility.

Changing the default .wav file for intercom events

Certain situations lead to default .wav files being played. It is possible to customize those files.

1. Under the Tools menu open the Help Desk Preferences dialog box, click on the **Audio** tab.
2. For each event, click on the corresponding file button ... and navigate to **C:\Program Files\Extron\IPI\wav** folder. Select the .wav files that you wish to associate with that event.
3. As soon as a change is made, an OK button appears. When all the changes have been made, click **OK** to close the Help Desk Preferences dialog box.

Call forwarding

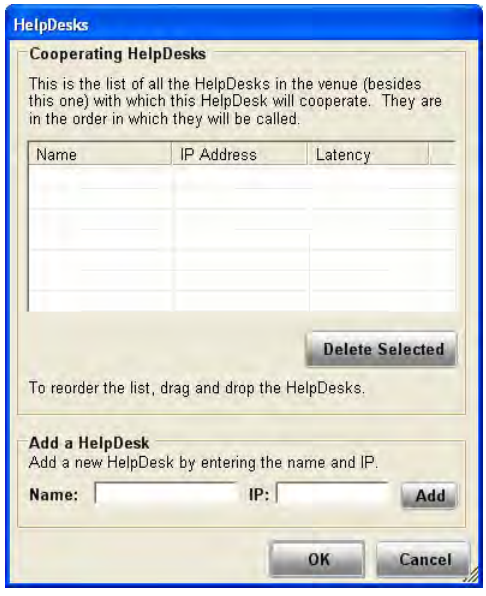
The IP Intercom HelpDesk provides two ways of handling call forwarding:

1. A single PC, acting as a server, forwards calls to the next available help desk.
2. A peer-to-peer network allows calls to be forwarded to any available help desk.

Setting up a peer-to-peer network

All PCs must be running the IP Intercom HelpDesk software.

1. All PCs must have all available intercoms on their intercom list.
   a. On the first computer, add all intercoms to the intercom list by one of the methods described on pages 4-5 to 4-7.
   b. In the **File** menu, click on **Save** or **Save As...** to save the .xml configuration project file.
   c. On each of the other help desks, in the file drop-down menu, select **Load Project**. Load the project file saved in step **1b** onto the help desk PC.
2. All intercoms must be linked to the IP address of one of the available help desks:
   a. Open the Configuration Utility and select an intercom in the intercom list.
   b. In the Button IP assignments pane, enter the server PC's IP address or select it from the dropdown list.
   c. Click **Apply.**
   d. Repeat steps **a-c** until all intercoms have been linked to one of the available help desk computers.
3. All help desk computers must have a list of all other available help desks, which are added as follows:
   a. Open the Configuration Utility window and, in the **Tools** menu, click on the **Multiple HelpDesk Configuration...** The HelpDesks window opens:
   b. Add the name and IP address of a HelpDesk in the text boxes at the bottom of the window.
   c. Click Add. The computer will be added to the Cooperating HelpDesks list.
   d. Repeat steps **b** and **c** until all cooperating HelpDesks have been added.



NOTE *There is no automated way to add multiple HelpDesks; they must be added individually.*

   e. When all HelpDesks have been added, click **OK**.

4. None of the PCs can be set to Server Mode:
   a. Under the **Tools** menu, click on **Preferences**. The Preferences box opens.
   b. Click the **Forwarding** tab.
   c. Uncheck the **Mode** box. This box is left unchecked by default.
   d. If necessary, shut down and restart the IP Intercom HelpDesk program.

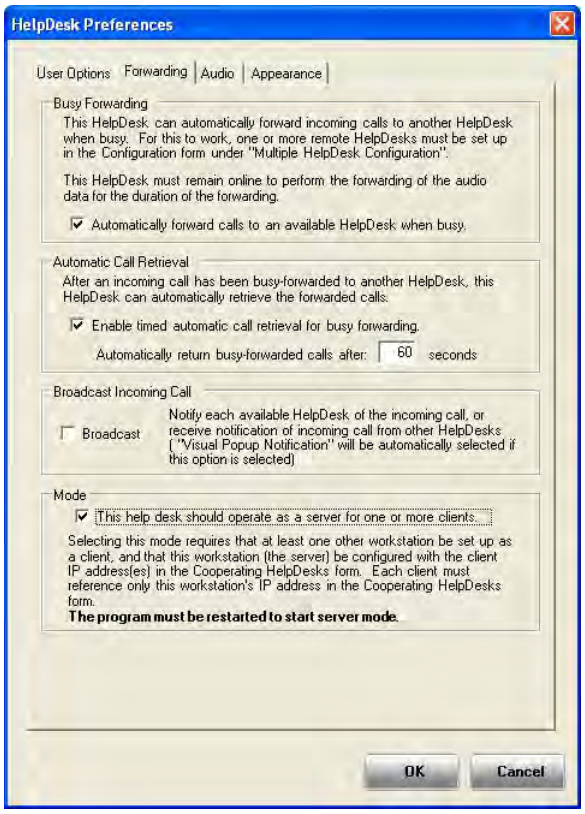
Setting up one PC as a server

All PCs (the server and the help desks) must be running the IP Intercom HelpDesk software.

1. The server PC and all HelpDesk PCs must have all available intercoms on their intercom list.
   a. On the computer that has been designated the server, add all intercoms to the server's intercom list.
   b. In the **File** menu, click on **Save** or **Save As...** to save the .xml configuration project file.
   c. On each help desk computer, in the file drop-down menu, select **Load Project**. Load the project file saved is step **1b** onto the help desk PC.
2. All intercoms must be linked to the server's IP address:
   a. Select an intercom in the intercom list.
   b. In the Button IP assignments pane, enter the server PC's IP address or select it from the dropdown list.
   c. Click Apply.
   d. Repeat steps **a-c** until all intercoms have been linked to the server.
3. The server PC must have a list of all client HelpDesks. The first name on the list will be the server's first choice HelpDesk. If the first PC is busy, the next call will be passed to the second PC on the list. If all HelpDesks are busy, any new incoming call will hear a pre-recorded .wav file. This pre-recorded .wav file will usually inform the caller that all help desks are busy and suggest calling back later.

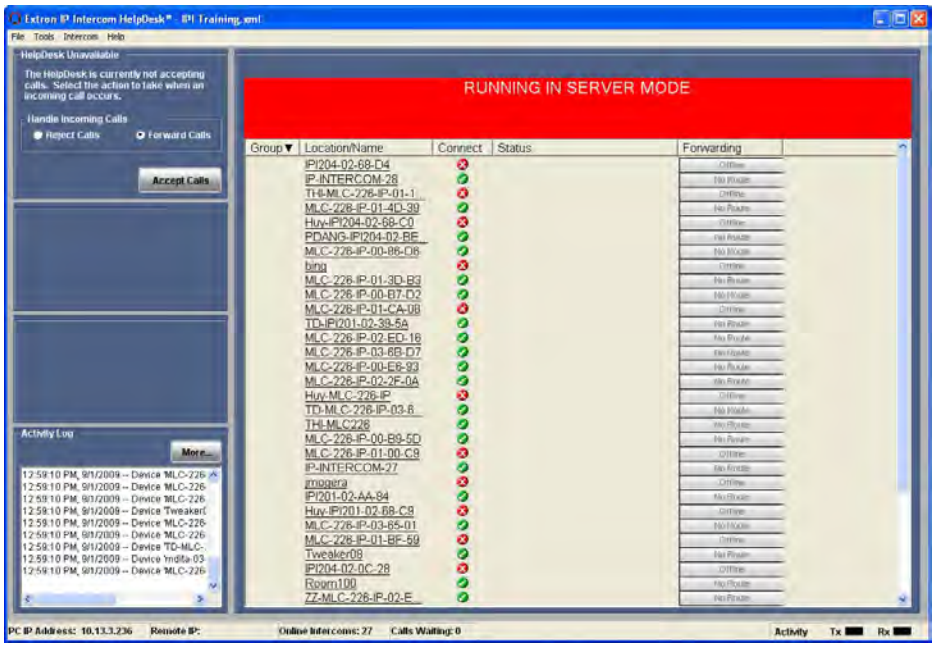
   These are added as described in steps **3a** to **3e** on page 5-13.
4. All HelpDesks must be linked to the Server PC:
   a. On each HelpDesk PC, open the HelpDesks window as described in step **3a** on the previous page.
   b. Add the name and IP address of the server PC in the text boxes at the bottom of the window.
   c. Click **Add**.
   d. Click **OK**.

