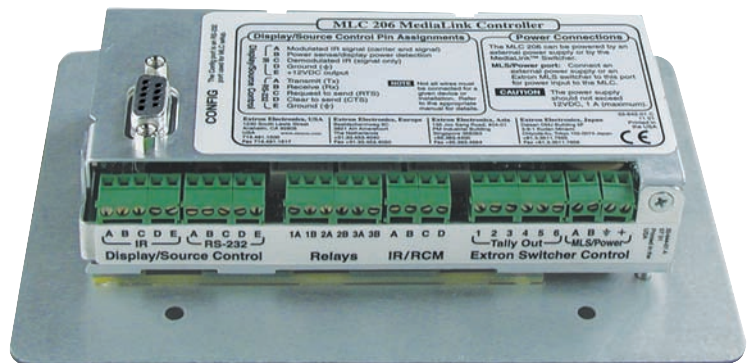


User's Manual



MLC 206, MLC 206 AAP, MLC 206 EC, MLC 206 AAP EC

MediaLink™ Controllers

Precautions

Safety Instructions • English



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



This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

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

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

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

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

Consignes de Sécurité • Français



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



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

Attention

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

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

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

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

Sicherheitsanleitungen • Deutsch



Dieses Symbol soll 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.

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 específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

Warning

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

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

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

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

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

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

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 le contourner ni de le désactiver.

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

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

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

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

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

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte 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 Stromversorgung (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.

Lithium-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.

Advertencia

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

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

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

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

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

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

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MediaLink™ Controllers

1 Chapter One

Introduction

About the MLC 206

Features and Options

MediaLink System Application Examples

Introduction

About the MLC 206

The Extron MediaLink™ Controller (MLC 206) provides infrared (IR) and RS-232 remote control of a display device, contact closure control of items in a room, tally outputs, and MediaLink Switcher control. Some models of Extron system switchers can also be slaved to the controller.

The MLC 206 is designed for use with audiovisual equipment in sites such as a small classroom or boardroom. The MLC 206 comes with a 3-gang faceplate, the MLC 206 AAP has a 5-gang faceplate, and the MLC 206 EC and MLC 206 AAP EC have Euro Channel-mountable faceplates. A variety of optional faceplates are also available.

“MLC”, “MLC 206”, and “controller” are used interchangeably in this manual to refer to the MediaLink controller unit, no matter which faceplate is attached to it. Most examples in this manual show the MLC 206 (3-gang size). The cabling, operation and setup are identical for all models; the models differ only in how they are mounted.

Features and Options

Standard features

Illuminated display — A button’s label is illuminated brightly when the button is selected and dimly when it is not selected.

Projector control — Using downloadable, one-way RS-232 or IR driver, IR learning, or user-defined RS-232 commands, the MLC 206 can turn a projector’s (or display’s) power on and off and also select between the projector’s inputs. You can also create RS-232 commands for special functions such as focus and zoom features.

Room control — Items in a room, such as room lights, a screen, a projector lift, and other devices can be controlled via the MLC’s contact closure relays.

Secure enclosure — Ideal for installations in high traffic areas, the MLC is designed to prevent label alteration. Its backlit labels are not accessible after installation.

Inactivity timer — The MLC can be set to automatically shut off the projector after a user-defined period.

Audio volume adjustment — The audio system volume can be attenuated via a rotary control. The MLC can be configured to adjust the volume on either the projector or an optional MediaLink switcher.

Options and accessories

Remote control — The optional MLA-Remote provides infrared remote control of the MLC unit from up to 30 feet away.

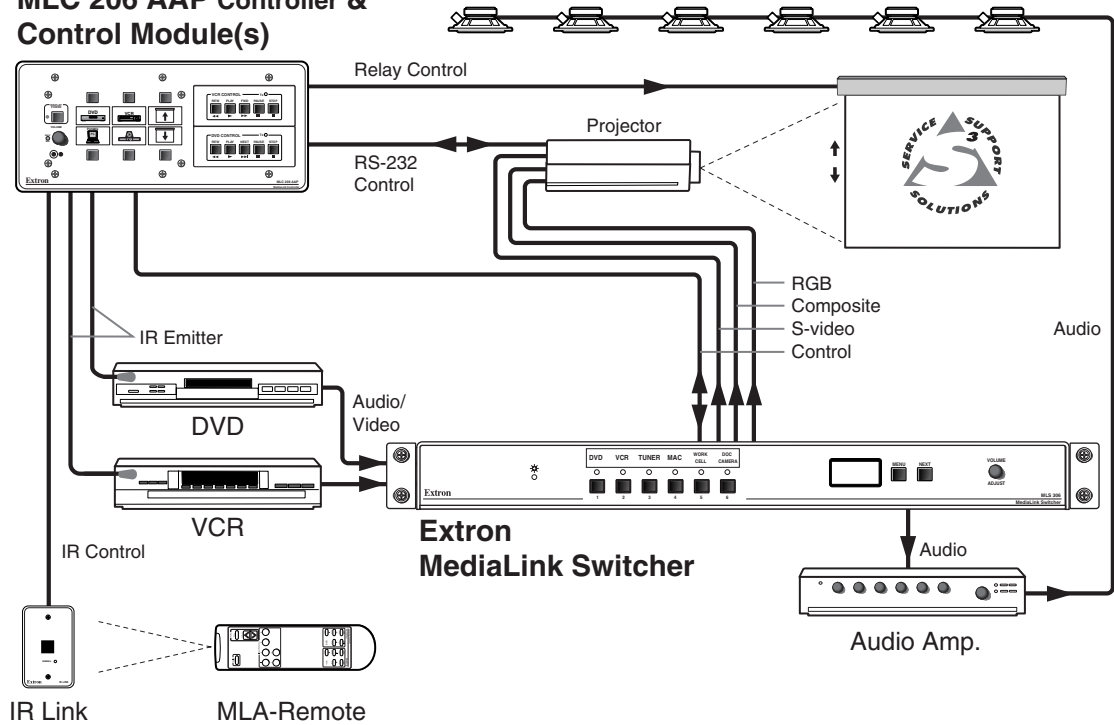
Expandability — An optional switcher can be attached in order to expand the number of inputs to the projector.

Optional faceplates for a variety of mounting locations — The controller can easily be mounted in a standard equipment rack, in a wall in an electrical box, in a Euro Channel, in a Hoffman box, or in a lectern or other furniture.

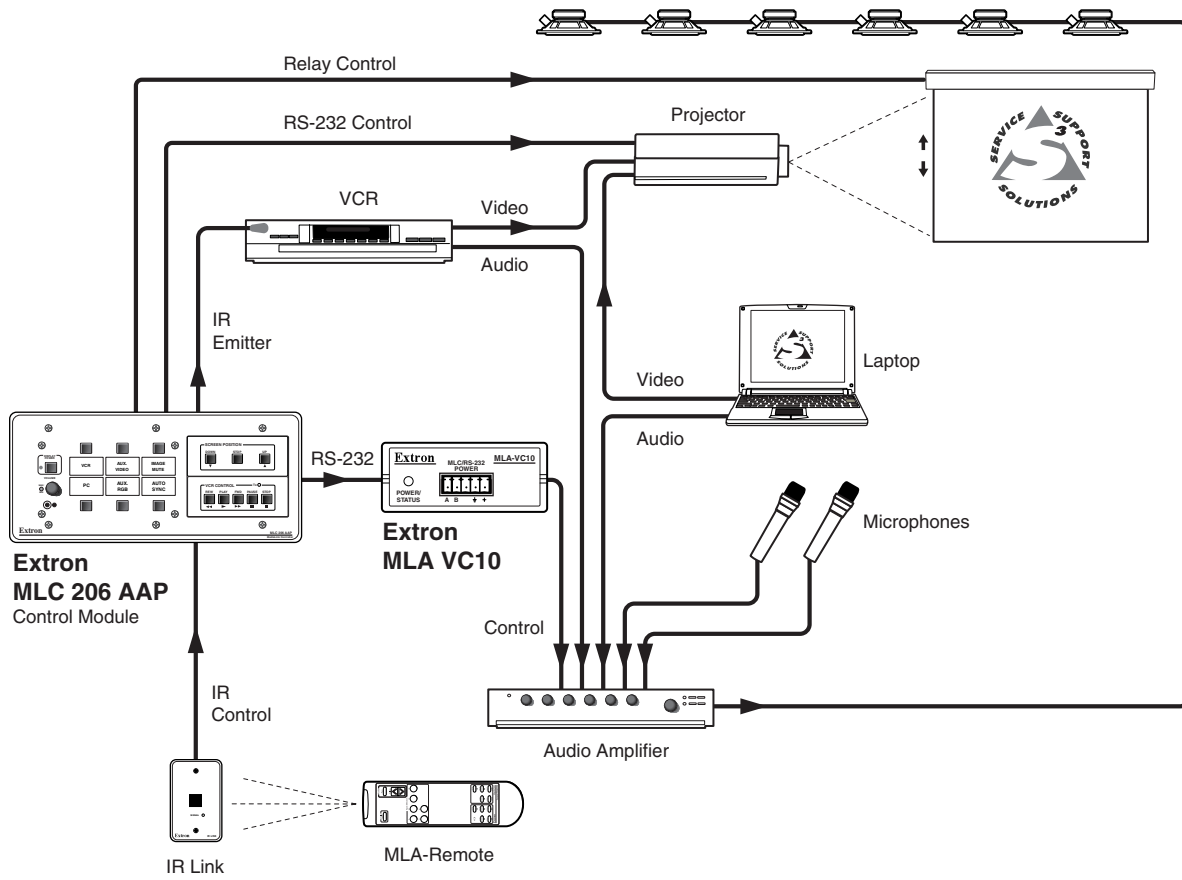
Control modules — By connecting and setting up optional IR control modules, the MLC can also be used to control video sources such as VCRs and DVD players. Control modules are also available for controlling features of a MediaLink Switcher (MLS) or for directly controlling the room control relays.

MediaLink System Application Examples

Extron MLC 206 AAP Controller & Control Module(s)



Introduction, cont'd





MediaLink™ Controllers

Chapter Two

Installation

Installation Overview

UL Requirements

Installation Procedures

Installation

Installation Overview

CAUTION *Installation and service must be performed by authorized personnel only. UL Listed electrical boxes are recommended. See “UL Requirements” below.*

To install and set up a MediaLink Controller, follow these steps:

- 1 If applicable, prepare the installation site: cut a hole in the wall/furniture, install the electrical box or mud ring, and prepare the cables. Instructions are included in this manual and/or with the optional faceplate, mounting device, or wall box. See “Preparing the site and installing the wall box” in this chapter.
- 2 Remove the faceplate. See “Replacing faceplates and labels” in this chapter.
- 3 Make and install labels. See “Replacing faceplates and labels” in this chapter.
- 4 Reinstall the original faceplate or attach a different faceplate to the MLC. See “Replacing faceplates and labels” in this chapter.
- 5 For an MLC 206 AAP EC or an optional faceplate with spaces for installing Extron Architectural Adapter Plates (AAPs), attach the AAPs to the faceplate.
- 6 Attach cables to the rear of the MLC and to the projector, room devices, optional control modules (IRCMs, ACMs, RCMs), optional IR Link, IR Emitters or IR Broadcaster, and optional switcher. See “Rear/bottom panel cable connections” in this chapter. If applicable, also attach cables to the back of the optional AAP plates.
- 7 Connect power cords and turn on all the devices, including the MLC.
- 8 Configure the controller by using the included Windows®-based control software or Simple Instruction Set™ commands. See chapter four.
- 9 Test the system: press the MLC’s buttons, watch the display, and listen to the audio output to determine whether the output devices are responding correctly (powering on/off, switching inputs). If not, ensure that all devices are plugged in and receiving power. Check the cabling; make adjustments as needed.
- 10 Attach the MLC to the wall, furniture, equipment rack, or Euro Channel.
 - A. Disconnect the MLC’s power supply at the source end (not at the MLC).
 - B. Disconnect the other devices’ power.
 - C. Secure the faceplate onto the UL-approved electrical wall box, the mud ring, the wall or furniture, the rack, or the Euro Channel. See “Mounting the MLC” in this chapter.
 - D. Restore power to the MLC and to the connected devices.

UL Requirements

The Underwriters Laboratories (UL) requirements listed below pertain to the installation of the MLC into a wall or furniture.

1. This unit is not to be connected to a centralized DC power source or used beyond its rated voltage range.

NOTE *The Extron P/S 100 and other Extron power supplies may be used with the MLC.*

2. This unit must be installed in a UL listed junction box.

NOTE *The UL approved electrical wall box (junction box) is not included with the MLC; the installer is responsible for obtaining and installing the box.*

3. This unit must be installed in accordance with the National Electrical Code.

Installation Procedures

The MLC can be installed into a wall, a Euro Channel, or furniture, or, if an optional faceplate is used, it can be mounted directly in furniture or an equipment rack. Follow the instructions appropriate to the mounting option you have selected. Templates for optional faceplates are not detailed in this manual.

Preparing the site and installing the wall box

Choose a location that will allow cable runs without interference. Allow enough depth for both the wall box and the cables. You may need to install the cables into the wall, furniture, or conduits before installing the controller.

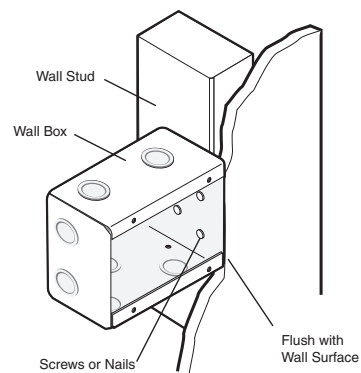
The installation must conform to national and local electrical codes and to the equipment's size requirements. Dimensional drawings of the MLC 206 and MLC 206 AAP and actual-size cut-out templates are provided in appendix B of this manual. Templates for the optional faceplates are included with each faceplate.

Installation using a UL listed wall box is recommended for most mounting options, but mud rings or a Euro Channel can be used instead.

- The MLC 206 includes a three-gang faceplate, the MLC 206 AAP includes a five-gang faceplate with space for Extron AAPs. Each can be installed in a standard electrical wall box that is at least 1.75" deep. Mud rings are also available.
 - The EC models (MLC 206 EC, MLC 206 AAP EC) can be installed in a standard Euro Channel.
 - Optional faceplates are available that accept the MLC 206 and also have openings for Extron AAPs. Some optional faceplates can be installed into various sizes of standard electrical wall boxes. Other optional faceplates are designed to be directly mounted into a lectern or other furniture.
- 1a. If you are using a wall box or installing a MLC using a lectern mounting faceplate, make a 100% size photocopy of the cut-out template that corresponds to the faceplate you are using, and cut out the center portion of it as indicated on the template.
 - 1b. If you are using a mud ring, use the template that came with the mud ring. Cut out the indicated center portion.
 2. Place the template (or the wall box or mud ring) against the installation surface, and mark the guidelines for the opening on the wall or furniture.
 3. Cut out the wall/furniture material from the marked area.
 4. Check the opening size by inserting the wall box, mud ring, or MLC into the opening. The box or mud ring (if used) and/or MLC should fit easily into the opening. Enlarge or smooth the edges of the opening if needed.
 5. Feed cables through the wall box punch-out holes, and secure them with cable clamps to provide strain relief.
 6. Exposed cable shields (braids or foil) are potential sources of short circuits. Trim back and/or insulate shields with heat shrink.

WARNING

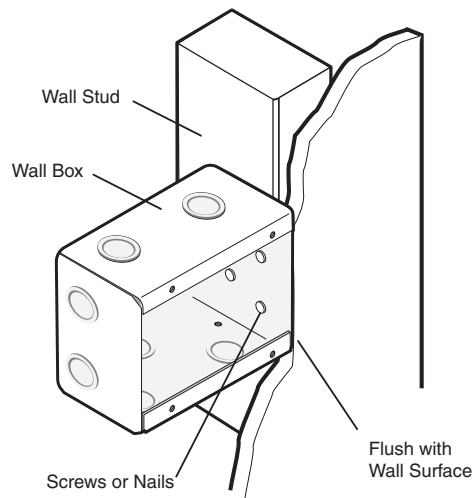
To prevent short circuits, the outer foil shield can be cut back to the point where the cable exits the cable clamp. Both braided and foil shields should be connected to an equipment ground at the other end of the cable.



Grounding outer braided and foil shields

Installation, cont'd

- 7a. If you are using a wall box, insert the wall box into the opening, and attach it to the wall stud/furniture with nails or screws, leaving the front edge flush with the outer wall or furniture surface. The illustration applies to all sizes of wall boxes.



Attaching a wall box to a wall stud

If attaching the wall box to wood, use four #8 or #10 screws or 10-penny nails. A minimum of 1/2 inch (1.3 cm) of screw threads must penetrate the wood.

If attaching the wall box to metal studs or furniture, use four #8 or #10 self-tapping sheet metal screws or machine bolts with matching nuts.