5. The server PC must be set to Server Mode:
   a. Under the **Tools** menu, click on **Preferences**. The Preferences box opens.
   b. Click the **Forwarding** tab.
   c. Check the **Mode** box.



   d. An OK button appears. Click on the **OK** button.

e. Exit and restart the program. When the program restarts, the window will have changed:



Appendix A

Specifications, Part Numbers, Accessories

Specifications, Part Numbers, Accessories

Specifications — IPI 100 Series

Audio— IPI 101, IPI 104 and MLC 226 IP

Speaker ..... 1.4" (35.6 mm), 1-way, indoor
Frequency response
  Line level output (MLC)... 20 Hz to 3.3 kHz, ±1 dB
  Speaker output (IPI)..... 300 Hz to 3.3 kHz, -10 dB
Nominal sensitivity/IPI speaker output level
  80 dB SPL, 300 mW, 3' (1 m)
Processing
  Audio format ..... PCM, µ-law companded
  Sampling rate..... 8 kHz
  Sample size..... 16 bit, µ-law companded to 8 bit
  Audio latency..... <100 ms

Audio input— IPI

Number/signal type..... 1 mono, via integrated electret microphone
Microphone gain ..... -30 dB to 0 dB, adjustable in 2 dB steps

NOTE *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu*

Audio output

Number/signal type..... 2 mono: 1 via MLC 226 IP, 1 via IPI speaker
Line level (MLC)..... -10 dBV (316 mVrms), unbalanced (via 3.5 mm captive screw connector, 2 pole)
Amplified speaker (IPI)..... 300 mW, continuous, 1% THD

Ethernet control interface via MLC 226 IP

Ethernet control/communications port
  1 female RJ-45 connector
Ethernet data rate/transport bandwidth
  80 kbps
Communications type ..... Half duplex
Protocol..... IP (control), TCP (control), UDP (port 3121, audio), Telnet
Program control (via MLC)..... Extron control/configuration program for Windows®
  Extron Simple Instruction Set (SIS™)
  Microsoft® Internet Explorer, Telnet

General

Power ..... Supplied by an MLC 226 IP
Power input requirements..... +12 VDC, <100 mA
Distance between MLC 226 IP and an IPI
  100' (30.5 m), maximum
Connection type (IPI–MLC)..... RJ-45 jacks with CAT 5, CAT 5e, or CAT 6 cable
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
Cooling ..... Convection
Mounting
  Rack mount..... Yes, with optional faceplate
  Furniture mount..... Also furniture- and wall-mountable with optional faceplate or in an MLC 226 IP AAP faceplate
Enclosure type ..... Metal faceplate

Enclosure dimensions

Board/device	2.7" H x 2.6" W x 0.9" D (6.9 cm H x 6.6 cm W x 2.3 cm D) (Depth excludes buttons and switch. Allow at least 2.1" (5.3 cm) depth in the wall or furniture.)
Product weight	0.2 lb (0.1 kg)
Shipping weight	1 lbs (1 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
Compliances	CE, C-tick, FCC Class A, ICES, VCCI
MTBF	30,000 hours
Warranty	3 years parts and labor

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

NOTE *Specifications are subject to change without notice.*

Included Parts (IPI 100 Series)

These items are included in each order for an IPI intercom module:

Included parts	Replacement part number
IPI 104 AAP (black, white)	70-502-0*x*
IPI 101 AAP (black, white)	70-501-0*x*
RJ-45 interconnection cable (12" CAT 5e)	26-632-01
Button labels	33-1344-01
Tweeker (small screwdriver)	
IPI 100 Series Installation Instructions	

Accessories (IPI 100 Series)

Accessories	Part number
MLC 226 IP (black, white, RAL9010 white, or without faceplate)	60-600-0*x*
MLC 226 IP AAP (black, white, RAL9010 white)	60-600-1*x*
MLC 226 IP L (black, white, RAL9010 white)	60-600-3*x*
9-pin D female to 2.5 mm TRS configuration cable	70-335-01
MPA 152	60-844-01
MPA 181 T	60-747-01
Text and Icon labels	33-1762-01, 33-1763-02
Button cap and diffuser kit (set of 3 button cap assemblies)	70-352-01

Specifications — IPI 200 Series

Audio

Speaker	1.4" (35.6 mm), 1-way, indoor
Frequency response	
Line level output	20 Hz to 3.3 kHz, ±1 dB
Speaker output	300 Hz to 3.3 kHz, -10 dB
Nominal sensitivity/IPI speaker output level	80 dB SPL, 300 mW, 3' (1 m)
Processing	
Audio format	PCM, µ-law companded
Sampling rate	8 kHz
Sample size	16 bit, µ-law companded to 8 bit
Audio latency	<100 ms

Audio input

Number/signal type	1 mono, via integrated electret microphone
Microphone gain	-30 dB to 0 dB, adjustable in 2 dB steps

NOTE *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu*

Audio output

Number/signal type	2 mono: 1 via audio output port, 1 via IPI speaker
Line level output	-10 dBV (316 mVrms), balanced/unbalanced (via 3.5 mm captive screw connector, 3 pole)
Amplified speaker output	300 mW, continuous, 1% THD

Ethernet control interface

Ethernet control/communications port	1 female RJ-45 connector
Ethernet data rate/transport bandwidth	80 kbps
Communications type	Half duplex
Ethernet protocol	IP (control), TCP (control), UDP (port 3121, audio), Telnet
Default settings	Link speed and duplex level: autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Default gateway = 0.0.0.0 DHCP = off
Program control	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™) Microsoft® Internet Explorer ver. 6 or higher, Telnet

Control — relay

Number/type	1 momentary or latching (configurable)
Connector	(1) 3.5 mm captive screw connector, 2 pole, C (common) and NO (normally open) for configurable relay output
Contact rating	24 V, 1 A

General

External power supply ..... 100 VAC to 240 VAC, 50-60 Hz, external; to 12 VDC, 2 A, regulated

Power input requirements ..... +12 VDC, 0.25 A

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

Cooling ..... Convection, no vents

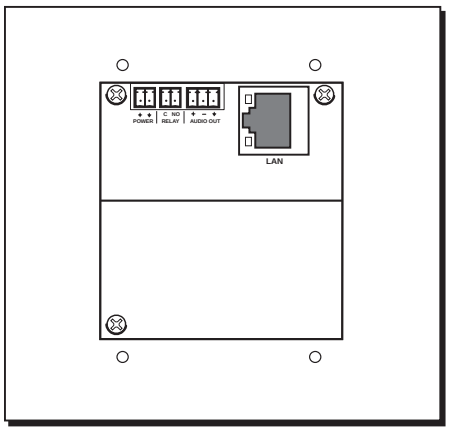
Mounting

- Rack mount ..... Yes, with optional faceplate and rack mounting kit
- Furniture mount ..... Yes, furniture- and wall-mountable with optional faceplate and mounting kits

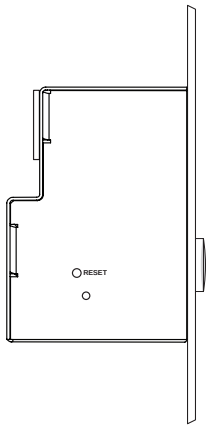
Enclosure type ..... Metal faceplate

Enclosure dimensions

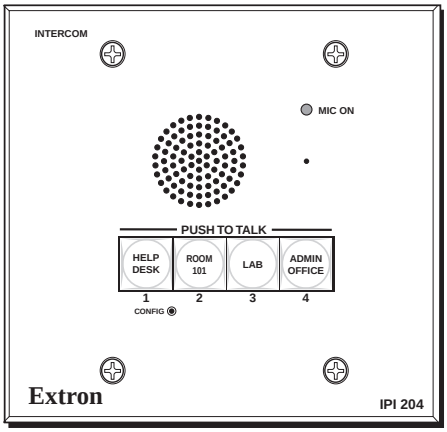
- IPI 201, IPI 204 faceplate... 4.5" H x 4.6" W x 0.1" D (11.4 cm H x 11.7 cm W x 0.3 cm D)
(fits some 2 gang boxes)
- IPI 201 AAP, IPI 204 AAP faceplate
2.8" H x 3.5" W x 0.1" D (7.1 cm H x 8.9 cm W x 0.3 cm D)
(four space AAP plate)
- Device ..... 2.8" H x 2.7" W x 1.85" D
(6.9 cm H x 6.6 cm W x 4.9 cm D)
(Depth excludes buttons. Allow at least 2.25" (5.5 cm) depth in the wall/furniture.)



IPI 204 Rear

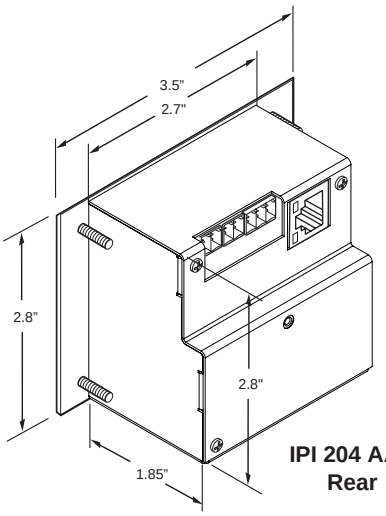


Left Side

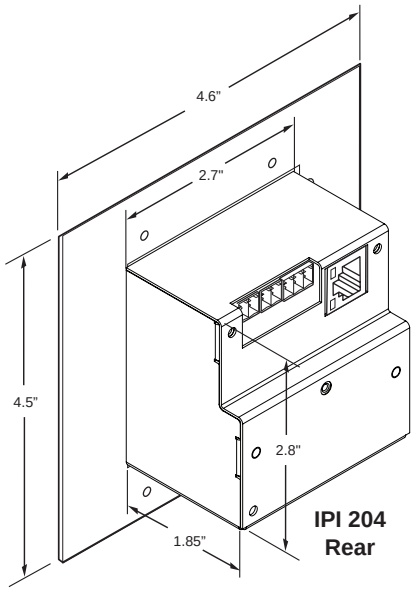


Front

Specifications, Part Numbers, Accessories, cont'd



IPI 204 AAP
Rear



IPI 204
Rear

Product weight	0.5 lbs (0.2 kg)
Shipping weight	3 lbs (1 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
MTBF	30,000 hours
Warranty	3 years parts and labor

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

NOTE *Specifications are subject to change without notice.*

Included Parts (IPI 200 Series)

These items are included in each order for an IPI intercom module:

Included parts	Replacement part number
IPI 201 AAP (black, white)	60-809-1*x*
IPI 201 2-gang (black, white)	60-809-0*x*
IPI 204 AAP (black, white)	60-810-1*x*
IPI 204 2-gang (black, white)	60-810-0*x*
12 V, 1 A power supply	70-055-01
Button labels	33-1344-01
IPI 200 Series Installation Instructions	

Accessories (IPI 200 Series)

Amplifiers, cable, miscellany	Part number
9-pin D female to 2.5 mm TRS configuration cable	70-335-01
MPA 152	60-844-01
MPA 181 T	60-747-01
Text and Icon labels	33-1762-01, 33-1763-02
Button cap and diffuser kit (set of 3 button cap assemblies)	70-352-01

Appendix B

SIS Programming and Control

Introduction to SIS

Symbols used in this manual

Error messages

Command/Response table for SIS commands

SIS Programming and Control

The Extron MediaLink IP Intercom 201 and 204 modules can be remotely set up and controlled via a host computer or other device (such as a control system) by using the Extron Simple Instruction Set (SIS™) commands, accessed via RS-232 or an Ethernet LAN connection.

NOTE *The following SIS commands are for use with the IPI 201 and 201 models only. Refer to the MLC 226 IP Series User's Manual for IPI 101/104 series SIS command and control information.*

IPI RS-232 protocol:

- 38400 baud
- 8 data bits
- 1 stop bit
- no parity
- no flow control

NOTE *The configuration port requires 38400 baud communication. This is a higher speed than many other Extron products use. If using HyperTerminal or a similar application, make sure the PC or control system connected to these ports is set for 38400 baud.*

LAN port defaults:

- **IP address:** 192.168.254.254
- **gateway's IP address:** 0.0.0.0
- **subnet mask:** 255.255.0.0
- **DHCP**: off

NOTE *The IP Intercom (IPI) must be configured before use.*

Host-to-IPI Communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the IPI determines that a command is valid, it executes the command and sends a response to the host device. All responses from the IPI to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

IPI-initiated Messages

If you are communicating with the IPI via RS-232 or via a verbose Telnet connection when a local event such as a front panel selection or adjustment takes place, the IPI responds by sending a message to the host. No response is required from the host. The IPI-initiated messages are listed here (underlined).

(c)Copyright 2007, Extron Electronics, IPI 201 V1.00, 60-809-00 ↵
Mon Day, DD Mon YYYY HH:MM:SS

(c)Copyright 2007, Extron Electronics, IPI 204, V1.00, 60-810-00 ↵
Mon Day, DD Mon YYYY HH:MM:SS

Vx.xx is the firmware version number.
The IPI sends the boot and copyright messages under the following circumstances:

- If the IPI is off and an RS-232 connection is already set up (the PC is cabled to the IPI 204 series and a serial terminal emulation program such as HyperTerminal is open), the connected unit sends these messages via RS-232 when it is first powered on.

- If the IPI is on, it sends the boot and copyright messages when you first open a Telnet connection to the IPI. You can see the day of the week, date, and time if the IPI is connected via Telnet, but not via RS-232. If you are using a Telnet connection, the copyright message, date, and time are followed by a password prompt.

Additional messages may be sent by the IPI in response to front panel selections and volume adjustments and when scripts are executed during scheduled events.

Password information

The "↵Password:" prompt requires a password (administrator level or user level) followed by a carriage return. The prompt is repeated if the correct password is not entered.

If the correct password is entered, the unit responds with "↵Login Administrator ↵" or "↵Login User↵", depending on the password entered. If passwords are the same for both administrator and user, the unit will default to administrator privileges.

Error responses

When the IPI receives a valid SIS command, it executes the command and sends a response to the host device. If the IPI is unable to execute the command because the command is invalid or it contains invalid parameters, it returns an error response to the host.

The error response codes and their descriptions are as follows:

E12 – Invalid port number
E13 – Invalid value (the number is out of range/too large)
E14 – Not valid for this configuration
E17 – System timed out
E22 – Busy
E24 – Privilege violation
E26 – Maximum number of connections has been exceeded
E27 – Invalid event number
E28 – Bad filename or file not found
E30 – Hardware failure (followed by colon and descriptor number) (This is an unsolicited response.)
E31 – Attempt to break port pass-through when not set

Error response references

The following superscripted numbers are used within the command descriptions on the following pages to identify commands that may respond as shown:

[14] = Commands that give an E14 (not valid for this configuration) response if the unit's current configuration doesn't support that command.

[22] = Commands that yield an E22 (busy) response.

[24] = Commands that give an E24 (privilege violation) response if you are not logged in at the administrator level.

[27] = Commands that may yield an E27 (invalid event number) response.

[28] = Commands that may give an E28 (file not found) response.

Commands and Reponses

Using the command/response table

The IPI 201/204 Series intercom can be controlled via either a Telnet (port 23) or RS-232 connection using ASCII commands. Or it can be controlled via a Web browser (port 80) connection using URL-encoded commands. The ASCII and URL commands listed in the table starting on page B-8 perform the same functions, but they are encoded differently to accommodate the requirements of each port (Telnet or browser).

The ASCII to hexadecimal (HEX) conversion table shown below is for use with the command/response tables.

ASCII to HEX Conversion Table																			
Space	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27	Esc	1B	CR	0D
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F	LF	0A		
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37				
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F				
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47				
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F				
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57				
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F				
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67				
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F				
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77				
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F				

The command/response table lists valid ASCII (for Telnet or RS-232) command codes, the corresponding URL (uniform resource locator) encoded (for Web browsers) command codes, the IPI's responses to the host, and a description of the command's function or the results of executing the command.

- Upper and lower case characters may be used interchangeably in the command field unless otherwise specified.
- Commands may be sent back-to-back without spaces (for example, 11S0X4Q).
- Numbers can be entered with leading zeroes, as 1, 2, or 3 digits.
- There are a few differences in how to enter the commands depending on whether you are using Telnet or a Web browser.
    - When using these commands through a Web browser, the URL reference is used to shorten the examples. "URL" refers to the full URL of the intercom and Web page reference including all path information (e.g., http://192.168.100.10/myform.htm).
    - To send any of the commands using a Web browser you must prefix them with the full URL followed by ?cmd=.