- 7b. If you are using a mud ring, follow the directions, if any, that came with the mud ring to attach the clips that fasten the ring to the wall or furniture.
8. If desired, replace the faceplate and/or input labels.
9. Cable and test the MLC before fastening it into the wall box, mud ring, or furniture.

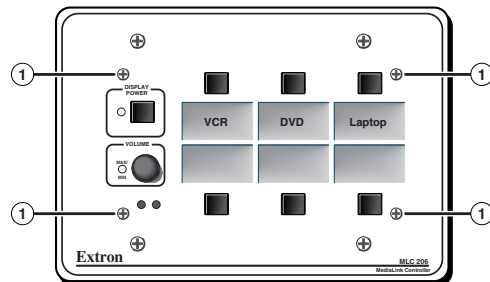
Replacing faceplates and labels

The MLC's faceplate and the backlit input selection labels can be replaced. You can replace the standard faceplate with an optional lectern mounting, rack mounting, or wall mounting MLM faceplate for installation into a variety of locations. The MLC 206 is shown in the following examples, but the instructions apply to all models.

Replacing the faceplate

1. Use a small Philips screwdriver to remove the four faceplate attachment screws marked ① in the picture at right, and keep them for later use.

NOTE Do not remove these screws while the MLC is installed in a wall or furniture, or the controller may fall down into the wall/furniture or wall box.

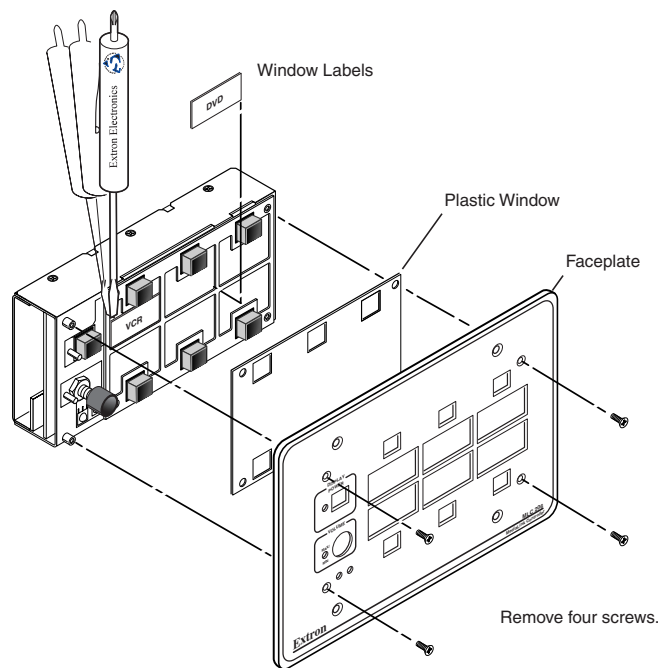


2. Lift the faceplate off the MLC.
3. Align the openings in the new faceplate with the controller's buttons, knobs, and LEDs, and place the new faceplate on the MLC.
4. Replace the four screws removed in step one, and hand tighten them.

Replacing labels

The backlit input selection labels are inaccessible once the MLC is installed into a wall or furniture. The faceplate must be removed to gain access to the labels.

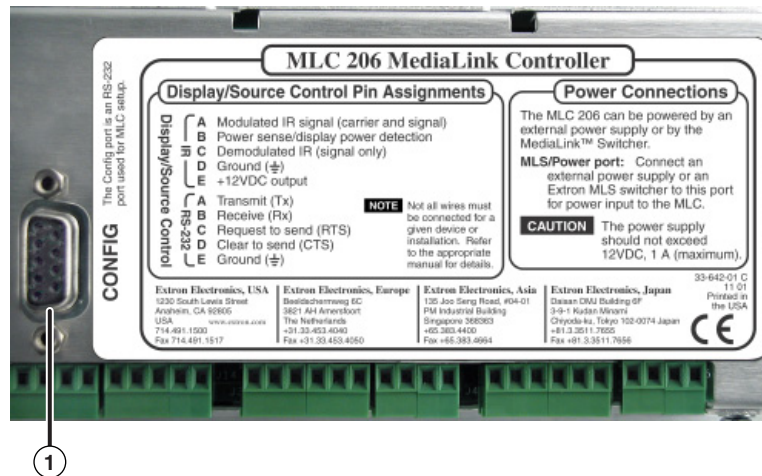
1. Use a small Philips screwdriver to remove the four faceplate attachment screws, and keep them for later use.
2. Lift the faceplate off the MLC.
3. Lift off the transparent, protective, plastic window that covers the labels.
4. Lift off the transparent, rectangular label you want to replace, being careful not to damage the circuits beneath it. You may need to use a small, flat bladed screwdriver to gently pry the label out.



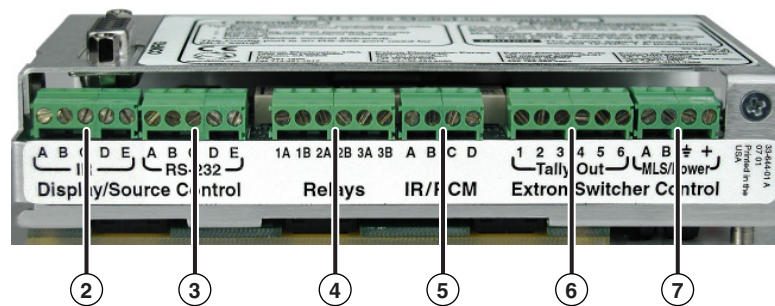
5. Detach one of the preprinted labels or one of the blank labels from the sheet of labels that is included with the MLC 206. Remove the protective film from the front of the label. To create customized labels, use a label maker, such as a Brother® P-touch®, and clear label material to print text to place on the blank labels.
6. Insert the new label into the opening from which the other label was removed.
7. Repeat steps four through six for each label you wish to replace.
8. Place the plastic window back onto the MLC to cover the labels.
9. Align the openings in the faceplate with the buttons, knobs, and LEDs of the MLC, and place the faceplate on the MLC.
10. Replace the four screws removed in step 1, and hand tighten them.

Installation, cont'd

Rear/bottom panel cable connections



MLC 206 rear view

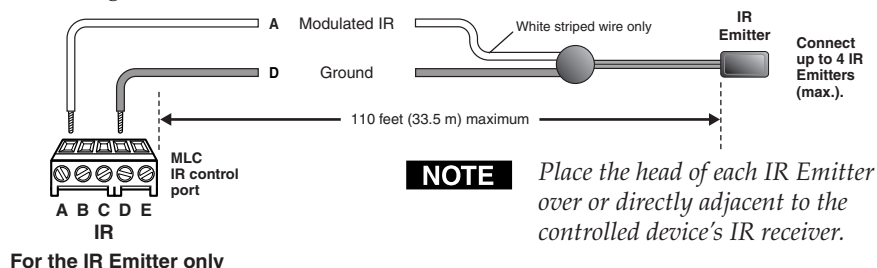


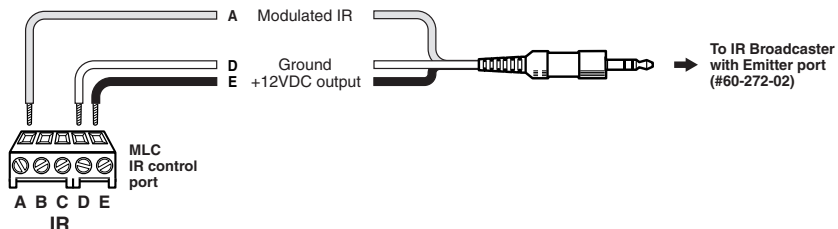
MLC 206 bottom view

- Configuration port** — This port is used for system configuration and for loading control files into the MLC. Connect a host computer, third party control system, or a terminal such as a personal digital assistant to the MLC via this rear panel 9-pin HD female RS-232 connector. Commands and drivers can be downloaded into or uploaded from the MLC via this port. See chapter four for details about the setup software and downloading drivers.

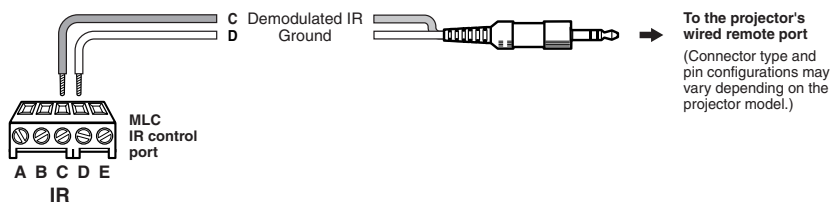
Display (projector) and source control connections

- IR Display/Source Control connector** — Infrared control signals are sent to A/V devices via accessories connected to this port. Connect Extron IR Emitters or an IR Broadcaster to this 3.5 mm, 5-pole direct insertion captive screw connector so display and/or source devices can be controlled via infrared commands from the MLC. Up to four IR Emitters can be connected to the MLC via this connector at one time. Wire the connector as shown in the following illustrations.

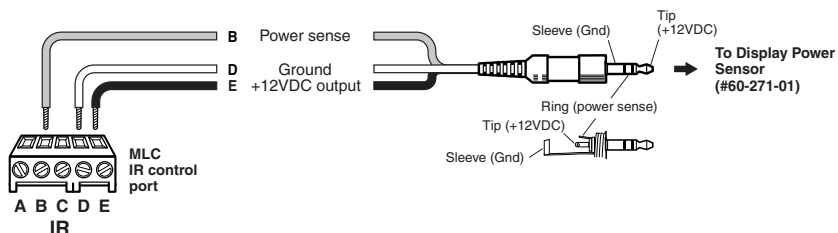




For the IR Broadcaster with emitter port



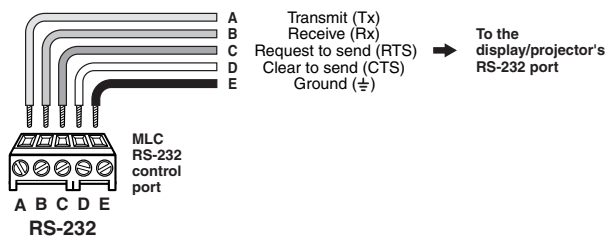
For a wired projector remote port



For a projector current/power sensor

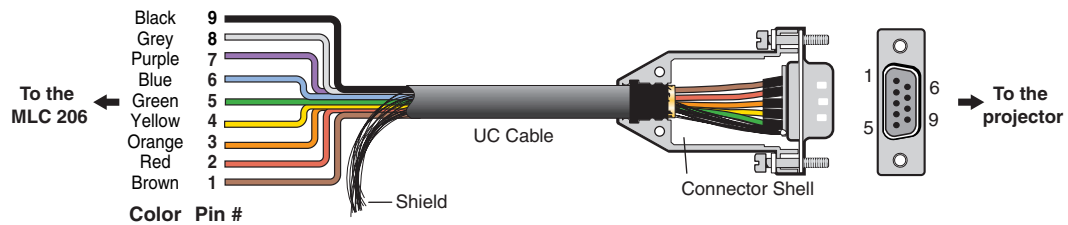
- ③ **RS-232 Display/Source Control connector** — The MLC sends out RS-232 commands via this port for controlling a projector or a slaved Extron system switcher. Guides for slaving system switchers to the MLC and for controlling specific models of projectors are available on the Extron Web site.

Connect a cable between the projector and this 3.5 mm, 5-pole direct insertion captive screw connector for RS-232 projector control. Use the illustration below as a guide to wiring the connector. Wiring will vary depending on the projector model. In most cases only the transmit (Tx) and ground connections will be needed.



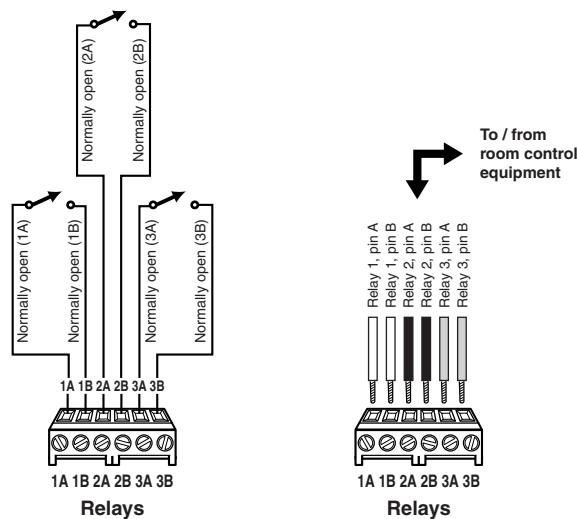
We recommend using the UC 50' universal projector control cable (for this connection). One end of the cable is terminated with a female 9-pin D connector, and the other end is unterminated. The UC 50' pin assignments are as shown in the following illustration. Refer to the projector's manual for the projector's pin assignments in order to determine which of the cable's wires to connect to which of the MLC's RS-232 pins.

Installation, cont'd



Room/relay control connections

- ④ **Relay connector** — This 3.5 mm, 6 pole direct insertion captive screw connector provides three relays. Via the included software, these relays can be set to control items in the room (such as lights, screens, and projector lifts) when the display/projector is being powered up or down. They can also be associated with other buttons. See chapters three (operation) and four (serial communication) for details.
- Use the software to specify momentary or latching contact. All the relays are normally open, and the minimum rating is 24V, 1 A. See the following diagrams of the relays and connector wiring, and **refer to the screen, projector lift, or AC controller manufacturer's wiring guide.**



MLC 206 Relays

Accessory control connections

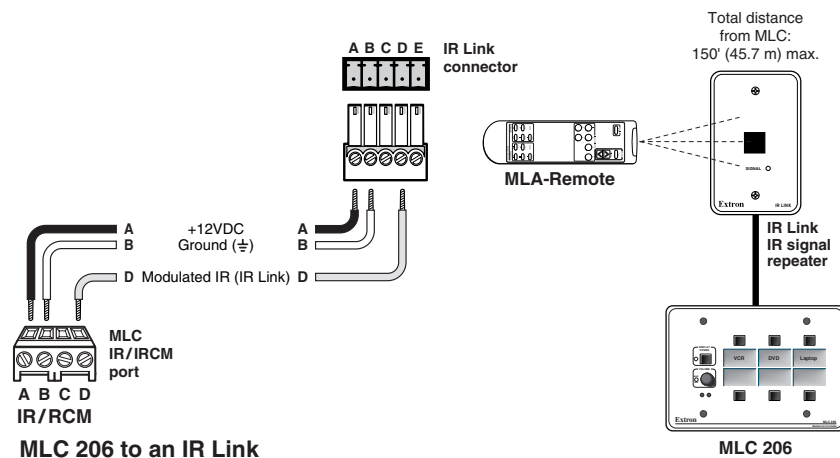
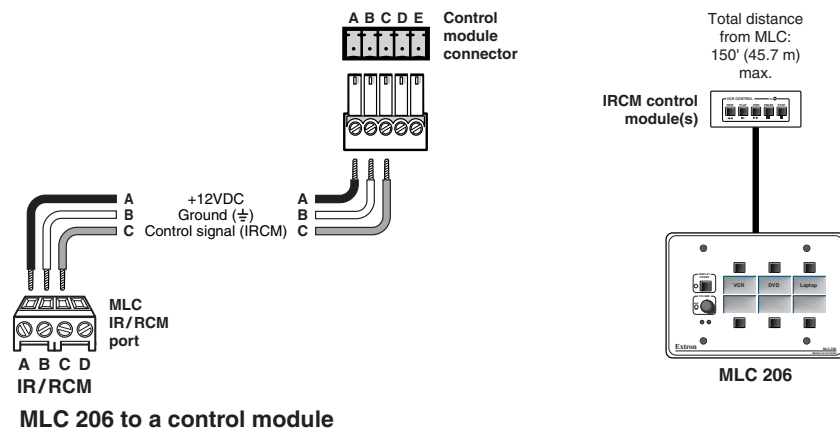
NOTE The MLC contains three relays, so you may install a maximum of one RCM-SC or one RCM-SCLT in a system with an MLC. Refer to the Relay Control Modules User's Manual.

- ⑤ **IR/RCM connector** — Connect an optional IR Link signal repeater and/or optional control modules (such as an Extron IRCM-VCR, IRCM-DVD, IRCM-DVD+, IRCM-Tape, or an ACM, or RCM control module) here. The IR Link receives infrared signals from the MLA Remote and sends them directly to the MLC, allowing the MLA Remote to be used out of the line of sight of and/or at a greater distance from the MLC than would be possible if the IR Link were not used.

The control modules are Architectural Adapter Plate modules that can be connected to the MLC to control devices such as VCR, tape, or DVD players, or provide limited control of an optional MLS 306/506 Series switcher, or other devices. Up to four control modules (in addition to the IR Link) can be connected to the MLC, though the connector can hold wires for only 2-3 items at a time, so you may wish to daisy chain the control modules together.

NOTE You must also set the control modules' rear DIP switches so each control module has a unique address number.