- For control via a Web browser, all non-alphanumeric characters must be represented as the hexadecimal equivalent, %xx, where xx represents the two-character hex byte. A comma (,), for example, would be represented as %2C.
  Characters such as %, +, and the space character ( ) must be encoded as hex bytes, or they will be misinterpreted by the IPI.
- Some characters differ depending on the method you use to send the commands:

Telnet	Web Browser
Escape (hex 1B)	W (must not be hex encoded)
Carriage return (hex 0D)	Pipe character (|) (must not be hex encoded)

NOTE *With Telnet you can use either an "Escape" (Esc) command or a "W" command, and the carriage return or the pipe character. With the Web browser, you are required to use a "W" command and the pipe character.*

In either method, {Data} = data that will be directed to a specified port and **must** be hex encoded if non-alphanumeric.

NOTE *If you make adjustments (changes to volume, etc.), whether via the front panel or via RS-232 or IP communication, it will take 1 minute 40 seconds (100 seconds) for the data in the IPI 200 series' RAM to be saved to flash memory.*

Symbol definitions

↵ = CR/LF (carriage return/line feed) (hex 0D 0A)

← = Carriage return (no line feed, hex 0D)
(use the pipe character, |, instead for URL-encoded commands)

• = Space character

| = Pipe (vertical bar) character

Esc = Escape key (hex 1B)
(use **W** instead of **Esc** for Web browsers)

NOTE *For Web encoding only: data will be directed to the specified port and must be encoded (URL encoding) if it is non-alphanumeric. Change any non-alphanumeric character (%, +, |, ←, etc.) within the data section into the corresponding hexadecimal equivalent, %xx, where xx represents the two-character hex byte. For example, a space (hex: 20) would be encoded as %20 (hex: 25 32 30) and a plus sign (hex: 2B) would be encoded as %2B or hex 25 32 42.*

X3 = Greenwich Mean Time (GMT) offset value (-12.00 to +14.00) represents the time difference in hours and minutes (+/-hh:mm) relative to Greenwich, England. The leading zero is optional. For example, 5:30 = 05:30. Do not use a plus (+) sign if the GMT offset is positive.

X5 = On/off status
0 = off / disable
1 = on /enable

X11 = Version (typically listed to two decimal places, e.g., x.xx)

X12 = IPI 200 series' name. The name is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and minus sign/**hyphen** (-). No blank or space characters are permitted as part of a name. No distinction is made between upper and lower case. The first character **must** be a letter. The last character must **not** be a minus sign/hyphen.

X13 = **Local date and time format**

Set format (MM/DD/YY-HH:MM:SS).

Example: *01/18/05-10:54:00*.

Read format (day of week, date month year HH:MM:SS).

Example: *Tue, 18 Jan 2005 18:19:33*.

X14 = IP address or subnet mask (xxx.xxx.xxx.xxx). Leading zeros in each of four fields are optional in setting values, and they are suppressed in returned values.
IPI's default address: 192.168.254.254
Default broadcast address: 255.255.255.255.

X18 = Hardware (MAC) address (xx-xx-xx-xx-xx-xx) (00-05-A6-xx-xx-xx)

X22 = Verbose/response mode status:
0 = clear/none, default for Telnet connections; responses are not echoed to the host
1 = verbose mode is on, default for RS-232 host control; responses are echoed to the host and displayed to the user
2 = send tagged responses for queries
3 = verbose mode is on and tagged responses are sent for queries

NOTE *If tagged responses are enabled, all read commands return the constant string + data, the same as for setting a value. For example, for* Esc **CN** ← *, the response is* **Ipn•**X12↵ *rather than just the data.*

X33 = Password (minimum length = 4 characters, maximum length = 12 characters, no special characters are allowed)

NOTE *A user password cannot be assigned if no administrator password exists; the E14 error code will be returned. If the administrator password is cleared, then the user password is also removed.*

X34 = Daylight saving time

0 = Daylight Saving Time off/ignore
1 = Daylight Saving Time on (USA/Canada)
2 = Daylight Saving Time on (Europe)
3 = Daylight Saving Time on (Brazil)

X41 = Password to display on screen (response to password query or set). When the MLC connects to a host device via RS-232, the password (X33), itself, is the response. When the connection is via IP, X41 is 4 asterisks (****) if a password has been assigned, or it is an empty field ( ) if a password hasn't been assigned.

X49 = Default name: a combination of the model name and the last 3 pairs of the IPI 200 series' MAC address

X52 = Connection's security level
11 = user
12 = administrator

X63 = Pulse time in 20 ms per count. If this parameter is missing or = 0, then pulse length = default = 25 = 500 ms. 1 = 20 ms (minimum pulse time) to 65535 = 1310700 ms (maximum pulse time).

X64 = Broadcast repetition interval in seconds (0 to 255 [4.25 minutes], default = 0 = off).

X71 = Hardware (MAC) address: 4 most-significant hex nibbles converted into single 16-bit decimal number.

X72 = Hardware (MAC) address: 8 least significant hex nibbles converted into single 32-bit decimal number.

NOTE *This could be as large as 10 digits.*

X206 = Voltage (in volts)

X207 =Temperature in degrees Celsius (the response is 3 digits including leading zeros)

X209 = Front panel lockout (executive mode) status
0 = off/unlocked (default)
1 = on, disable/lock the front panel

Command/response table for SIS commands

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
Relay functions				
Force relay on	1*1O	1%2A1O	Rly 1*1↵	Turn relay on.
Force relay off	1*0O	1%2A0O	Rly 1*0↵	Turn relay off.
Toggle relay	1*2O	1%2A2O	Rly 1*X5↵	Toggle relay on/off. X5 = 1 (on) or 0 (off).
Pulse relay	1*3*X63O	1%2A3%2AX63O	Rly 1*X5↵ Rly 1*X5↵	Set relay's pulse time (X63) in 20 ms increments from 1 (20 ms, minimum) to 65535 (1310700 ms, maximum). Default pulse length is 25 = 500 ms.
NOTE *If the verbose mode is enabled, there are two responses from the unit because the relay is pulsed. During a pulse, the relay is toggled to its opposite state and then back to the original state.*				
View the relay state	1O	1O	Rly 1*X5↵	
Front panel security lockout modes (executive modes)				
Off[24]	0X	0X	Exe 0↵	Executive mode is off.
On[24]	1X	1X	Exe 1↵	Executive mode is on.
View lockout mode status	X	X	X209↵	X209 = Front panel lockout (executive mode) status 0 = off/unlocked (default) 1 = on, disable/lock the front panel
Example:	X	X	0↵	Executive mode is off.
Status commands				
View all voltage and temperature status	11S	11S	shows responses to commands 12S•13S•14S•15S•16S•20S ↵	
View +12 V P/S voltage	12S	12S	+X206↵	X206 = Voltage (in volts)
View +5 V IR receiver port voltage	13S	13S	+X206↵	
View +3.3 V IP Link/FPGA voltage	14S	14S	+X206↵	
View +1.5 V FPGA voltage	15S	15S	+X206↵	
View internal temp. status	20S	20S	X207↵	X207 =Temperature in degrees Celsius (the response is 3 digits including leading zeros)

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
Firmware version, part number & information requests				
NOTE *In a query response, an asterisk (*) after the version number indicates the version that is currently used. A question mark (**?** or **?.??**) indicates that the factory default firmware is the only firmware loaded in the IPI. A carat (**^**) indicates the version of firmware that should be running, but, since a mode 1 reset was performed, the factory default firmware version is loaded and running instead. An exclamation point (!) indicates that the firmware is corrupted.*				
Query firmware version number	Q *or* 1Q	Q *or* 1Q	X11 ③ *or* Ver01*X11 ↵	Show the IPI's firmware version (X11) to two decimal places. This query yields the number of the currently running version of the user-updatable firmware
Example:	1Q	1Q	1.01↵ *or* Ver01*1.01	
Query verbose firmware version information	0Q	0Q	X11 X11 X11↵ responses to commands 2Q•3Q•4Q ↵	X11 = Version (typically listed to two decimal places, e.g., x.xx) Shows bootstrap, factory-installed, and current versions of firmware.
Example:	0Q	0Q	1.03•1.00*(1.18-IPI 201/IPI 204 - Thu, 20 Jan 2005 09:41:47 GMT)•1.01*(1.31-IPI 201/IPI 204 -Tue, 14 Jun 2005 00:54:58 GMT)↵	
Query bootstrap firmware version	2Q	2Q	X11↵ *or* Ver02*X11 ↵	The bootstrap firmware is not user-replaceable, but you may need this information during troubleshooting.
Example:	2Q	2Q	1.03↵	
Query factory firmware version	3Q	3Q	X11↵ *or* Ver03*X11 ↵	X11 = (kernel version–model description–date time of upload) Factory-installed firmware is different from the bootstrap firmware, but it is also not user-replaceable. This firmware was installed at the factory; it is the version the controller reverts to after a mode 1 reset (see chpt. 2).
Example:	3Q	3Q	1.00*(1.18-IPI 201/IPI 204-Thu, 20 Jan 2005 09:41:47 GMT)↵	
Query updated firmware version	4Q	4Q	X11↵ *or* Ver04*X11↵	X11 = (kernel version–model description–date time of upload) Use this command to find out which version of the firmware, if any, was uploaded into the controller after it left the factory
Example:	4Q	4Q	1.00*(1.64-IPI 201/IPI 204 -Mon, 28 Feb 2005 23:16:55 GMT)↵	
Query FPGA version	32Q	32Q	X11↵	Show the field-programmable gate array (FPGA) firmware version to two decimal places (x.xx).
Request the IPI's part number	N	N	60-809-0*n*↵ *or* 60-810-0*n*↵ *or* Pno60-809-1*n*↵ *or* Pno60-810-1*n*↵	See page A-7 for 200 Series part numbers.

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
Request the model name	1I	1I	IPI 201↵ *or* IPI 204↵	
Request the model description	2I	2I	One-Button IP Intercom↵ *or* Four-Button IP Intercom↵	
Request system memory usage	3I	3I		Show amount of memory used and total available memory for system operations.
Request user memory usage	4I	4I		Show amount of user memory used and total available user memory.
Query IPI module	32I	32I	IPI201↵ *or* IPI204↵	201 = IPI 201 AAP or 2-gang 204 = IPI 204 AAP or 2-gang.
IP setup commands				
Set the unit name[24]	Esc X12 CN↵	W X12 CN |	Ipn• X12 ↵	Change the IPI's name to one of your choosing (X12), such as "exec-boardroom-ctrl". The name consists of up to 24 alphanumeric characters (and the minus sign). The first character must be a letter, the last character cannot be a minus sign (hyphen). Case does not matter.
Set unit name to factory default[24]	Esc •CN↵	W%20CN |	Ipn• X49 ↵	X49 = the factory default name, which is a combination of the model name and the last 3 pairs of hex numbers in the controller's MAC address (e.g., IPI-104-IP-00- 02-3D).
Read the unit name	Esc CN↵	WCN |	X12 ↵ *or* X49 ↵	X12 = user-defined name. X49 = factory default name.
Set date/ time[24]	Esc X13 CT↵	W X13 CT |	Ipt• X13 ↵	X13 = Local date and time in the format: *MM/DD/YY-HH:MM:SS*. *Example: 09/07/06-10:54:00*.
Read date/ time	Esc CT↵	WCT |	X13 ↵	
Set GMT offset[24]	Esc X3 CZ↵	W X3 CZ |	Ipz X3 ↵	X3 = Greenwich Mean Time (GMT) offset value (-12.00 to +14.00) represents the difference in hours and minutes relative to Greenwich, UK. The leading zero is optional. Do not use a plus (+) sign.
Read GMT offset	Esc CZ↵	WCZ |	X3 ↵	
Set daylight saving time[24]	Esc X34 CX↵	W X34 CX |	Ipx X34 ↵	

X34 = Daylight saving time
0 = Daylight Saving Time off/ignore
1 = Daylight Saving Time on (USA/Canada)
2 = Daylight Saving Time on (Europe)
3 = Daylight Saving Time on (Brazil)

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
Read daylight saving time	Esc CX←	WCX|	X34↵	X34 See note at bottom of page B-10
Set DHCP on[24]	Esc 1 DH←	W1DH|	Idh 1↵	
Set DHCP off[24]	Esc 0 DH←	W0DH|	Idh 0↵	Setting DHCP to off also resets the unit's IP address to the factory default (192.168.254.254).
View DHCP mode	Esc DH←	WDH|	X5↵	X5 = 0 (off) or 1 (on).
Set IP address[24]	Esc X14 CI←	W X14 CI|	Ipi• X14↵	X14 = IP address (xxx.xxx.xxx.xxx). Leading zeros in each of the four fields are optional in setting values.
Read IP address	Esc CI←	WCI|	X14↵	Leading zeros in each of the four fields are suppressed.
Read hardware address (MAC)	Esc CH←	WCH|	X18↵ *or* Iph• X18↵	X18 = hardware (MAC) address (xx-xx-xx-xx-xx-xx).
Set subnet mask[24]	Esc X14 CS←	W X14 CS|	Ips• X14↵	X14 = IP address or subnet mask (xxx.xxx.xxx.xxx).
Read subnet mask	Esc CS←	WCS|	X14↵	Leading zeros suppressed.
Set gateway IP address[24]	Esc X14 CG←	W X14 CG|	Ipg• X14↵	X14 = IP address or subnet mask (xxx.xxx.xxx.xxx). Leading zeros are optional.
Read gateway IP address	Esc CG←	WCG|	X14↵	
Set verbose response mode on/off[24]	Esc X22 CV←	W X22 CV|	Vrb X22↵	X22 = verbose mode status: 0 = clear/none, default for Telnet connections; responses are not echoed to the host 1 = verbose mode is on, default for RS-232 host control; responses are echoed to the host and displayed to the user 2 = send tagged responses for queries 3 = verbose mode is on and tagged responses are sent for queries.

NOTE *If tagged responses are enabled, all read commands return the constant string + data, the same as for setting a value. For example, for Esc CN ←, the response is Ipn• X12↵ rather than just the data.*

NOTE *Verbose mode is a communication mode in which the device responds with more information than it usually would—more than the device, itself, requires. For example, the controller can send out unsolicited information (such as notice of a volume or input change or a change in some other setting). That is an example of a verbose (wordy) relationship between the controller and a connected device. Verbose mode creates more network traffic than usual, which can slow down network performance.*
Verbose mode is usually enabled for troubleshooting and disabled for daily use.

- *For a direct RS-232 connection, the controller is set for verbose mode by default.*
- *When the IPI is connected via Ethernet, verbose mode is disabled (by default) in order to reduce the amount of communication traffic on the network. If you want to use the verbose mode with a controller connected via Ethernet, this mode must be set to "on" each time you reconnect to the controller.*

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
Read verbose mode status	Esc CV ←	WCV |	X22 ↵	
Set the broadcast interval[24]	Esc X64,X14 EB ←	W X64 %2C X14 EB |	Bmd X64,X14 ↵	X64 = Broadcast repetition interval in seconds (0 to 255 [4.25 minutes], default = 0 = off). X14 = subnet address (xxx.xxx.xxx.xxx). Default broadcast address: 255.255.255.255.
Set broadcast interval to default address[24]	Esc X64 EB ←	W X64 EB |	Bmd X64,X14 ↵	X14 = Default broadcast subnet address: 255.255.255.255.
Clear broadcast interval[24]	Esc 0 EB ←	W 0 EB |	Bmd X64,X14 ↵	X64 = Broadcast repetition interval set to 0 (off). X14 = Default broadcast subnet address: 255.255.255.255.
View broadcast interval	Esc EB ←	W EB |	X64,X14 ↵	
Set broadcast port	Esc {port#}*X71, X72 PB ←	Bpt {port#}*X18 ↵ W{port#}*X71, X72 PB |		
View broadcast port and MAC	Esc PB ←	WPB |	{port#}*X18 ↵	

NOTE *{port#} = UDP outgoing port, X71 * X72 = MAC address for UDP unicast transmissions.*

NOTE *Changes to the PB command become effective in kernel versions 1.53 or higher.*

Get connections listing	Esc CC ←	WCC |		verbose modes 0/1: {# of connections} ↵ verbose modes 0/1: Icc {# of connections} ↵
Password and security settings				
Set administrator password[24]	Esc X33 CA ←	W X33 CA |	Ipa• X41 ↵	
Clear administrator password[24]	Esc • CA ←	W%20CA ↵	Ipa• ↵	Clear/remove all passwords (administrator and user).

NOTE *A user password cannot be assigned if an administrator password does not exist. Also, if the administrator password is cleared, the user password is also cleared.*

Read administrator password	Esc CA ←	WCA |	X41 ↵	

X22 = verbose mode status:
0 = clear/none, default for Telnet connections; responses are not echoed to the host
1 = verbose mode is on, default for RS-232 host control; responses are echoed to the host and displayed to the user
2 = send tagged responses for queries
3 = verbose mode is on and tagged responses are sent for queries.