Wire the MLC's IR/RCM 3.5 mm, 4-pole direct insertion captive screw connector as shown in the following illustrations. Refer to the *Control Modules User's Manual* or the *Relay Control Modules User's Manual* for information on setting an address for each device. An Extron Comm-Link cable (see appendix A for part numbers) is recommended.



CAUTION Polarity is important. If the IR/RCM connector wiring specified in the diagram is not followed, the equipment may be damaged.

NOTE Connect a maximum of one (1) IR Link. Do not connect more than one IR Link (either in parallel or in series). Also, do not connect more than four (4) control modules to the MLC.

NOTE The MLC contains three relays, so you may install a maximum of one RCM-SC or one RCM-SCLT in a system with an MLC.

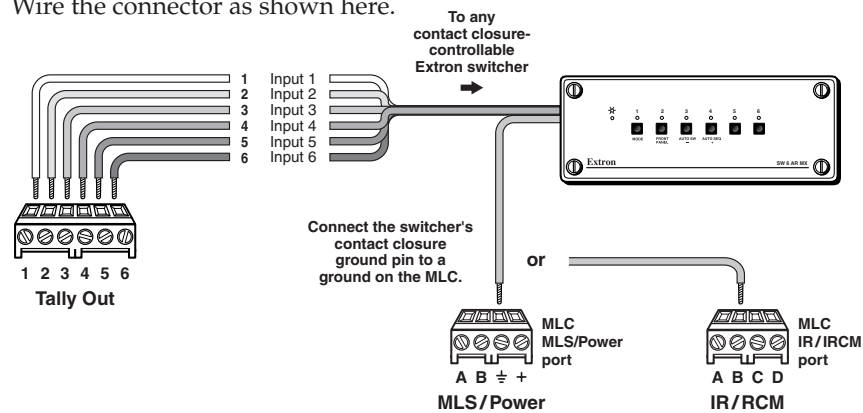
NOTE The control modules are not hot swappable. When you add or remove a control module, you must cycle (disconnect, then reconnect) the MLC's power before the MLC can recognize the new module and the configuration change.

Installation, cont'd

Extron switcher control connections

- ⑥ **Contact closure Tally Out(put) connector** — To effectively add more A/V inputs to a projector, you aren't limited to using a MediaLink switcher. If desired, attach an Extron switcher that accepts contact closure control to this 3.5 mm, 6 pole direct insertion captive screw connector. Each pin corresponds to a switcher front panel button. When a tally pin is selected, the pin changes from a high (5V) to a low (0V) state. This momentary high-to-low change can be used to trigger switching on various contact closure controllable Extron switchers.

Wire the connector as shown here.

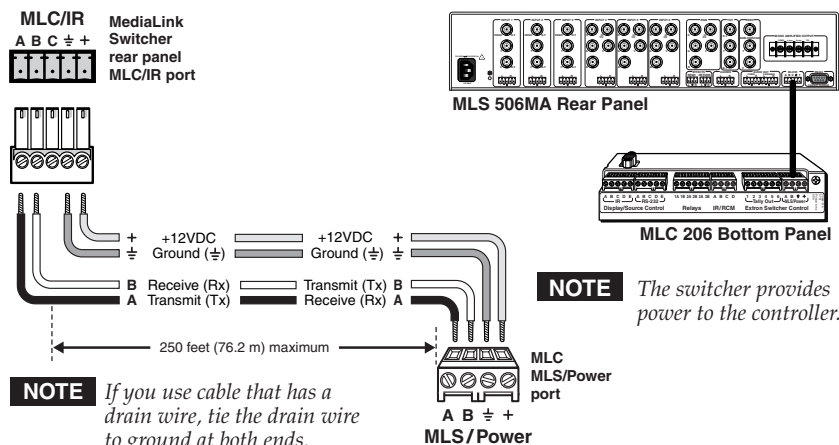


MLC 206 Contact Closure Control

- NOTE** You must connect the ground pin of the switcher's connector to a ground connection on the MLC.
- NOTE** Only Extron switchers can be slaved to the MLC via this tally output contact closure connector.

- ⑦ **MLS/Power connector** — Connect a cable between this 3.5 mm, 4-pole direct insertion captive screw connector and an optional Extron MLS switcher for RS-232 control of the switcher and to provide power from the switcher to the MLC. See the following diagram. With Extron Comm-Link cable, the switcher and controller can be up to 250 feet (76.2 m) apart.

- NOTE** The commands issued from this port are standard Extron *SIST* commands, and they follow the Extron switcher protocol (9600 baud rate, 8-bit, 1 stop bit, no parity). The commands sent via the MLS/Power connector are fixed and cannot be altered. See page 3-3 for additional details.

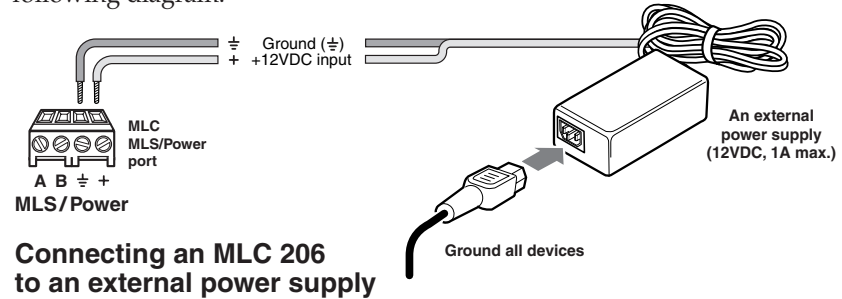


- NOTE** If you use cable that has a drain wire, tie the drain wire to ground at both ends.

- NOTE** The switcher provides power to the controller.

Connecting an MLC 206 to a MediaLink Switcher

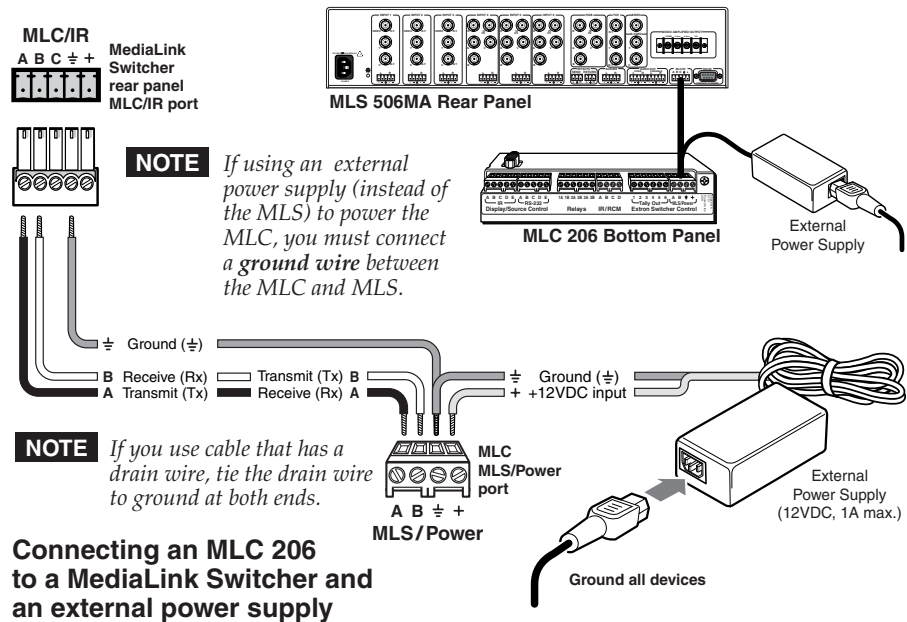
If you are not using an optional switcher, connect an external power supply (12VDC, 1 A maximum) to this port to power the MLC as shown in the following diagram.



Connecting an MLC 206 to an external power supply

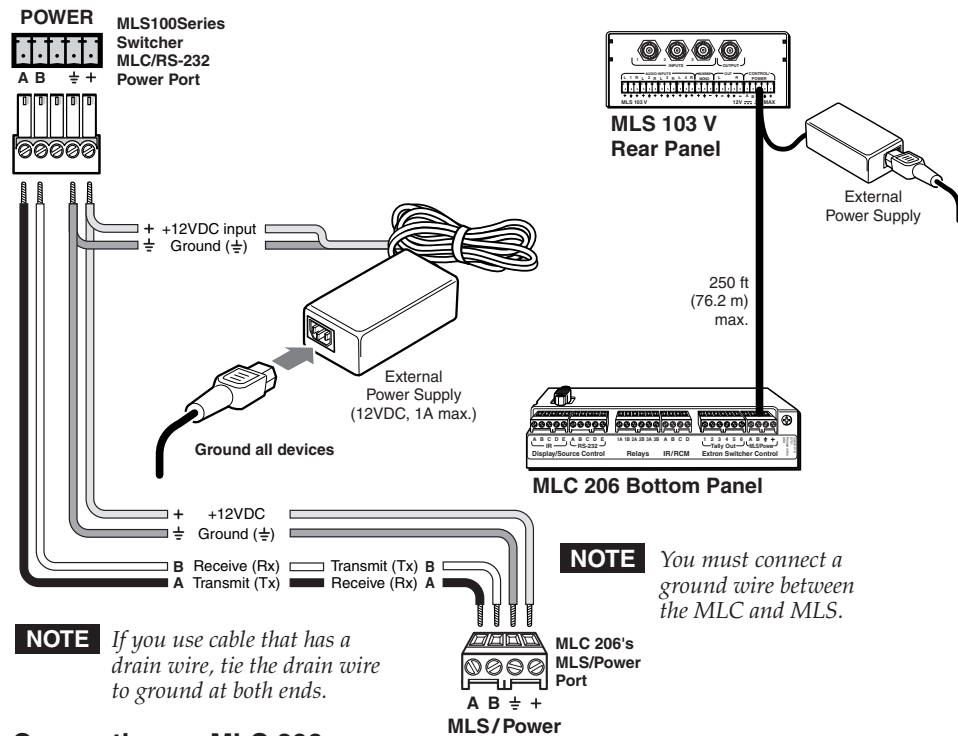
NOTE Check the power supply's polarity before connecting it to the MLC.

If you choose to power the MLC from a separate external power supply rather than from a MLS 306/506/506 MA/506 SA or MLS 100 Series switcher, you **must** connect a ground wire between the MLS and the MLC, as shown in the following diagrams.



Connecting an MLC 206 to a MediaLink Switcher and an external power supply

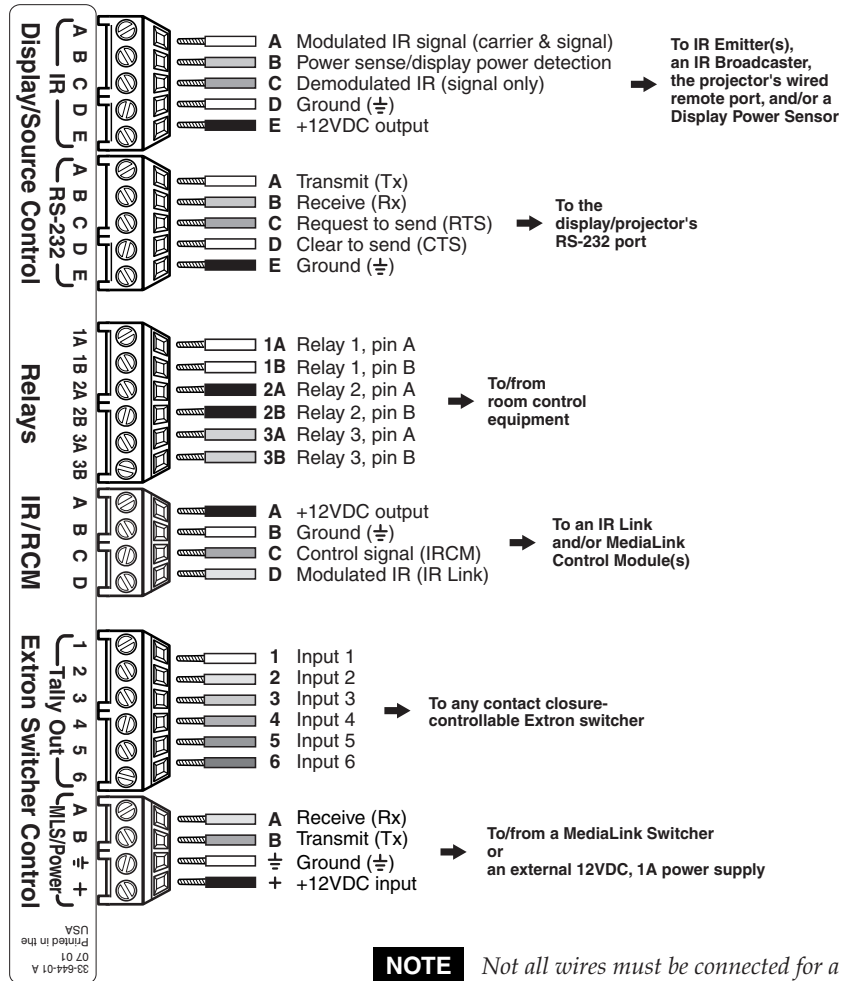
Installation, cont'd



Connecting an MLC 206 to a MediaLink VersaTools Switcher and an external power supply

Pinout guide

The illustration below summarizes the pin assignments of all of the MLC's bottom panel connectors that are covered in detail on pages 2-6 to 2-12.



NOTE *Not all wires must be connected for a given device or installation. Refer to the appropriate manual for details.*

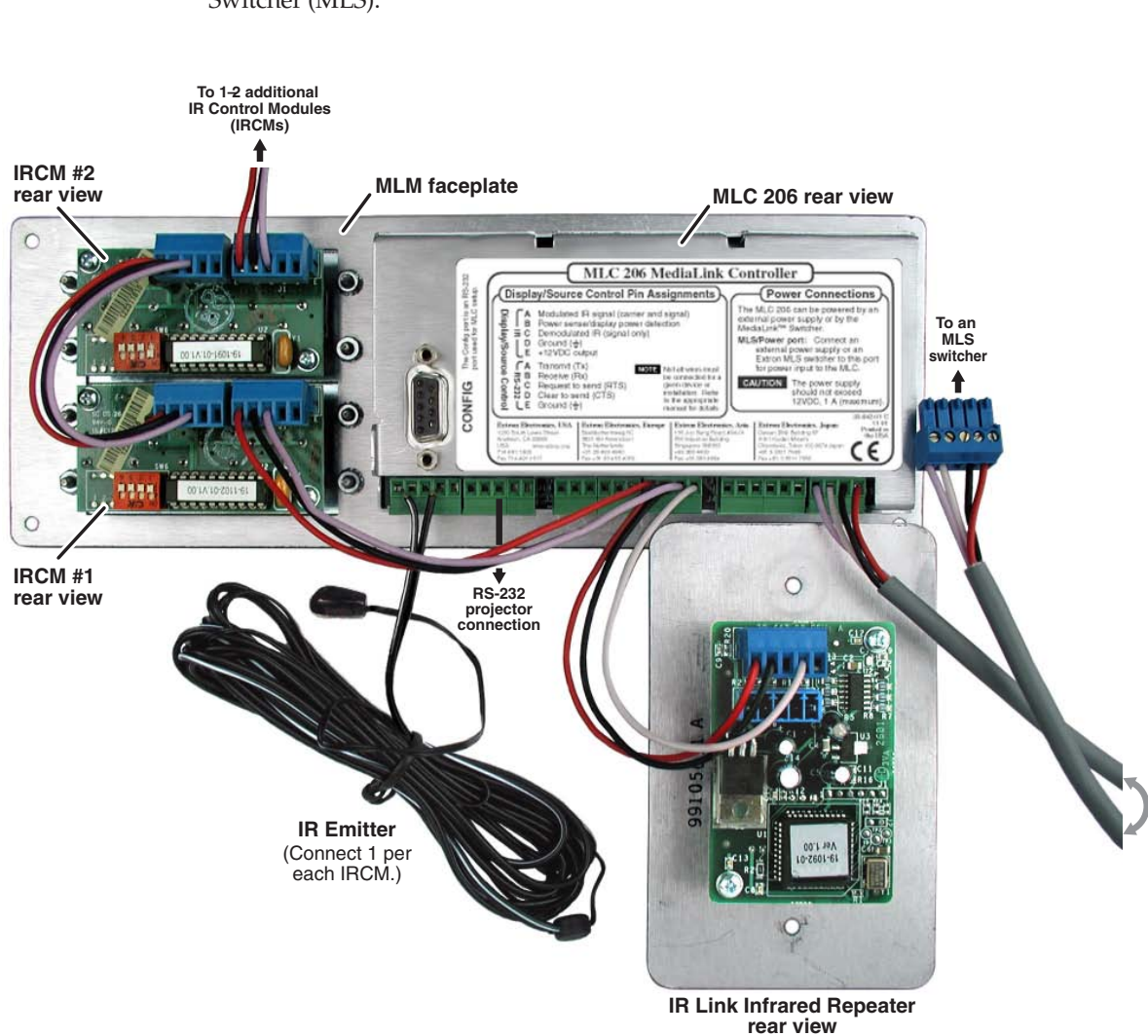
MediaLink Controller (MLC 206) bottom panel connector pinouts

Installation, cont'd

Application diagram

An example of one way to connect accessories to the controller is shown in the photo below. The Config port is not shown with an RS-232 cable attached because that connection is only required during setup.