X33 = Administrator password has 4 to 12 alphanumeric characters and is case sensitive. Special characters (spaces, symbols) not allowed.

X41 = Password displayed on screen. When the IPI connects to a host device via RS-232, the password is shown. When the connection is via IP, 4 asterisks are shown (or an empty field if no password has been assigned).

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
Set user password[14, 24]	Esc X33 CU ←	W X33 CU |	Ipu • X41 ↵	X33 = user password X41 = Password displayed on screen.
NOTE *A user password cannot be assigned if an administrator password does not exist. Also, if the administrator password is cleared, the user password is also cleared.*				
Clear user password[24]	Esc • CU ←	W%20CU |	Ipu • ↵	This clears the user password only.
Read user password	Esc CU ←	WCU |	X41 ↵	
Read connection's security level	Esc CK ←	WCK |	X52 ↵ *or* Pvl X52 ↵	For X52 11 = user 12 = administrator
Remapping port designations				
For security reasons the network administrator may wish to assign new/different port numbers to the controller's Telnet, Web browser, and direct access ports or to disable one or more ports. Typically Telnet uses port 23, Web access is via port 80 (HTTP), and direct access is via port 2001.				
CAUTION *Do **not** set two or more ports to the same port number. Setting two ports to the same number could cause networking conflicts and will also result in an E13 (invalid parameter) error.*				
NOTE *If you remap a port, you must set the port number to 1024 or higher, unless you reset the port to the default number or disable the port by setting it to 0.*				
Set Telnet port[24]	Esc {port#}MT ←	W{port#}MT |	Pmt {port#} ↵	Set a Telnet port number that does not conflict with any other ports.
Reset Telnet port [24]	Esc 23MT ←	W23MT |	Pmt 00023 ↵	Reset the Telnet port to port 23.
Disable Telnet port[24]	Esc 0MT ←	W0MT |	Pmt 00000 ↵	Disables the port.
Read Telnet port	Esc MT ←	WMT |	{port#} ↵	
Set HTTP port[24]	Esc {port#}MH ←	W{port#}MH |	Pmh {port#} ↵	Set a HTTP port number that does not conflict with any other ports.
Reset HTTP port[24]	Esc 80MH ←	W80MH |	Pmh 00080 ↵	This resets the HTTP port to port 80.
Disable HTTP port[24]	Esc 0MH ←	W0MH |	Pmh 00000 ↵	Disables the port.
Read the Web port map	Esc MH ←	WMH |	{port#} ↵	
Set Direct Access port[24]	Esc {port#}MD ←	W{port#}MD |	Pmd {port#} ↵	Set a direct access port number that does not conflict with any other ports.
Reset Direct Access port[24]	Esc 2001MD ←	W2001MD |	Pmd 02001 ↵	This resets the direct access port to port 2001.
Disable Direct Access port[24]	Esc 0MD ←	W0MD |	Pmd 00000 ↵	Disables the port.
Read Direct Access port	Esc MD ←	WMD |	{port#} ↵	

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
Directory commands				
Change to or create a directory	Esc *path/directory/* CJ ←	W *path* %2F *directory* %2F CJ |	Dir•*path/directory/*↵	

The directory's name must be composed of alphanumeric characters and may include the minus sign (hyphen, -) and the colon (:). The first character must be a letter. Case does not matter. No blank or space characters are permitted in the name. Include the full path, not just the name of the directory. Nonalphanumeric characters are not permitted in the Web browser.

NOTE *A directory does not fully exist until a file has been copied into that path. Also, the IPI operates differently from PC operating systems: files stored in and directories created in the IPI may have the same names.*

Example 1:	Esc *majordirectory/subdirectory/next-level/* CJ ←	W *majordirectory* %2F *subdirectory* %2F *next-level* %2F CJ |	Dir•*majordirectory/subdirectory/next-level/*↵
Example 2:	Esc *custompages/HTMLfiles/* CJ ←	W *custompages* %2F *HTMLfiles* %2F CJ |	Dir•*custompages/HTMLfiles/*↵
Example 3:	Esc oak/CJ ←	W oak %2F CJ |	Dir• oak↵

In example 1, the path is *majordirectory/subdirectory/*. The command created or moved to a directory called *next-level*.
In example 2, a directory called *HTMLfiles* was created inside the *custompages* directory.
In example 3, the user moved to a directory called oak.

Change back to the root directory	Esc /CJ ←	W %2F CJ |	Dir• /↵	Moves to the system's root directory.
Go up one directory level	Esc .. CJ ←	W %2E %2E CJ |	Dir•*path/directory/*↵	
View the current directory	Esc CJ ←	W CJ |	*path/directory/*↵	

NOTE *The current directory is determined on a per-connection basis. At the beginning of each IP connection/session, the current directory is selected as the root directory.*

NOTE *Directory = A text string drawn from the alphabet (A~Z), digits (0~9), minus sign/hyphen (-), plus sign (+), or colon (:). No blank or space characters are permitted as part of a name. No distinction is made between upper and lower case. The first character must be an alpha character. A directory does not truly exist until a file has been copied into that path. Unlike various PC operating systems, a File and Directory on the Extron product are allowed to have the same name. The current directoy is a per-connection setting. It begins at the root for each new IP session.*

Stream Files via Telnet or RS–232				
Load a file to user flash memory	Esc + UF *filesize, filename* ←		Upl↵	
Retrieve file from user flash memory	Esc *filename SF* ←		responds with 4-bytes of file-size + raw undprocessed data in file}	

NOTE *If there is insufficient space on a box to store the sent file, response will be "Fld↵ " instead of "Upl↵" to denote failure.*

NOTE *Updating firmware can be done by loading an .S19 file with this command. If the box determines that the .S19 file is not intended for this product, the "Upl↵" response is followed by an "Fwm↵" response (Firmware mismatch).*

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
Stream Files via Port 80				
Load file to user flash memory		Use a POST on port 80 followed by the delimited data to be written to the flash file memory.		
Retreive file from user flash memory		Send a page GET on port 80 followed by: WSF| e.g. http://192.168.254.254/mypage.html?cmd=WSF|	Responds with raw unprocessed data in file	
File handling commands				
Erase user-supplied Web page and files[24,28]	Esc filename EF←	W*filename* EF|	Del • *filename*↵	
Erase current directory and its files[24,28]	Esc/EF←	W%2F EF|	Ddl↵	
Erase current directory and sub-directories[24,28]	Esc//EF←	W%2F%2F EF|	Ddl↵	

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
List files from the current directory	Esc DF↵	WDS|	Retrieve a list of files stored in the controller. Each line of the response lists a different filename and its corresponding file size. The last line of the response indicates how much available file space there is.	
	Esc DF↵	W DF|	[filename 1]• [day, date time of upload] GMT • [file size 1 in bytes]↵ [filename 2]• [day, date time of upload] GMT • [file size 2 in bytes]↵ [filename 3]• [day, date time of upload] GMT • [file size 3 in bytes]↵ … [filename *n*]• [day, date time of upload] GMT • [file size *n* in bytes]↵ [space remaining (to 7-digits)] • Bytes Left ↵↵	
When working with the IPI's embedded Web pages, the response visible in HTML source code follows this structure: var file=new Array(); file[1]="[filename 1],[day, date time1 of upload] GMT,[file size 1 in bytes]";↵ file[2]="[filename 2],[day, date time2 of upload] GMT,[file size 2 in bytes]";↵ file[3]="[filename 3],[day, date time3 of upload] GMT,[file size 3 in bytes]";↵ … file[*n*]="[filename *n*],[day, date time*n* of upload] GMT,[file size *n* in bytes]";↵ file[*n*+1]="[space remaining (to 7-digits)],Bytes Left;↵				
Example (via Telnet or HyperTerminal)	Esc DF↵	W DF|	4.evt Tue, 01 Mar 2005 02:03:07 GMT 42233↵ 1.eml Tue, 01 Mar 2005 02:03:34 GMT 200↵ 2.eml Tue, 01 Mar 2005 02:03:34 GMT 300↵ 2.eir Tue, 01 Mar 2005 02:03:34 GMT 1683↵ 6.evt Tue, 01 Mar 2005 02:03:36 GMT 17956↵ 4.eir Tue, 01 Mar 2005 02:03:47 GMT 6849↵ IPImain.sc Tue, 01 Mar 2005 02:03:52 GMT 8515↵ 0.evt Tue, 01 Mar 2005 02:03:56 GMT 34413↵ 99.eml Tue, 01 Mar 2005 02:04:19 GMT 178↵ buttons.xml Tue, 01 Mar 2005 02:04:19 GMT 17214↵ IPI.cfg Wed, 16 Mar 2005 21:34:45 GMT 7188↵ 6568448 Bytes Left ↵↵	
List files from current directory and subdirectories	Esc LF↵	WLF|	(See responses to Esc DF↵, above.)	The response is the same except that the path/directory prece filenames for files within the subdirectories.
Event Control				
Start events	Esc 1AE↵	W1AE|	Ego↵	
Stop events	Esc 0AE↵	W0AE|	Est↵	
Query number of events running	Esc AE↵	WAE|	#####↵ *or* Enm #####↵	The response is the quantity of currently running events, and it includes leading zeros. For example, if two events are running, the response is 00002↵.