This system includes an MLC mounted in an optional faceplate (MLM-LAAP) that holds two control modules (IRCMs, ACMs, and/or RCMs), and an additional control module is connected to the upper IRCM and mounted in another location. An IR Link infrared repeater shares the IR/RCM port with the control modules (a much longer cable than the one shown here would be used). IR Emitters are connected to the MLC for controlling a VCR, DVD player, tape player or other source device, and/or projector. An RS-232 connection to the projector could be made from the adjacent RS-232 Display/Source Control port. Note the wiring on both ends of the cable that connects the MLC's MLS/Power port to an MediaLink Switcher (MLS).



Mounting the MLC

Once the system has been cabled, configured (see chapter four), and tested, the controller can be installed in the wall, furniture, equipment rack, or Euro Channel.

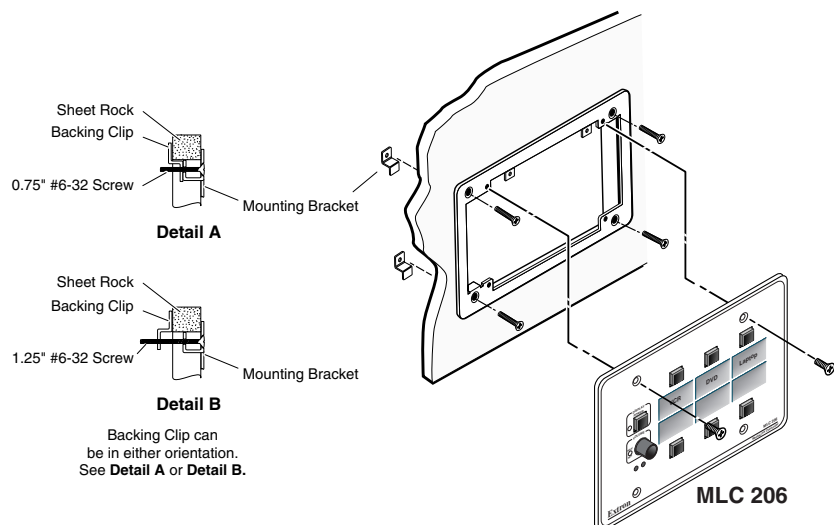
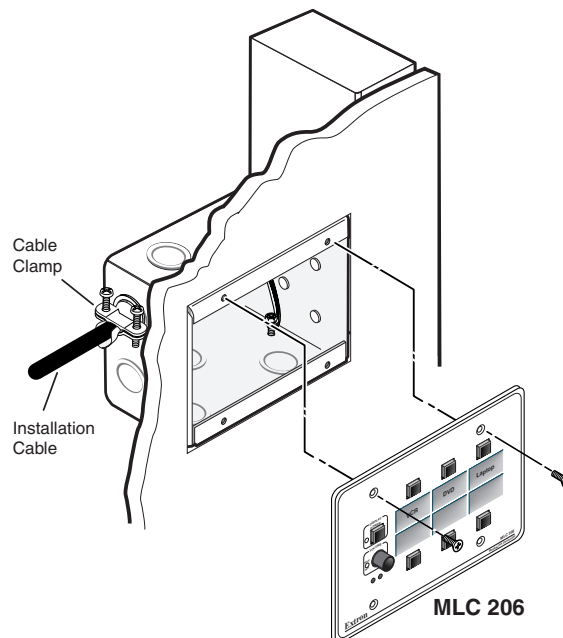
Mounting the MLC to an electrical box or mud ring

1. With power disconnected at the source, insert the MLC into the wall or furniture.
2. Mount the MLC to the wall box or mud ring mounting bracket with the provided machine screws (as shown in the following illustrations), or attach it directly to the furniture with wood or metal screws.

NOTE If the MLC (and any accessories such as control modules or an IR Link) is not mounted to a grounded metal wall box,

- Ground each faceplate directly to an earth ground. Or...
- Tie each faceplate to its circuit board and power supply via a ground pin on one of the connectors.

Do not tie a product's faceplate to both a separate earth ground and the circuit ground (via a connector pin). If you tie a product to two different ground sources, you may introduce ground loops or other grounding-related problems into the system.



Mounting the MLC to an electrical box or mud ring

Installation, cont'd

Mounting the MLC to a wall or furniture

1. Attach the optional lectern mounting faceplate to the MLC with machine screws, as described on page 2-4 in "Replacing faceplates and labels" in this chapter.
2. With power disconnected at the source, insert the MLC into the wall or furniture.
3. Fasten the MLC and faceplate directly to the furniture or wall using wood screws.

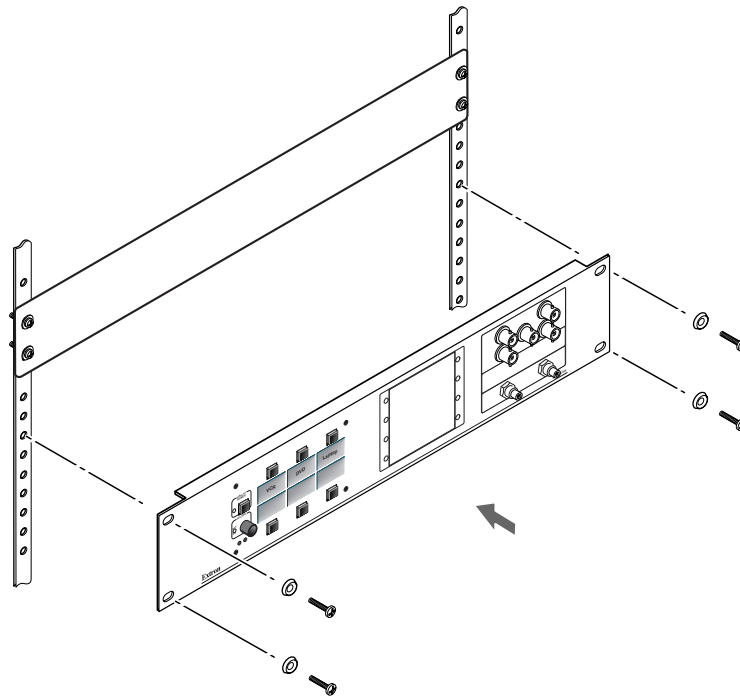
NOTE *If the MLC (and any accessories such as control modules or an IR Link) is not mounted to a grounded metal wall box,*

- Ground each faceplate directly to an earth ground. Or...
- Tie each faceplate to its circuit board and power supply via a ground pin on one of the connectors.

Do not tie a product's faceplate to both a separate earth ground and the circuit ground (via a connector pin). If you tie a product to two different ground sources, you may introduce ground loops or other grounding-related problems into the system.

Rack mounting the MLC

1. Attach the optional rack mounting faceplate to the MLC with machine screws, as described on page 2-4 in "Replacing faceplates and labels" in this chapter.
2. With power disconnected at the source, fasten the MLC and faceplate to the rack using the supplied machine screws as shown in the following illustration.

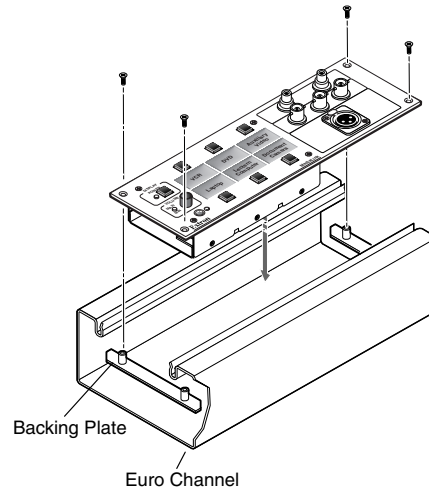


Rack mounting the MLC

Mounting the MLC in a Euro Channel

1. With power disconnected at the source, insert the MLC 206 EC or MLC 206 AAP EC into the Euro Channel. For wider types of Euro Channels, you may need to insert a spacer plate first.
2. Mount the controller to the Euro Channel by attaching the faceplate to the two backing plates using four #4-40 mounting screws. See the illustration below.

NOTE *Make sure that the EuroChannel is grounded to an earth ground before completing the installation.*



Mounting the MLC 206 EC or MLC 206 AAP EC to a Euro Channel

Installation, cont'd



MediaLink™ Controllers

3

Chapter Three

Operation

Projector Control

Front Panel Features and Operation

Optional Control Modules and MLA Remote

Operation

Projector Control

The MLC 206 can control a projector or other display device by using IR or RS-232 control. The MLC must be configured for projector control in one of the following ways before it will send commands to the projector:

- An IR or an RS-232 driver file can be downloaded from a disk or the Extron Web site into the MLC.
- RS-232 command strings can be entered directly from a host computer using the supplied Windows-based software.
- IR commands can be entered directly from an IR remote control into the MLC through IR learning. IR learning is convenient for installing new or updated commands into the MLC in the field.

See chapter four and the MediaLink Control Program software for details on setting up the MLC and for downloading, programming, or learning projector control commands.

Projector control memory

Each time a new projector driver is downloaded into the MLC, all previously downloaded drivers (IR or RS-232) and user-defined RS-232 commands will be replaced (overwritten or deleted) by the new driver. Similarly, entering a user-defined RS-232 command will cause the previously downloaded or user-defined command to be replaced.

Secondary mode and special projector functions

The MLC has additional memory (up to 32 bytes per input selection button) for storing commands for special projector functions such as zooming, focusing, displaying color bars, or muting sound. These commands must be stored and the MLC must be set up (see chapter four) to associate each command with a specific input selection button. See the next page for LED and button names/numbers and locations.

Follow these steps to execute the secondary mode commands:

1. Press input selection buttons three and four for three seconds to access the secondary mode. The Display Power LED blinks rapidly while the secondary mode is active.
2. While the secondary mode is active, press and release an input selection button to send out the command that has been associated with it. The button's label blinks each time an input selection button is pressed and a command is sent out.

NOTE *The previously selected input remains active and will not change/switch while the MLC is in the secondary mode.*

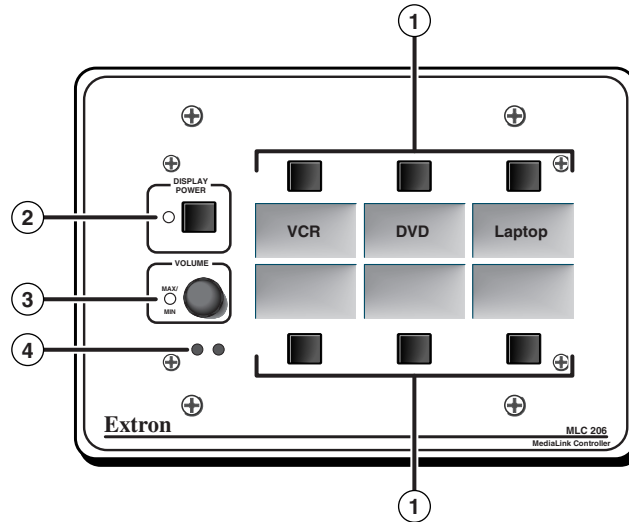
3. To exit secondary mode, either press input selection buttons three and four for three seconds and release them, or allow the MLC approximately ten seconds of inactivity to time out to the regular (primary) mode.

Front Panel Features and Operation

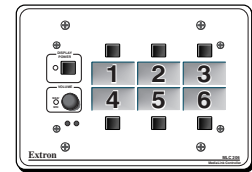
Each of the front panel buttons can have more than one function. A button may serve one purpose in regular use (in primary mode), but can have another function that is accessible only when the MLC is in secondary mode. See ① in the following picture.

NOTE *Many features must be set up in order to function. See chapter four, "Serial Communication", for information about the MediaLink Control Program, which you must use to set up many features of the MLC 206.*

The MLC 206 is shown in the following examples, but the features and operation are the same for all MLC models.



- ① **Input selection buttons and backlit labels** — From the upper left to lower right these buttons are numbered 1 through 6. See chapter 2 for instructions on how to replace the labels.



Basic operation — Press and release an input selection button to select the designated input on the projector or the optional Extron switcher. All labels are lit while the MLC receives power. The selected (active) input's label is lit more brightly than those of the nonselected inputs. If the display power is off, the label backlighting will turn off (go dark) after a period of inactivity (if no buttons are pressed for a while).

If the MLC is used without an optional switcher and the MLC has been set up for use with a projector, only the number of inputs that are available on the projector will be selectable on the MLC. If an optional Extron switcher is connected to the MLC, all six input selection buttons will be selectable. Which buttons are and aren't part of the switching rotation can be determined/set by the projector driver or via the Windows-based setup program. See pages 4-7 and 4-12 and the MediaLink Control Program's Help file for details.

NOTE *When an input selection button is part of the switching rotation, pushing that button causes the MLC to send out an SIS input change command via the MLS/Power connector in addition to sending projector control commands out the Display/Source Control IR or RS-232 ports.*

The standard Extron SIS commands sent via the MLS/Power connector are fixed and cannot be altered. The command for each input is shown at right.

Button	Command
Input 1	1!
Input 2	2!
Input 3	3!
Input 4	4!
Input 5	5!
Input 6	6!

Additional and secondary functions —

IR/RS-232 command execution — Each input selection button can also have IR commands or up to 32 bytes of RS-232 commands associated with it. A command can be executed along with an input switch by pressing the button while the MLC is in primary mode. A different command can be executed by

Operation, cont'd

pressing the button when the MLC is in the secondary mode or via the Windows-based software.

NOTE *The corresponding label flashes when a command associated with a button is executed.*

Relay triggering — A relay can be associated with a button. The relay can be triggered by pressing a button *only* when the MLC is in primary mode, or it can be triggered via the control software. See pages 2-8, 4-3, 4-5, 4-10, 4-12, 4-22, and the note on page 4-18 for details.

NOTE *If an input selection button is not part of the switching rotation (does not cause input switching), the corresponding label flashes when a momentary relay associated with a button is triggered, and it lights steadily while a latching relay associated with the button is active.*

Secondary mode selection — If buttons 3 and 4 are simultaneously pressed for three seconds, the MLC enters the **secondary mode**. In this mode, input switching is temporarily disabled, and the input selection buttons can be used to send various user-defined RS-232 or IR commands to the projector (or other equipment). Commands for special projector functions such as autosync, focus, and zoom can be assigned to an input button and executed when secondary mode is active.

While the secondary mode is active, the Display Power LED blinks about twice per second. If a button is pressed in secondary mode, the button's label flashes briefly. Relays cannot be triggered via the front panel when secondary mode is active, only via the software.

To exit secondary mode, press and hold buttons 3 and 4, or allow the MLC to time out to primary mode.

- ② **Display Power button and LED** — The Display Power button has two blocks of memory that can be programmed to store projector power-on and power-off commands.

Basic operation — You must program the commands (see chapter four) during MLC setup before this button will control the projector. To turn the projector's power on/off:

1. Press the Display Power button to turn the projector's power on. The MLC sends an RS-232 or IR power-on command to the projector, the Display Power LED blinks for the period set for power-up delay (refer to the Room & Misc. Options screen of the control software for details), and then the LED remains steadily lit.
2. Once the projector is on, press and hold the Display Power button for two seconds to turn the projector's power off. The MLC sends a power-off command to the projector, the LED blinks for the time set for power-down delay, then the LED turns off. During the power-down period, the MLC resends the power-off command.

NOTE *The two-second press and hold period for Display Power Off can be changed, via HyperTerminal only, to zero seconds by using a special command (22 * \boxed{x} #, where \boxed{x} = 0 for a two-second delay, or \boxed{x} = 1 for no delay). See page 4-7.*

The relays discussed in "Rear/bottom panel cable connections" in chapter two can be turned on/off when the Display Power button is pressed. Via the control software, each relay can also be associated with

either an input selection button or display power-up or display power-down. See chapter two for information on the relays, and see chapter four and the control software for details on changing settings for the relays.

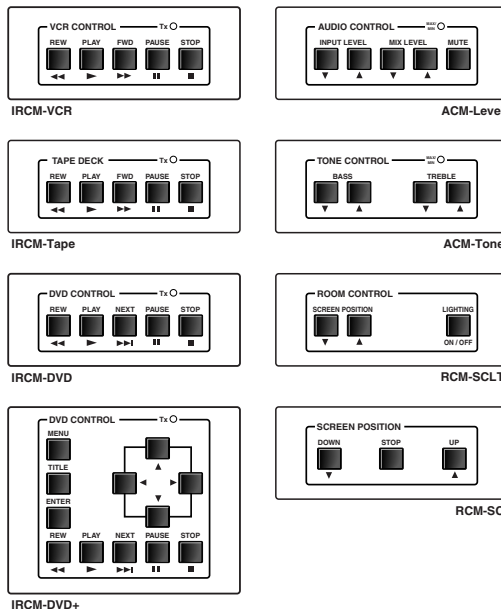
Additional and secondary functions — While the secondary mode is active, the Display Power LED blinks rapidly.

- ③ **Volume adjustment knob and LED** — Rotate this knob to adjust the audio volume. The LED lights when the volume has reached the minimum or maximum limit. The included control software lets you select whether this knob will control the projector's audio levels or the optional switcher's audio levels. If the knob controls the projector's audio levels, the software allows you to specify incremental adjustments or table-based adjustments. See the MediaLink Control Software Help file for details.
- ④ **IR signal pickup devices** — These sensors allow for IR control of the MLC and for IR learning. The IR remote control must be pointed directly at these devices for best results. One device is an IR receiver that receives signals from the MLA-Remote for controlling the MLC 206. The other is the IR learning device. The MLC can "learn" commands in order to control the projector or to control input devices such as a VCR or DVD players. IR learning of projector control codes is only necessary if there are no RS-232 codes available for that projector or if you need to customize the driver. The IR learning procedure is discussed in the control software and later in this manual.

Optional Control Modules and MLA-Remote

The MLC has an additional thirty memory blocks in which IR or other commands can be stored for control modules attached to the MLC. The MLC can "learn" IR commands directly from a VCR's, DVD's, tape deck's or other device's remote control. A learned command can be associated with each of the buttons on an optional infrared control module (such as the Extron IRCM-VCR, IRCM-DVD, IRCM-DVD+, IRCM-DV+, or IRCM-Tape) in order to allow limited control of source devices. ACM control modules provide limited remote control of adjustments to a slaved MediaLink Switcher.

NOTE *The control module must be connected to the MLC before you can perform IR learning for the module's buttons.*



A total of four control modules (maximum) can be installed with an MLC 206. Refer to the *Control Modules User's Manual* and the *Relay Control Modules User's Manual* for installation details. See page 4-4 of this manual for special instructions for the IRCM-DV+.

Optional IRCM, ACM, and RCM control modules

Operation, cont'd

The buttons on the optional MLA-Remote duplicate the MLC's front panel controls and also those of two Control Modules (IRCMs) for normal operation. The MLA-Remote can also be used to control a MediaLink Switcher (MLS). The controller, control module, or switcher responds to commands from the MLA-Remote as if the corresponding button or knob were pressed or turned on the controller or switcher.

From a distance of no more than 30 feet and within 40° of the axis, the MLA-Remote sends infrared (IR) signals to

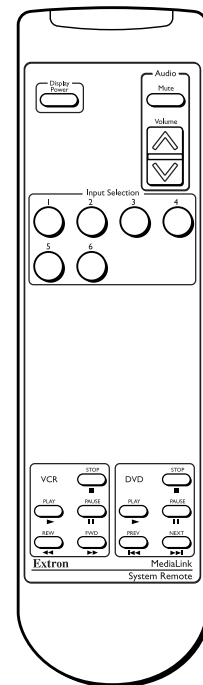
- a MediaLink Controller via the controller's front panel IR pickup device or the IR pickup device of an optional IR Link IR signal repeater.
- a MediaLink Switcher via a connected IR Link. The switcher can receive signals from the MLA-Remote only via an IR Link.

NOTE *Setup operations cannot be performed from the MLA-Remote.*

NOTE *The only control modules that can be controlled via the MLA-Remote are the IRCM-VCR and IRCM-DVD.*

The MLA-Remote's Display Power button and the VCR and DVD control buttons will not function until commands have been stored in the MLC's memory. The MLA-Remote's VCR buttons control the first (lowest address numbered) IRCM-VCR connected to the MLC. The DVD buttons control the first (lowest address numbered) IRCM-DVD connected to the MLC.

Commands are transmitted from the MLC's Display/Source Control RS-232 port (via hard wiring) and IR ports (via IR Emitters or optional IR Broadcaster) when the corresponding button is pressed on the MLA-Remote or on the controller's or control module's front panel. Refer to the *Control Modules User's Manual*.



**MLA-Remote
IR remote control**



MediaLink™ Controllers

4 Chapter Four

Serial Communication

RS-232 Programmer's Guide

Control Software for Windows

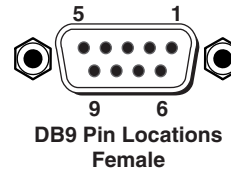
Serial Communication

The MLC can be remotely set up and controlled via a host computer or other device (such as a control system) attached to the rear panel Configuration port. The control device (host) can use either Extron's Simple Instruction Set (SIS) commands or the graphical control program for Windows.

The MLC uses a protocol of 9600 baud, 1 stop bit, no parity, and no flow control.

The rear panel RS-232 9-pin D connector has the following pin assignments:

Pin	RS-232 function	Description
1	–	No connection
2	Tx	Transmit data
3	Rx	Receive data
4	–	No connection
5	Gnd	Signal ground
6, 7	–	No connection
8, 9	–	No connection



RS-232 Programmer's Guide

Host-to-MLC 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 MLC determines that a command is valid, it executes the command and sends a response to the host device. All responses from the controller 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.

MLC-initiated messages

When a local event such as a front panel (or Extron switcher front panel) selection or adjustment takes place, the MLC responds by sending a message to the host. No response is required from the host. The MLC-initiated messages are listed here (underlined).

(C) 2001, Extron Electronics, MediaLink Controller, Vx.xx ↵

The MLC sends the copyright message when it first powers on. Vx.xx is the firmware version number.

C hn[x] ↵ (where [x] is the input number)

The MLC sends this response when an input is switched.

B tn[x] ↵ (where [x] is the button number)

The MLC sends this response when a button is pressed (but the button is not part of the switching rotation). If [x] is 8 or greater, the button is part of an optional control module (IRCM, ACM, RCM, or CM).

C md[x] ↵ (where [x] is the button number)

The MLC sends this response if a button is pressed while the MLC is in secondary mode.

Error responses

When the MLC receives a valid SIS command, it executes the command and sends a response to the host device. If the MLC 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:

E01 – Invalid input channel number (the number is too large)

E10 – Invalid command

E13 – Invalid value (the number is out of range/too large)

E16 – Unit is busy
 E23 – Checksum error.

Using the command/response tables

The command/response tables below and on the following pages list valid command ASCII codes, the MLC’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.

ASCII to HEX Conversion Table												Esc 1B	CR 0D	LF 0A			
20	!	21	“	22	#	23	\$	24	%	25	&	26	‘	27			
(28) 29	* 2A	+ 2B	, 2C	- 2D	. 2E	/ 2F										
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 ASCII to HEX conversion table at left is for use with the command/response tables.

ASCII to Hex conversion table

Symbol definitions

- ↵ = CR/LF (carriage return/line feed) (hex 0D 0A)
- = Space
- [Esc] = Escape key
- [X1] = Specific input number (0 through 6 maximum)
 - 0 = no connection
 - 1 = input 1, 2 = input 2, and so forth
- [X2] = Display power status (0 through 3)
 - 0 = display power is off
 - 1 = display power is on
 - 2 = display is powering down
 - 3 = display is powering up
- [X3] = Volume adjustment range (0 through 100%)
- [X4] = Relay number (1 through 3)
- [X5] = Relay status
 - 0 = off
 - 1 = on
- [X6] = Controller firmware version (listed to two decimal places e.g.: x.xx)
- [X7] = On/off status
 - 0 = off/disable
 - 1 = on/enable

Command/response table for SIS commands

Command	ASCII Command (host to MLC)	Response (MLC to host)	Additional description
Input/button selection			
Select an input/button	[X1] !	Chn [X1] ↵ Btn [X1] ↵	Select input [X1]. Select button [X1] (if button isn't part of the switching rotation).
<i>Example:</i>	6!	Chn6 ↵	<i>Example:</i> select input 6.
Display (projector) power			
Turn display power on	1P	Pwr [X2] ↵	On (discrete).
Turn display power off	0P	Pwr [X2] ↵	Off (discrete).
View display power status	P	Pwr [X2] ↵	Show the display power status.
<i>Example:</i>	P	Pwr2 ↵	
Relay functions			
Turn relay off	[X4]*0O	Rly [X4]*0 ↵	Toggle relay number [X4] off.
<i>Example:</i>	3*0O	Rly30 ↵	Set relay 3 to off.
Turn relay on	[X4]*1O	Rly [X4]*1 ↵	Toggle relay number [X4] on.
View relay status	[X4] O	Rly [X4]*[X5] ↵	Show the status of relay [X4].
<i>Example:</i>	2O	Rly2*1 ↵	Show the status of relay 2.

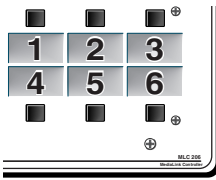
The syntax for setting a special function is __ * [X?] # where __ is the function number and [X?] is the value. To view a function's setting, use __#, where __ is the function number. In the following table the values of the [X?] variable are different for each command/function. These values are given in the rightmost column.

Command/response table for special function SIS commands



Command	ASCII Command (host to MLC)	Response (MLCr to host)	[X?] values and additional descriptions
Delay times			
Power on delay	1 * [X?] #	WarmUp* [X?] ↵	0 = 0 seconds, 1 = 2 seconds, 2 = 4 seconds, ... in 2 second steps up to 150 = 300 seconds (5 minutes).
<i>Example:</i>	1*8#	WarmUp*08 ↵	<i>Example:</i> set a 16 second power on delay.
<i>Example:</i>	1#	WarmUp*023 ↵	<i>Example:</i> view the power on delay setting.
Power off delay	2 * [X?] #	CoolDown* [X?] ↵	0 = 0 seconds, 1 = 2 seconds, 2 = 4 seconds,... in 2 second steps up to 150 = 300 seconds.
<i>Example:</i>	2*23#	CoolDown*023 ↵	<i>Example:</i> set a 46 second power off delay.
Relays			
Relay 1 mode/timing	4 * [X?] #	Rly1Tm* [X?] ↵	0 = toggle mode (press on/off), 1 = momentary, 1 second long, 2 = momentary, 2 seconds long, 3 = momentary, 3 seconds long.
<i>Example:</i>	4*3#	Rly1Tm*3 ↵	<i>Example:</i> momentary, 3 sec. long.
Relay 2 mode/timing	5 * [X?] #	Rly2Tm* [X?] ↵	0 = toggle mode (press on/off), 1 = momentary, 1 second long, 2 = momentary, 2 seconds long, 3 = momentary, 3 seconds long.
<i>Example:</i>	5*0#	Rly2Tm*0 ↵	<i>Example:</i> set relay to toggle mode.
Relay 3 mode/timing	6 * [X?] #	Rly3Tm* [X?] ↵	0 = toggle mode (press on/off), 1 = momentary, 1 second long, 2 = momentary, 2 seconds long, 3 = momentary, 3 seconds long.
Associate a button with relay 1	7 * [X?] #	Rly1Mode* [X?] ↵	Cause a button to control a relay. For a relay set to be normally closed: 0 = power-on. 1 = power-off. 2-7 = MLC input selection buttons 1-6. 8-27 = remote control module 1 buttons. 28-47 = remote control module 2 buttons. 48-67 = remote control module 3 buttons. 68-87 = remote control module 4 buttons. For a relay set to be normally open, add 128 to the above numbers. 128 = power-on (relay normally open). ... 196-215 = remote control module 4 buttons (relay normally open). 127 or 255 = not assigned.
<i>Example:</i>	7*1#	Rly1Mode*1 ↵	<i>Example:</i> Relay 1 will toggle when the Display Power button is pressed for power-off .
Associate a button with relay 2	8 * [X?] #	Rly2Mode* [X?] ↵	See above.
Associate a button with relay 3	9 * [X?] #	Rly3Mode* [X?] ↵	See above.

Serial Communication, cont'd

Command/response table for special function SIS commands, continued

Command	ASCII Command (host to MLC)	Response (MLC to host)	[X?] values and additional descriptions
Audio settings			
Audio mute on/off w/display power	10 * [X?] #	AudMute* [X?] ↵	0 = no (audio doesn't mute when display power is off or unmute when display power is on). 1 = yes (default) (audio mutes when display power is off, audio unmutes when display power is on).
<i>Example:</i>	10*1#	AudMute*1 ↵	<i>Example:</i> set audio to mute when display powers off.
Limit audio level on power-up	11 * [X?] #	VolLimit* [X?] ↵	0 = audio off, 1 = 1% of max. level, 2 = 2% of max possible level, ... up to 100. 50 = default value. 100 = no limit on audio level. If this feature is enabled, the maximum initial power-up volume level will not exceed the level specified by this command.
<i>Example:</i>	11*28#	VolLimit*028 ↵	<i>Example:</i> limit power-up volume to 28% of maximum volume.
Set volume mode	21 * [X?] #	VolMode* [X?] ↵	Select the volume mode: 0 = control projector volume. 1 = control switcher audio volume.
IR-related settings			
Send IR/RS-232 commands associated with the currently selected input (reselect the current input channel) upon display power-up	12 * [X?] #	IRM0* [X?] ↵	0 = no (default). 1 = yes.
Disable IR commands while the display's power is off	13 * [X?] #	IRM1* [X?] ↵	0 = no. 1 = yes (default).
MLC input selection button associations (virtual mapping) for an IRCM-DV+			
<p>By design an IRCM-DV+ can be assigned paired module addresses (by DIP switch) of either 1&2 or 3&4 <i>only</i>. It cannot be assigned to addresses 2&3 or 1&4. The odd-numbered module address (1 or 3) is reserved for DVD control, the even-numbered module address (2 or 4) is for VCR control. The address DIP switches must be set in order for the MLC to recognize and reserve memory space for the module. Refer to the <i>Control Modules User's Manual</i>.</p>			
<p>To use an optional IRCM-DV+ with an MLC, you'll need to associate the DVD portion of this module with an MLC input selection button, and associate the VCR portion with a different MLC input selection button. The appropriate associated MLC button must be selected (pressed) in order to activate and use the VCR portion or the DVD portion. You cannot activate both parts (VCR and DVD) at the same time. If you do not associate (map) the IRCM-DV+'s addresses (1&2 or 3&4) with MLC buttons, you cannot activate and use either the DVD or the VCR part of the IRCM-DV+.</p>			
			
<p>NOTE You cannot assign both the DVD and VCR portions to the same MLC input selection button. If two IRCM-DV+ modules are connected to the MLC, each addresses (1, 2, 3, 4) should be assigned to a different MLC button.</p>			
<p>Here's how to determine the value of [X?] for the following commands:</p>			
<div style="display: flex; align-items: center; justify-content: center;"> <div style="text-align: center;"> $(A \times 16) + (B) = [X?]$ <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 5px; width: 40px; height: 20px; margin: 0 auto;">A</div> <p style="font-size: 8px; margin: 0;">Button to associate the VCR half (even address) with</p> </div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 5px; width: 40px; height: 20px; margin: 0 auto;">B</div> <p style="font-size: 8px; margin: 0;">Button to associate the DVD half (odd address) with</p> </div> </div> </div> <div style="margin-left: 20px;"> <p style="font-size: 8px;">[X?] will be a decimal number from 000 to 101.</p> </div> </div>			
(continued)			

Command/response table for special function SIS commands, continued

Command	ASCII Command (host to MLC)	Response (MLC to host)	$\boxed{X?}$ values and additional descriptions
IRCM-DV+ address 2, address 1 button association			
Associate MLC buttons w/IRCM-DV+ address 2	$25 * \boxed{X?} \#$	DVA_VMap* $\boxed{X?}$ ↵	Associate specific MLC buttons with the VCR and DVD halves of the IRCM-DV+ which has DIP switch-based addresses of 1 and 2.
Example:	$25 * 52 \#$	DVA_VMap*052 ↵	Associate MLC button 4 with IRCM-DV+ address 1 (DVD functions) and MLC button 3 with IRCM-DV+ address 2 (VCR functions). See the illustration.
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\boxed{X?} = (3 \times 16) + (4) = 52$  Button to associate the VCR half (even address, 2 or 4) with Button to associate the DVD half (odd address, 1 or 3) with </div> <div style="text-align: center;">  The VCR half of the IRCM-DV+ will be associated with button 3. The DVD half of the IRCM-DV+ will be associated with button 4. </div> </div>			
IRCM-DV+ address 4, address 3 association			
Associate MLC buttons w/IRCM-DV+ address 4	$26 * \boxed{X?} \#$	DVB_VMap* $\boxed{X?}$ ↵	Associate MLC buttons with the VCR & DVD parts of an IRCM-DV+ which has DIP switch-set addresses of 3 and 4.
Miscellaneous settings			
Automatic shut-off (Issue a display power-off command after a specific period of inactivity.)	$15 * \boxed{X?} \#$	AutoOff* $\boxed{X?}$ ↵	0 = disabled (use manual shutoff) (default), 1 = 15 minute shutoff delay, 2 = 30 minute delay, ... in 15 minute steps up to 32 = 480 minutes (8 hours).
Automatic on (Send a display power-on command when any MLC input selection button is pressed.)	$27 * \boxed{X?} \#$	AutoOn* $\boxed{X?}$ ↵	0 = off: a power-on command is not sent when an MLC input selection button is pressed. 1 = on: pressing an MLC input selection button causes a power-on command to be sent.
Set switch exclusion Each of the MLC's six input selection buttons can be disabled for switching between inputs. If the MLC does not have a switcher slaved to it, and the projector has only three inputs, for example, you may wish to exclude from the switching rotation the excess input selection buttons (buttons 4-6). Each excluded button can still have an RS-232 or IR command or a relay associated with it, but pressing an excluded button will not cause any input switching to occur.	$20 * \boxed{X?} \#$	SwtMode* $\boxed{X?}$ ↵	Set the (6 bit, binary) address (0-63) of the MLC's input selection buttons that will not be used for input switching. <i>Examples:</i> 0 = all six buttons are included in the switching rotation. 1 = exclude input selection button 1 (upper left). 32 = exclude input selection button 6 (lower right). 56 = exclude buttons 4-6. 63 = no buttons are included for switching.
Set power-down button hold to off The Display Power Off button's two-second press and hold period can be changed, via HyperTerminal only, to zero seconds.	$22 * \boxed{X?} \#$	PwrOffDly* $\boxed{X?}$ ↵	0 = the MLC requires a 2-second delay (Display Power button hold period) to start power-off sequences (default). 1 = the MLC needs no delay (the button hold period is 0).