Command	ASCII (Telnet) (host to intercom)	URL Encoded (host to intercom)	Response (intercom to host)	Additional Description
Reset (zap)/Erase Commands				
Erase all files from flash memory	Esc ZFFF←	WZFFF|	Zpf↵	
Reset all devices settings to factory presets	Esc ZXXX←	WZXXX|	Zpx↵	
NOTE *Excludes IP settings such as IP address, subnet mask, gatewate IP address and IP Security-level table. User files in flash memory will not be deleted.*				
Reset all device settings and delete files	Esc ZY←	WZY|	Zpy↵	
NOTE *This is an absolute system reset but excludes IP settings such as IP address, subnet mask, gateway IP address, unit name, DHCP setting and port mapping (Telnet/Web/direct access) in order to preserve communicaiton with the device. This reset is recommended after a firmware update.*				
NOTE *The ZY command appears n kernel versions 1.45 or higher.*				
Absolute system reset	Esc ZQQQ←	WZQQQ|	Zpq↵	
NOTE *(Mode 5 reset) Resets alls device settings, including IP settings, to factory default. Also rerases flash memory. Firmware version remains the same.*				

Appendix C

Mounting

Mounting the IPI 100 Series

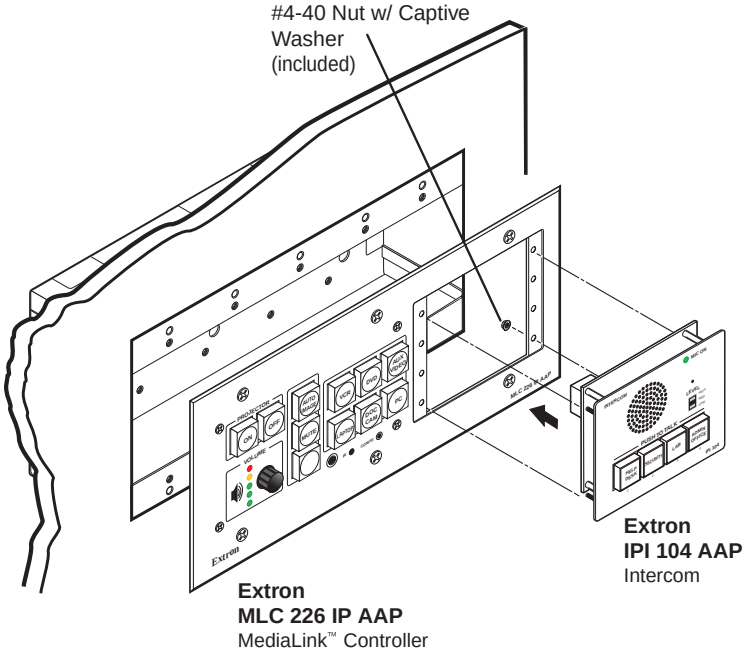
Mounting the IPI 200 Series

Mounting

Mounting the IPI 100 Series

The IPI intercom and any other adapter plates must be attached to a device faceplate or AAP wall plate and cabled before the device or wall plate is installed in a wall or furniture. The screws needed for installing the IPI are built into its front panel.

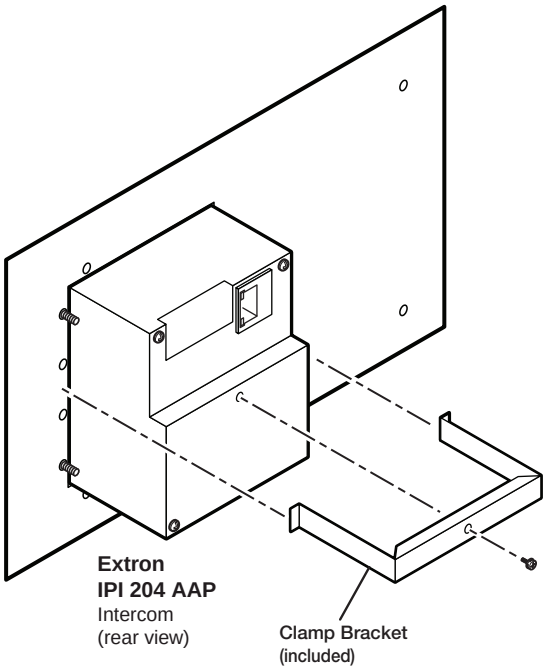
1. Before cables are attached, insert the IPI's screws through the holes in the device's faceplate or AAP mounting frame. Secure the intercom module to the faceplate/wall plate with the provided captive washers and #4-40 nuts, as shown below:



2. Connect each IPI to an MLC via the RJ-45 intercom ports on both devices using the included cable. If a longer cable is required, use a standard CAT 5, CAT 5e, or CAT 6 straight through network cable. See "IPI Rear Panel Features and Cabling" on page 2-2.
3. Mount the AAP mounting frame or other device to the wall, furniture, or rack panel. Follow any special mounting instructions that came with that device.

Mounting the IPI 200 Series

The IPI 201 and IPI 204 intercoms must be attached to a device faceplate or AAP wall plate and cabled before the device or wall plate is installed in a wall or furniture. Unlike the IPI 100 Series intercoms, the IPI 200 AAP Series intercoms are secured by attaching a clamp bracket to the back of the intercom after it has been inserted through the front of the AAP plate.



1. Before cables are attached, insert the IPI through the front of the device's faceplate or AAP mounting frame. Secure the IPI to the faceplate/wall plate by attaching the provided clamp bracket.
2. Connect cables to the IPI. See "IPI Rear Panel Features and Cabling" on page 2-2.
3. Mount the AAP mounting frame or other device to the wall, furniture, or rack panel. Follow any special mounting instructions that came with that device.

Appendix D

Button Labels

Installing or Replacing Button Labels

Button Labels

Installing or Replacing Button Labels

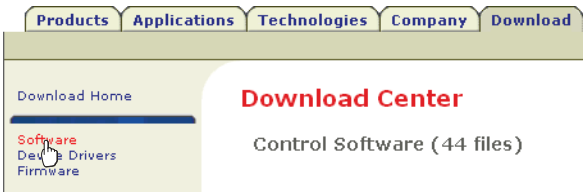
Printed labels are included with the IPI 100 Series and IPI 200 Series. In addition, users can write on blank labels, purchase additional sheets of printed button labels from Extron (see page A-3 or A-7) or print their own customized button labels with the Button Label Generator program. Replacement button caps are also available for purchase.

Button Label Generator software

The Button Label Generator software creates labels that you can place in the translucent covers above the buttons. You can create labels with names, alphanumeric characters, or color graphics for easy and intuitive input and output selection.

Installing the Button-Label Generator software

The Extron Button Label Generator is available on the Extron Web site, www.extron.com, under the Download tab. Click the **Software** link, and download and install the program by following the on screen instructions.