Serial Communication, cont'd

Command/response table for advanced instructions (for the Windows-based control program)

Data downloads/uploads are initiated by sending a series of hex commands to the host RS-232 port of the MLC. The Windows-based control program uses these commands mainly to load and save driver data and system configuration settings.

Command	Hex. command (host to MLC)	Response (MLC to host)	Additional description
Send/receive data to/from page 0 memory			
Send	80 A0 [16k bytes of data]	Dnl0 ↵	The host downloads 16k bytes of binary data to page 0 of the MLC's memory.
Receive	80 A1		The MLC sends 16k bytes of binary data to the host.
Send/receive data to/from page 1 memory			
Send	80 A2 [16k bytes of data]	Dnl1 ↵	The host downloads 16k bytes of binary data to page 1 of the MLC's memory.
Receive	80 A3		The MLC sends 16k bytes of binary data to the host.
Send/receive a segment (256 bytes) of data (a segment relating to a single button)			
Send	80 A6 [??] [256 bytes of data]	Seg0 ↵	The host sends 256 bytes of binary data to the MLC.
Receive	80 A7 [??]		The MLC sends 256 bytes of binary data to the host.
Initiate or abort IR learning			
Learn ready	80 B0 [??]	LrnRdy ↵	Initiate IR learning.
		LrnTimOut ↵	Timeout during IR learning.
		LrnRetry ↵	Retry IR learning. (Aim remote control at MLC, press button again.)
		LrnFail ↵	IR learning has failed.
		LrnOK ↵	IR learning has succeeded.
Abort learning	80 B1	Lrn Abort ↵	Abort IR learning.
Set pass-through/normal mode			
Set to pass-through mode	80 C0	Hst1 ↵	Set the MLC to RS-232 pass-through mode. RS-232 commands will go directly to a connected Extron MLS switcher for direct control of switcher settings.
Set to normal mode	80 C1	Hst0 ↵	Set/reset the MLC to normal mode. RS-232 commands are processed by the MLC.
Activate a memory block (segment)/emulate a button press			
Activate a block	80 D0 [??]	IRsnd*[??d] ↵	Activate/trigger a memory block. (Send the command stored at that address).
Emulate a button press	80 D1 [??]	Btn[??d] ↵	Simulate pressing a button. (Send the command and/or perform the function [relay triggering] stored in the block.)

NOTE [??] indicates the block number in hex notation where [??] can be 0 to 7F (hex) (0 to 127 decimal). [??d] indicates the block number in ASCII numeric notation.

NOTE The responses shown are ASCII.

Control Software for Windows®

The included Extron MediaLink™ Control Program for Windows offers another way to control the MLC via RS-232 connection in addition to the Simple Instruction Set™ commands. The control program's graphical interface includes the same functions as those on the switcher's front panel and some additional features that are only available through the Windows-based software.

The control software must be used in order to download projector driver files into the MLC controller.

The control software is compatible with Windows 95/98, Windows NT, and Windows 2000. Extron's MediaLink Control Program is included with the MLC, and updates can be downloaded from the Extron Web site (<http://www.extron.com>).

Installing the software

The control program is contained on a set of 3.5-inch diskettes, and it requires approximately 2 MB (megabytes) of hard disk space.


To install the software on the hard drive:

1. Run SETUP.EXE from the floppy disk.
2. Follow the instructions that appear on the screen.

By default the installation creates a C:\MediaLnk directory, and it places two icons (MediaLnk Control Pgm and MediaLnk Help) into a group or folder named "Extron Electronics".

Using the control program

Many items found in the MediaLink Control Program are also accessible via front panel controls and the LCD menus described in chapters two and three. Refer to those chapters for details on features and settings. The MediaLink Help Program provides information on settings and on how to use the control program itself. Some features, including the miscellaneous options, are only available via this control program. These features are described in the sections of this chapter that correspond to the parts of the control program where the features are found.

1. To run the control program, double-click on the MediaLnk Control Pgm icon  in the Extron Electronics group or folder. The Comm menu appears on the screen.

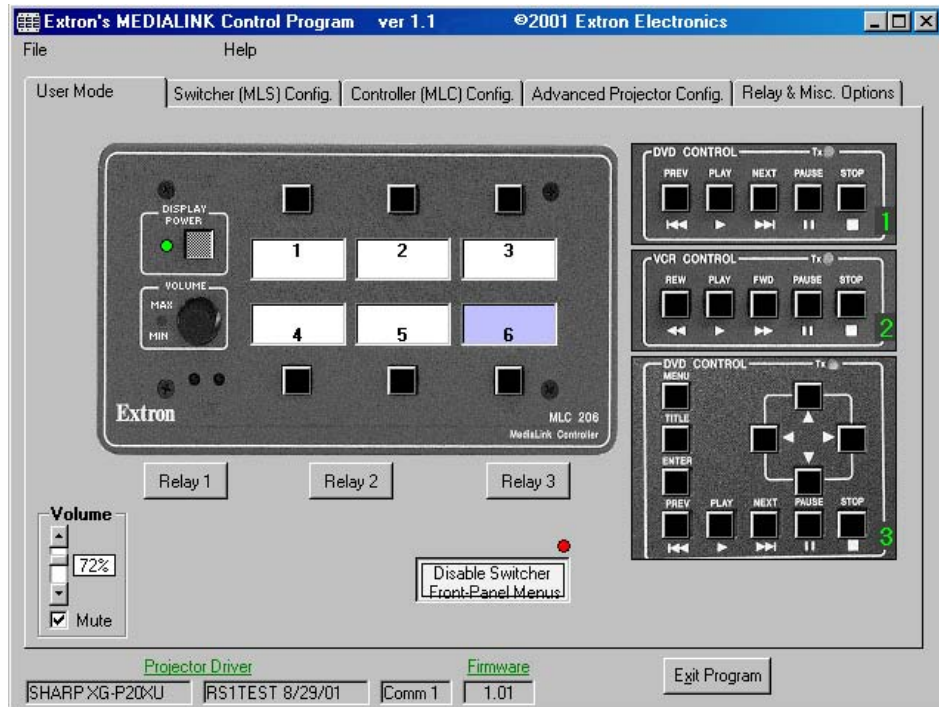
MediaLnk.exe

2. Click on the comm port that is connected to the MLC's RS-232 port. The Extron MediaLink Control Program windows appear. The projector driver, port, and firmware information are displayed at the bottom of the screen. There are several views available: the *User Mode* screen, the *Switcher (MLS) Config.* screen, the *Controller (MLC) Config.* screen, the *Advanced Projector Config.* screen, and the *Relay & Misc. Options* screen.

Serial Communication, cont'd

User Mode

The *User Mode* screen, shown below, includes the most frequently used controls: it emulates the MLC 206 front panel for primary mode functions (input selection, projector power control, volume control, relay toggling), and it emulates the MediaLink Control Modules. See chapter two of this manual and refer to the *MediaLink™ Control Modules User's Manual* for details on basic operation.



When an MLC is connected to the host computer, **projector driver and MLC firmware information** is available at the bottom of every screen within the control program. The projector driver name and version appear in the two spaces on the left, and the third space shows which port is used for the host-to-MLC connection. The fourth space indicates the MLC's firmware version.



Special features

Relay buttons — By clicking on one of the Relay buttons you can trigger the corresponding relay (1, 2, or 3) independently from selecting an input or toggling another button.

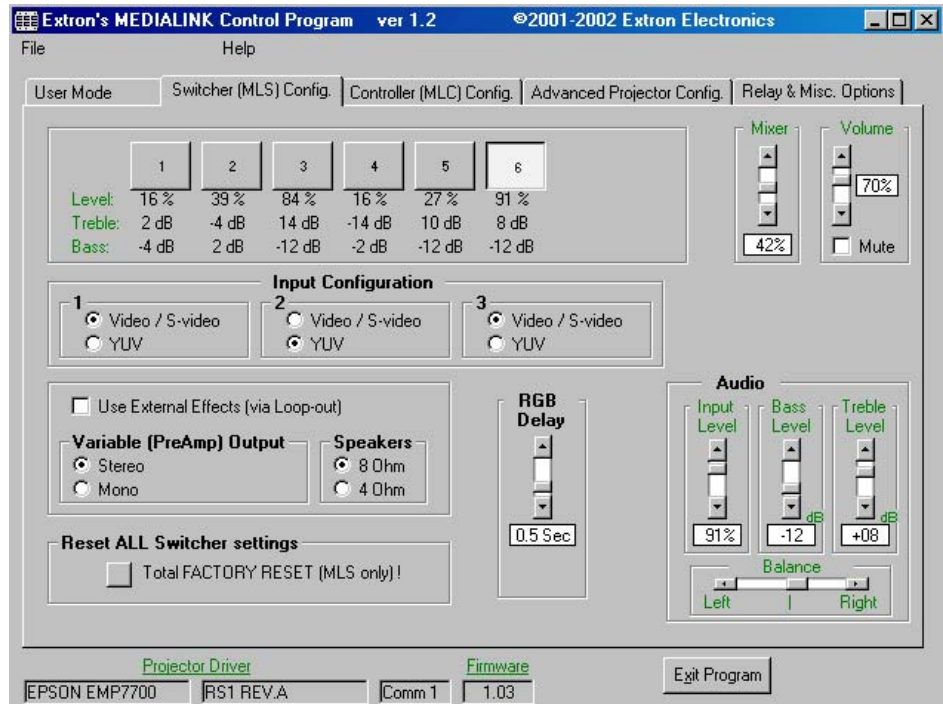
NOTE *Clicking on a Relay button triggers a latching on or off relay response regardless of how the relays are configured (latching or momentary) in the Relay & Misc. Options screen.*

Volume Mute — Check this box to activate the audio mute (1Z, 0Z) command.

Disable Switcher Front Panel Menus — This feature toggles the executive mode on or off to prevent or allow configuration (menu-based) changes via the front panel of an optional MediaLink Switcher.

Switcher (MLS) Config

The *Switcher (MLS) Config* screen, shown below, only becomes available if an optional MediaLink Switcher is connected to the MLC. It allows you to make switcher-specific adjustments without having to use the switcher's front panel



controls.

In this part of the program you can:

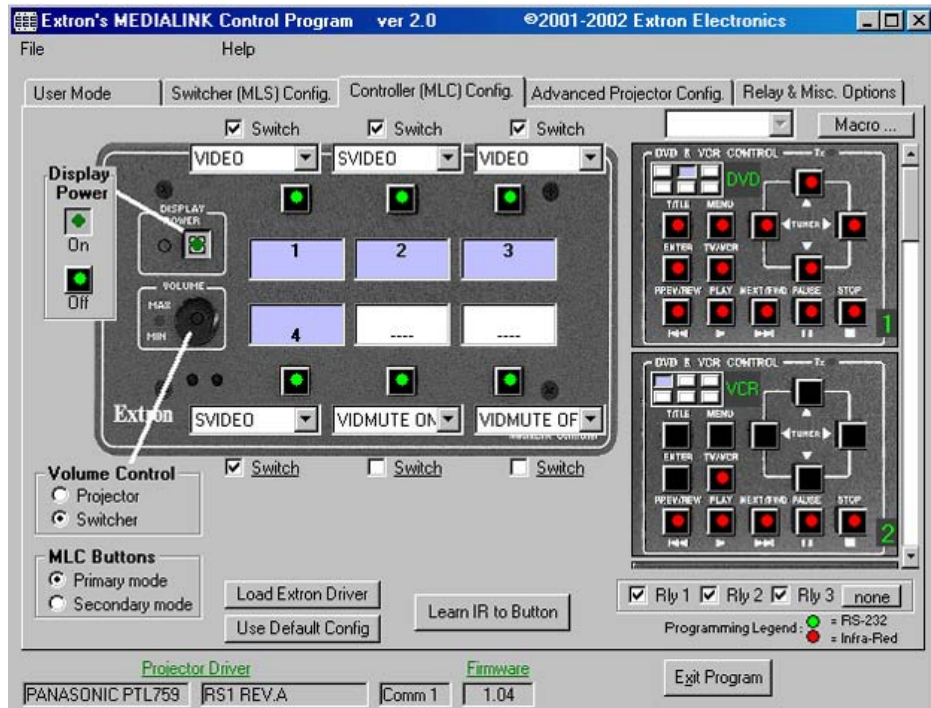
- Set per-input audio adjustments (level, bass, treble).
- Set overall volume. (Selecting Mute selects audio input 0.)
- Set the left-right audio balance.
- Set the mixer volume (MLS 506MA & MLS 506SA only).
- Choose between stereo and mono output for the variable preamp output.
- Tell the switcher whether a 4 ohm or an 8 ohm (the total resistance of the connected speakers) load is connected to the amplified output.
- Set the video format (composite video/S-video, or component video) for inputs 1 through 3 (MLS 506MA & MLS 506SA only).
- Set the RGB delay period (for Triple-Action Switching).
- Reset the switcher to factory default settings. This resets all switcher settings and options.

NOTE *Not all of the features shown above will appear for every model of MLS switcher.*

Serial Communication, cont'd

Controller (MLC) Config

The *Controller (MLC) Config* screen, shown below, is the most important part of the MediaLink Control Program. This is where you configure the controller and the control modules, and initiate IR learning.



A **green** dot in the middle of a button indicates that RS-232 codes have been associated with that button. A **red** dot indicates that IR codes are associated with/learned for that button. If the button is grey or black, there is no code stored in that button's memory slot.

NOTE We recommend using RS-232 for communicating with a display device.

The check boxes above/below the input selection button menus indicate whether the button is part of the **switching rotation** (checked, pressing the button causes that input channel to be selected) or not (unchecked, pressing the button does not cause an input switch). A button's Switch box should be unchecked if that button will be used for something other than selecting an input – issuing special function commands such as auto image or zoom, for example.

To see if a **relay** is associated with a button, select the button, and look at the relay area in the lower right of the screen: the box for a given relay will be checked if it is associated with that button. Each relay can only be associated with one input or display button at a time, though two or three relays can be associated with the same button. Relays cannot be tied to buttons in secondary mode.

Load Extron Driver

This option lets you download a control file (library) of Extron-created projector commands that are specific to a particular projector. Pre-configured control files (drivers) should be used whenever possible. If no driver is available for the display you want to control, it is possible to create your own via IR learning.

Use Default Config

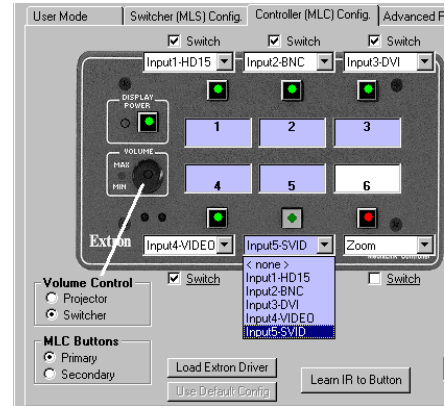
This feature lets you select and use the MLC default configuration for that projector. See the MediaLink Help program for details.