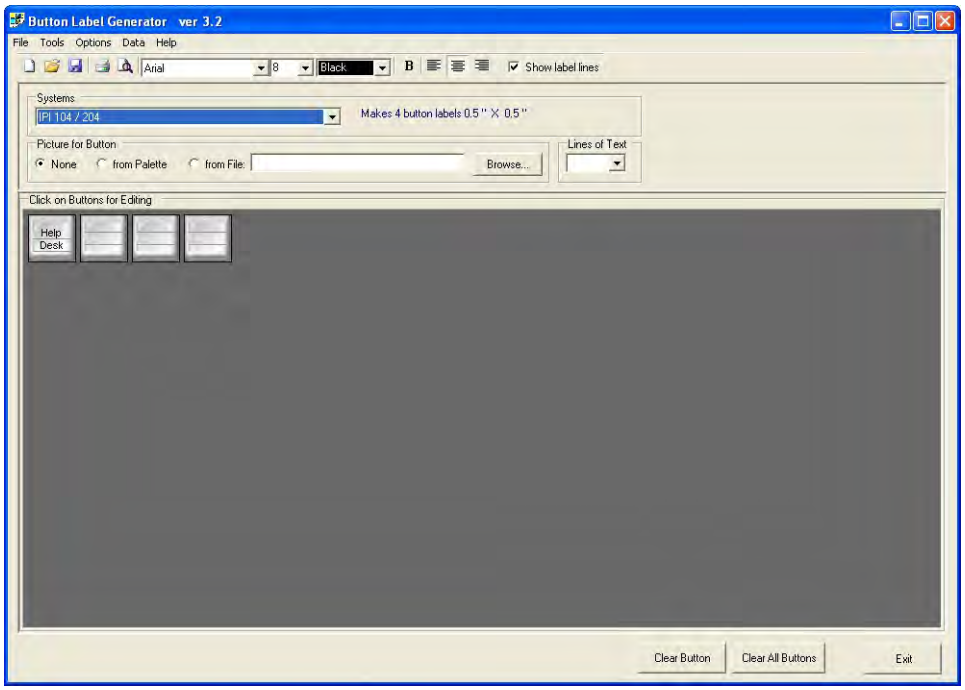


NOTE *The Button Label Generator software is also included on the Extron Software Products disk that accompanies the IP Intercom unit.*

By default, the Windows installation creates a C:\Program Files\Extron\ ButtonLabelGenerator directory and places the Button Label Generator icon into a group or folder named "Extron Electronics". A shortcut icon can also be placed on the PC desktop.

Using the Button-Label Generator software

1. To run the Button-Label Generator program, click on the desktop icon. Alternatively, click **Start** > **Programs** > **Extron Electronics** > **Button Label Generator** > **Button Label Generator**. The Button-Label Generator window opens.
2. In the Systems selection box, choose the IPI 101/201 or the IPI 104/204 option to match the button label size and quantities for your TouchLink panel:



3. Using standard Windows controls, you can create and print labels that can be placed in the clear button caps on the front panel of the switcher.
4. Click the **Clear All Buttons** button and create new labels as many times as necessary to make all of the button labels that you need.

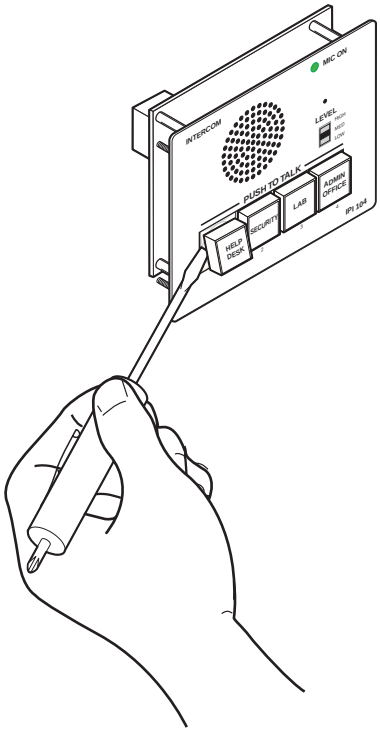
To access the help program, click the Help menu.

Button Labels

Installing Button Labels

The button assembly consists of a clear lens cap, the label and a white diffuser. To remove a button assembly and replace a label:

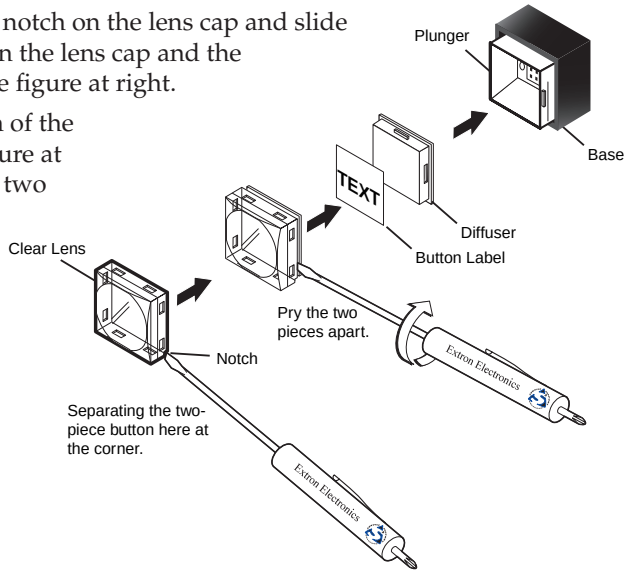
1. Use a small flat-blade screwdriver to gently pry the button assembly away from its plunger/base.



2. Locate the small corner notch on the lens cap and slide the screwdriver between the lens cap and the diffuser, as shown in the figure at right.

   Using a rotating motion of the screwdriver (see the figure at right), carefully pry the two pieces apart.

3. Replace the label with the new button label.
4. Press the lens cap and diffuser together and reinstall the button assembly into its plunger/base.
5. Repeat steps **1** through **4** for each button you plan to re-label.



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
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

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

Europe, Africa, and the Middle East:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

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

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

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, 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 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), 65.383.4400 (Asia), or 81.3.3511.7655 (Japan) 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.

Quick Installation Checklist

☐ Determine which rooms will have IP Intercoms and HelpDesk PCs and where, in each room, they will be located. Ensure there is a network connection for each intercom and each HelpDesk PC.

For the IPI 100 Series models

☐ Connect the IPI to the MLC 226 IP controller, using the included 12 inch (30.5 cm) network cable (see page 2-2).

☐ Cable the MLC 226 IP to other devices:

- Connect the LAN port to the local network, using a standard network cable with an RJ-45 connector.
- If desired, cable the rear panel audio connector for local audio output (see page 2-2).
- Cable other devices (control modules, SCP, and/or IR emitters) to the MLC as needed (for more information, see the *MLC 226 IP User's Manual*, which is available on the Extron website (www.extron.com).

☐ Install the IPI 100 unit and the MLC 226 IP into the wall box(es) or furniture (see page C-2).

☐ Ensure the HelpDesk PC(s) is connected to the network and power it on.

☐ Configure the MLC(s) as described in the *MLC 226 IP User's Manual* and the Global Configurator Help File, which are available on the Extron website (www.extron.com).

For the IPI 200 Series models

☐ Connect the LAN port to the local network, using a standard network cable, with an RJ-45 connector (see page 2-3).

☐ Connect power, and, if required, contact relay and local audio output, using the rear panel captive screw connectors (see page 2-3).

☐ Mount each IPI 200 into furniture, an AAP wallplate, mounting bracket for 2-gang wallplates, or device faceplate. The AAP versions must be secured by attaching a clamp bracket to the back of the intercom after it has been inserted through the front of the AAP plate (see page C-3).

☐ Ensure the HelpDesk PC(s) is connected to the network and power it on.

For all models

☐ Install the Extron IP Intercom HelpDesk software, which is on the disk that shipped with the unit and is also available for download from the Extron website (www.extron.com).

☐ Use the IP Intercom HelpDesk software to configure all intercom units in the system (see chapter 5). Full instructions can be found in the software's Help File.

When the front panel button(s) light amber, the unit is correctly installed and configured. If the button(s) light red the unit has not been correctly configured and you should check the *IPI 100 Series and IPI 200 Series User's Manual* or the software's Help File.

Extron **USA - West** Headquarters
+800.633.9876 Inside USA / Canada Only
+1.714.491.1500
+1.714.491.1517 FAX

Extron **USA - East**
+800.633.9876 Inside USA / Canada Only
+1.919.863.1794
+1.919.863.1797 FAX

Extron **Europe**
+800.3987.6673 Inside Europe Only
+31.33.453.4040
+31.33.453.4050 FAX

Extron **Asia**
+800.7339.8766 Inside Asia Only
+65.6383.4400
+65.6383.4664 FAX

Extron **Japan**
+81.3.3511.7655
+81.3.3511.7656 FAX

Extron **China**
+400.883.1568 Inside China Only
+86.21.3760.1568
+86.21.3760.1566 FAX

Extron **Middle East**
+971.4.2991800
+971.4.2991880 FAX