Load Extron Driver

Use Default Config

Primary and secondary modes

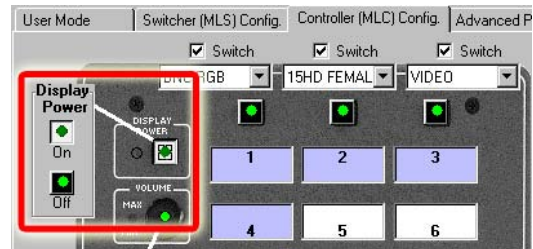
The MLC Buttons area in the lower left of this screen lets you select between primary and secondary modes. A button can have one code stored in its memory for primary mode, and another code stored for secondary mode. In each mode the MLC's buttons can be given an on-screen label: select an option from the pull-down menu above/below each button, as shown at right. If desired, you can change the label name during IR Learning or in the Advanced Projector Config screen. In normal use (primary mode), the MLC will issue commands from its primary memory blocks. Secondary mode is typically reserved for special commands such as auto adjust and zoom.



Display Power on/off

If you select Display Power, a dialog box appears in which you can select Power On or Power Off so that the corresponding IR commands can be "learned" from the projector's remote control.

NOTE *If the projector's remote control has just one button for on/off toggling, you must "learn" that same command to each button (Display Power On, Display Power Off).*



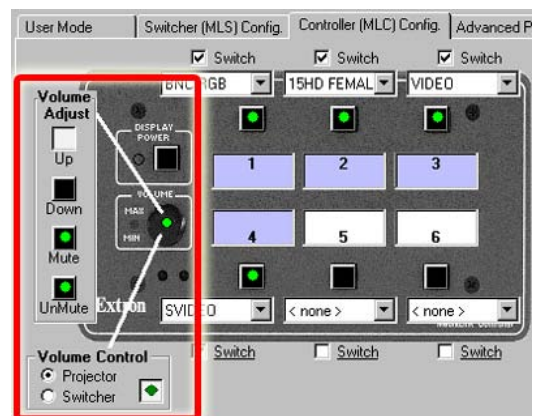
Volume control settings

The MLC can control the audio volume adjustment of either an optional MediaLink Switcher (MLS) or the projector.

Select Projector if you plan to use the projector/plasma display's speakers or if you plan to use the projector/plasma display as a preamp. Select Switcher if you plan to use an external switcher as an audio preamp or amplifier.

If you select Projector, the Volume Adjust dialog box appears, in which you can select Up or Down or Mute or Unmute so that the corresponding IR commands can be "learned" from the projector's remote control for controlling these functions.

If you select Switcher, the MLC will automatically issue the necessary volume up/down commands via the MLS/Power port.



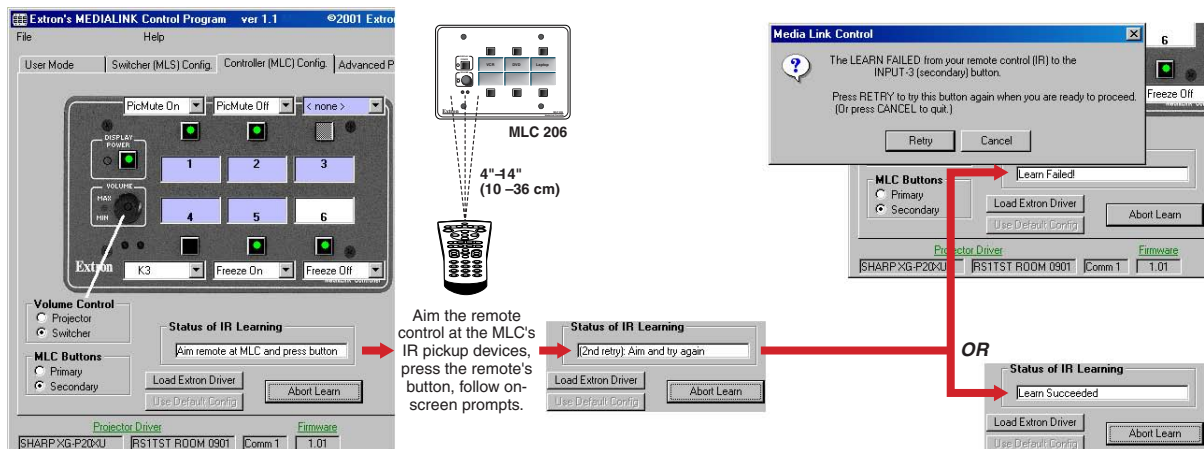
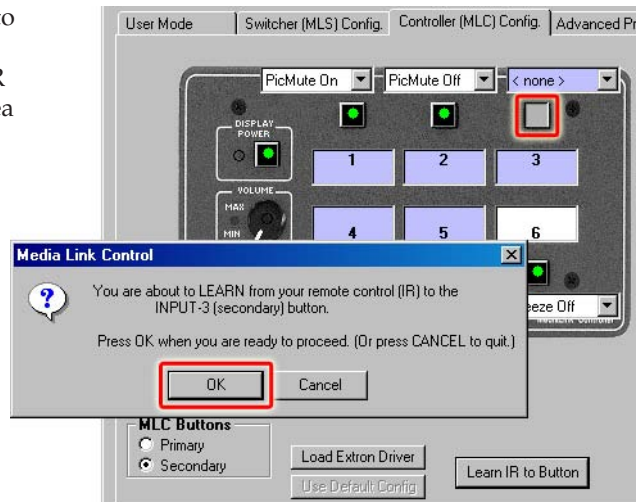
Serial Communication, cont'd

IR learning

The MLC can “learn” commands in order to control the projector or to control devices such as VCRs, audio tape players, or DVD players. For the MLC 206, IR learning is only necessary if there are no RS-232 codes available for that projector or if you need to customize the driver. For the infrared control modules, IR learning is essential for setting up the buttons so you can control the VCR, DVD player or other device.

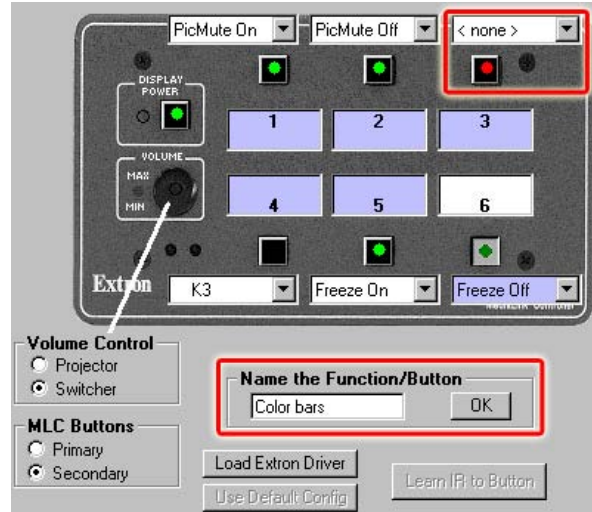
To initiate IR learning,

1. Attach cables between the MLC 206 and any optional IR control modules, and connect an RS-232 cable between the MLC’s config port and the host computer. Refer to the *Control Modules User’s Manual* and other accessories’ manuals for details.
2. If you haven’t already done so, connect the MLC 206 to a 12VDC power supply, turn on the computer, start the MediaLink Control Program, and select the Controller (MLC) Config screen.
3. Select the button (an MLC button, or a button on an optional control module) and mode (MLC primary/secondary) for which you want the MLC to learn IR codes.
4. Click on the button labeled “Learn IR to Button”. As shown below, a dialog box appears that indicates the button to which IR codes will be learned, and to allow you to OK or cancel the IR learning process.
5. When you are ready to start, click on the OK button. A Status of IR Learning message area appears beneath the picture of the MLC.
6. Follow the on-screen directions. A sampling of the messages and directions that appear on screen are shown below.



During IR learning hold the device's remote control 4" to 14" (10 cm to 36 cm) away from and directly in front of the MLC's IR pickup device. You may need to experiment to determine the best IR learning distance for each remote control.

Once the IR commands have been successfully learned, you will have the opportunity to accept a default label or type in your own label (which will appear in the control program screens) for that button.



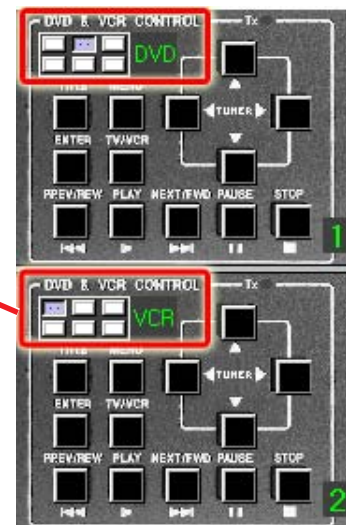
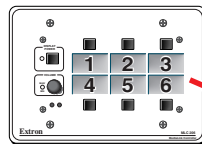
- Repeat steps 6 through 9 for each button that you want to set up with IR codes.

Associating IRCM-DV+ modules with MLC inputs

If an optional IRCM-DV+ control module is to be used with the MLC, you must associate each half (DVD and VCR) of the module with a different MLC input selection button. That way the MLC knows which half of the module to activate when the appropriate MLC input button is pressed. MLC button association also tells the IRCM-DV+ whether to send DVD commands or VCR commands, allowing you to activate and use the IRCM-DV+ from the front panel buttons in addition to RS-232 control.

When an IRCM-DV+ is connected to the MLC, two pictures of the module appear on the right side of the *Controller (MLC) Config* screen, as shown at right. The upper picture represents the DVD half, the lower one represents the VCR half.

A simplified representation of the MLC's input selection buttons appears at the top of the picture of each half of the module. Associate an MLC input button with each half of the IRCM-DV+ by doing the following:



- In the picture of the DVD half of the IRCM-DV+, select (click on) a miniaturized MLC button to associate the DVD controls with.
- In the picture of the VCR half of the IRCM-DV+, select (click on) a different miniaturized MLC button.

NOTE You cannot select the same MLC input selection button for both halves of the IRCM-DV+.

- Perform IR learning for the buttons in each half of the control module, if needed.

Serial Communication, cont'd

Macros: associating MLC and control module buttons with each other

Basic configuration, covered in the rest of this chapter, will meet your needs for most installations. In a standard installation a single control command is sent each time an MLC front panel button (in primary or secondary mode) or control module button is pressed, or the Volume knob is turned. Pressing an input selection button also causes a channel change (input X to input Y). Additionally an extra command (such as repeat power-off) can be sent out during the display power-on or power-off period if set up to do so via the *Relay & Misc. Options* part of the control program.

With a more complex setup you can simultaneously control more things. The Macro feature of the MediaLink Control Program (version 2.0 and higher) provides a way to associate MLC/control module buttons with each other. Once two buttons are associated, you can press one button to trigger it's own functions, and also trigger all the commands associated with the other button.

NOTE *The MLC must contain firmware of version 1.05 or higher in order to support macros.*

Follow these steps to set up button associations by using the Macro feature of the MediaLink Control Program:

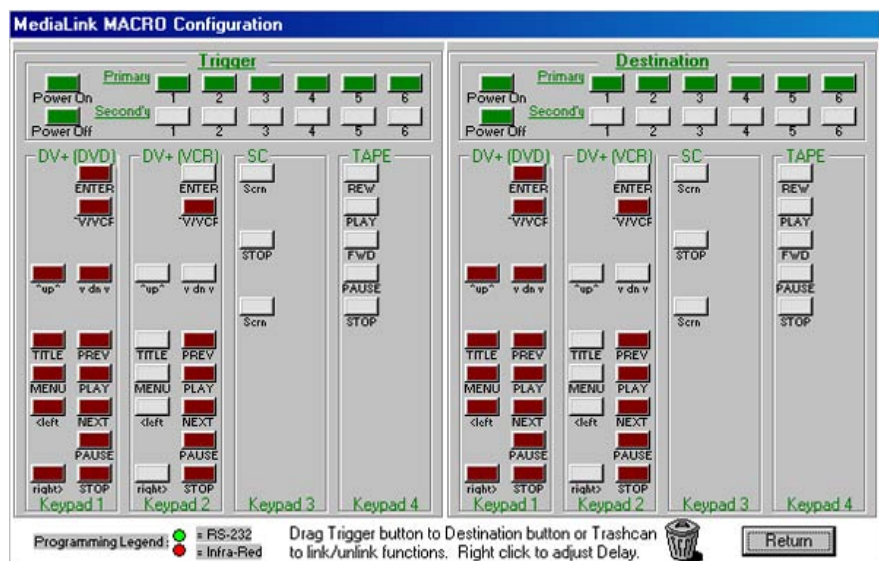
1. Cable and power on the MLC and connected control modules.
2. If needed, load a projector driver into the MLC, and perform IR learning for MLC and IRCM control module buttons.

NOTE *Only buttons that have been configured with IR or RS-232 codes can be used as macro triggers.*

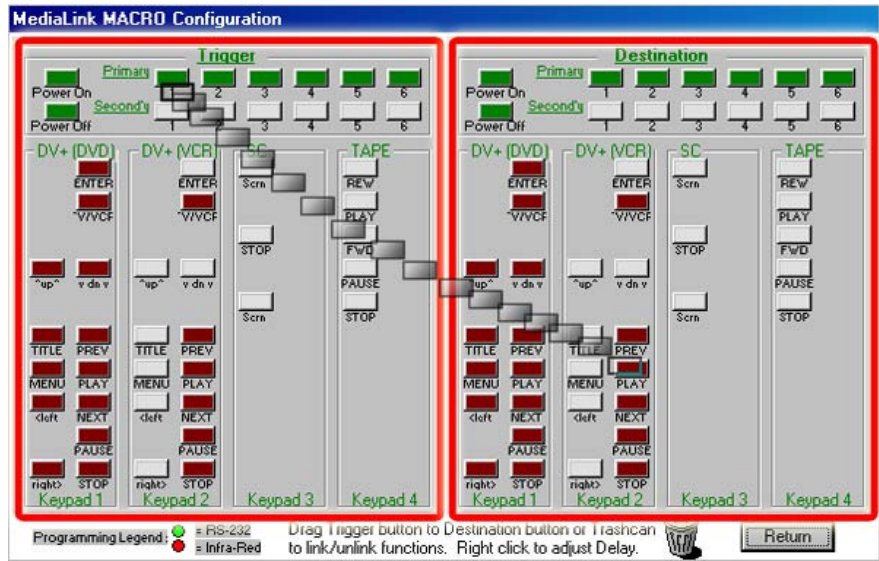
3. Click on the Macro... button in the *Controller (MLC) Config.* screen.



The Macro Configuration screen appears:

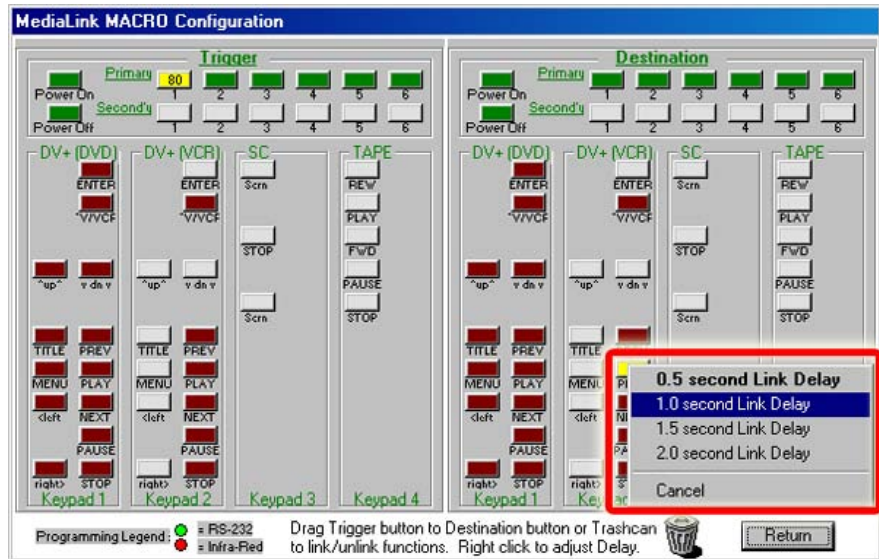


- Select a "trigger" button that has been programmed with IR code (shown in dull red) or RS-232 code (shown in green). This is the button you want to push to trigger both button's commands. Hold the mouse button down as you drag the trigger button across the screen to the desired "destination" button, then release it.



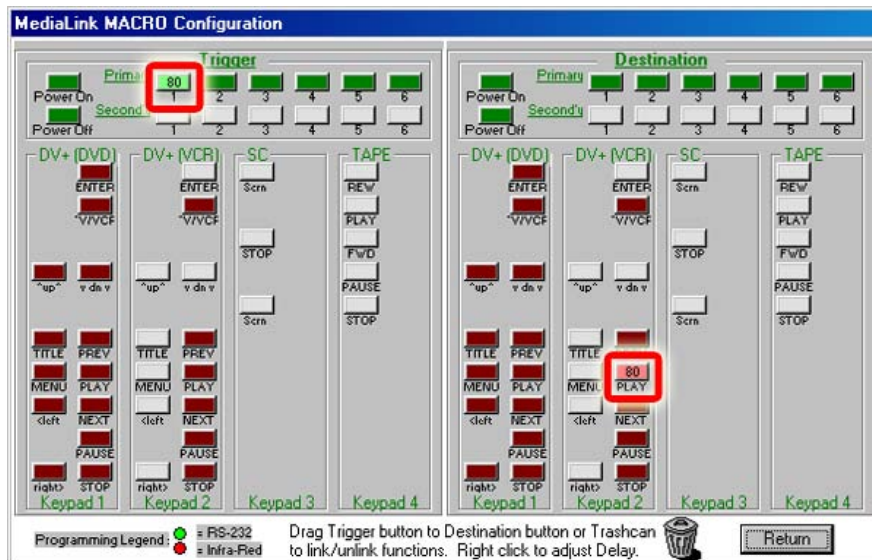
The selected trigger and destination buttons turn yellow, and both buttons display the number of the destination button. (After you finish the next step, let your cursor hover over the trigger button to get a more straightforward note about the button settings.)

- Select the length of delay that will occur between when the trigger button's commands are sent and when the destination button's commands are sent.



Serial Communication, cont'd

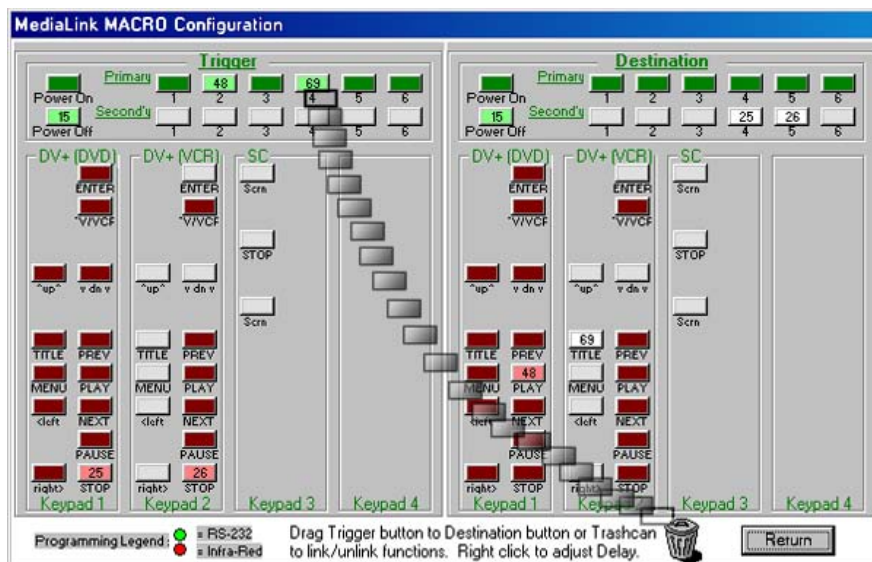
The trigger and destination buttons change to lighter shades of green or red once they have been associated with each other.



NOTE Tied buttons can be identified by their lighter shade of red or green, and by the destination button number displayed on the tied trigger and destination buttons. In the example above, pressing the MLC's input button 1 will also cause the VCR Play command to be issued.

NOTE Relays associated with a destination button will not be executed when the trigger button is pressed.

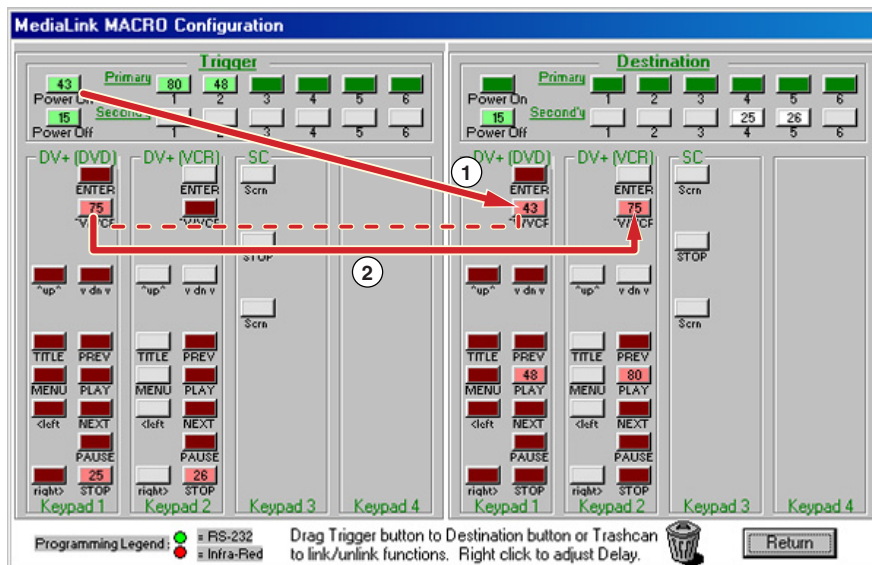
6. Repeat steps 4 and 5 for all desired pairs of trigger and "destination" buttons.
7. To remove (undo) a tie, click on and drag the trigger button to the trashcan,



then release the button and confirm the unlinking.



- You can daisy chain trigger-destination ties together to allow multiple control commands to be sent as a result of one button press. For example, you could tie the PowerOn button to the TV/VCR button of a DVD control module (1), and then tie the DVD TV/VCR button to the TV/VCR button of a VCR control module (2), as shown in this example:

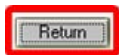


Now when someone presses the PowerOn button, the projector *and* the DVD player and VCR will all be sent commands to prepare them for use.

NOTE *If a daisy chain of button ties has been set up, pressing a tied button will cause commands to be sent out for only the ties made from the pressed button to subsequent buttons in the daisy chain. Button presses do not affect buttons that come earlier in the daisy chain. Also, input changes and relays will be executed only for the pressed button, not for other buttons in the linking chain.*

In the above example if you press the button that controls the DVD's TV/VCR function, the DVD's TV/VCR function and the VCR's TV/VCR function (the second link of the daisy chain) will be executed, but the display power-on/off commands will not be executed (the first link of the daisy chain is not affected).

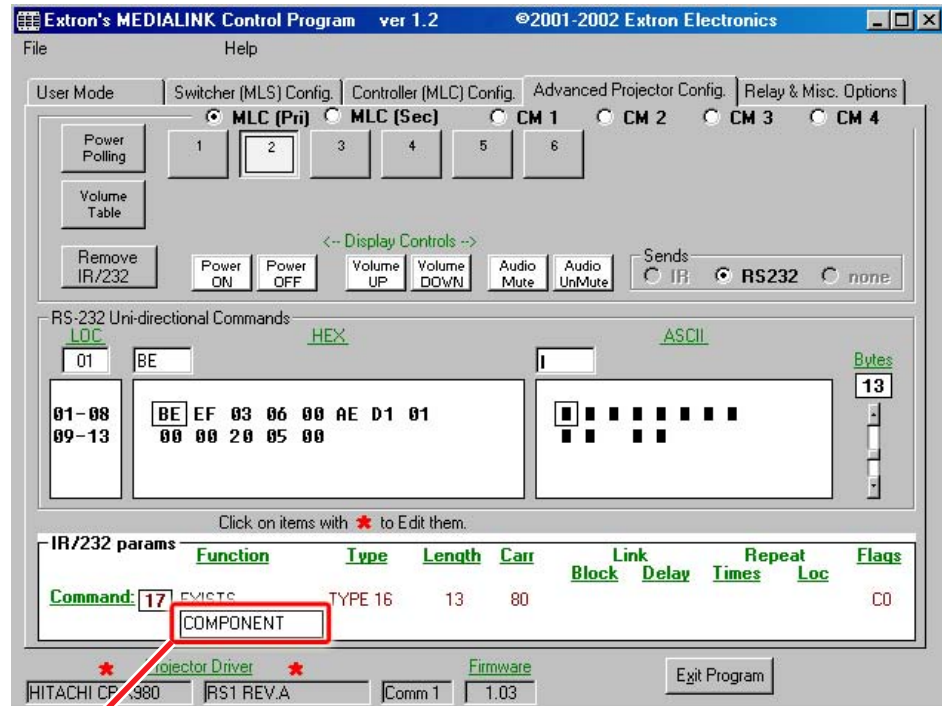
- To exit the Macro screen and return to the *Controller (MLC) Config* part of the control program, click on the Return button in the lower right corner of the screen.



Serial Communication, cont'd

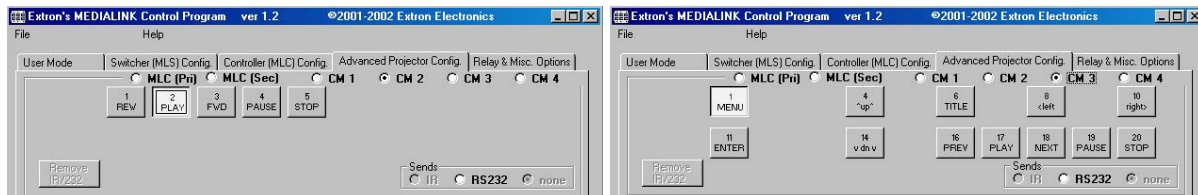
Advanced Projector Config

The *Advanced Projector Config* screen, shown below, provides a way to check the kind, length, and location of codes (IR/RS-232), if any, that are stored in the memories for the various MLC and control module buttons. In this screen you can also edit or enter RS-232 codes, define step parameters for controlling a projector's audio volume, and change the name of the projector driver.



In this area of the IR/232 params section, you can edit or replace button label text.

The “radio buttons” across the top of this screen—MLC (Pri), MLC (Sec), CM 1, CM 2, CM 3, CM 4—let you select a different mode of the MLC or select one of the control modules. The buttons shown on the screen change as you select different modes or control modules: the pictures below show how the upper portion of the screen looks when an IRCM-VCR (CM 2 in this case) or an IRCM-DVD+ (CM 3 for this example) is selected.

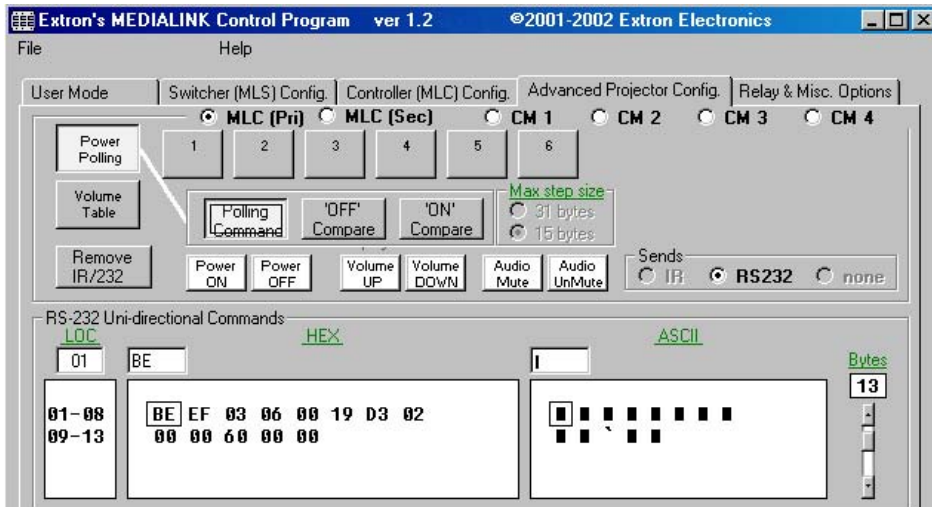


The power polling feature allows the MLC to regularly ask the projector whether it is on (fully powered up) or off (in standby mode), and to determine the status by comparing the projector's reply with expected responses.

NOTE *Not every projector supports RS-232 power polling. Also, not every Extron-created projector driver supports power polling.*

You do not need to alter the power polling feature if Extron has already created a driver for your projector. If there is not Extron-created driver for your projector, select MLC (Pri), then select **Power Polling**. Three more buttons appear, as shown below. Refer to your projector's user's manual to find the RS-232 command strings

to use for asking for the power status (the polling command), the off reference response (for Off Compare), and the on reference response (for On Compare). Refer to the control program's help file for step-by-step programming instructions.



NOTE For power polling to be used, you must also select (check) the "Use Projector-power Polling" box in the Misc. Options part of the Relay & Misc Options portion of the control program (shown on page 4-22).

If a projector driver does not already exist for your projector, and the projector requires discrete audio volume commands (for each percent of maximum volume, for example), as opposed to a pair of volume up/down commands, you can program those commands in the **Volume Table** section.

NOTE Use the volume table only if you plan to use the display device's audio inputs.

For the MLC primary mode, select the Volume Table button to access to slider bars and boxes where you can set volume adjustment step parameters. If you select the Tools button, a menu (shown in the picture below) appears that provides ways to make setting up the projector volume table easier.



Follow these procedures to add a new volume table:

1. Set the total number of steps in the Total Steps scrollbar.
2. Follow the step-by-step details provided in the help file to create an RS-232 command string for "step 1" (the first increment of volume change).
3. Click on the Tools button. If most steps for volume increments have similar RS-232 codes, select "Fill table w/ copies of step 1". That process copies the command string you entered in step two into all the subsequent steps.

Serial Communication, cont'd

4. Select "step 2" by using the Current Step scrollbar or box, then edit the RS-232 string as needed to customize it for the next volume command.
5. Repeat step 4 for each "step" in the volume table.
6. The Exit Program button in the lower right corner of the screen is replaced by the Cancel and Take buttons. To save the changes, click on Take. To ignore the changes, click on Cancel.

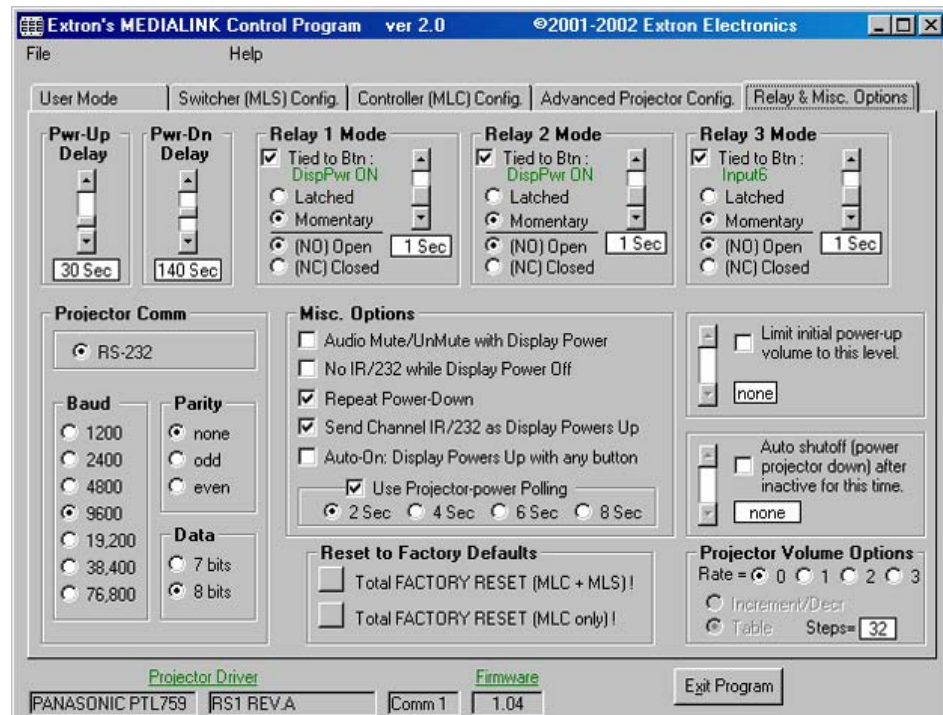


The **Remove IR/232** feature lets you erase the code that has been stored for the selected button.

For additional details on using the features of the *Advanced Projector Config* screen, refer to the MediaLink Help file.

Relay & Misc. Options

The *Relay & Misc. Options* screen, shown below, includes an assortment of settings including those pertaining to the projector, relays, audio volume, and resetting the memories to factory defaults.



When a change has been made to various items in the Relay & Misc. Options screen, the Exit Program button in the lower right corner of the screen is replaced by the Cancel and Take buttons. To save the changes, click on Take. To ignore the changes, click on Cancel.



Special features

Relay __ Mode — Each of these areas shows the settings for a particular relay and what MLC or Control Module button it is associated with, if any.

Tied to Btn __ — If this feature is enabled, the relay turns on/off when the specified button is pressed/activated. You can disable a button tie by unchecking this box. To tie a relay to a button, select the button from within the Controller (MLC) Config screen, then select the appropriate relay. Each relay can be tied to only one button, but more than one relay can be tied to the same button.

Latched/Momentary — Contacts can be programmed to operate in one of two ways: latching (brief contact) (press to turn on, press to turn off), or momentary (timed) (press to turn on, timeout to turn off). If you select Momentary, you can set the timeout period by using the slider bar.

NC (open), NO (closed) — Select the appropriate box to make the relay normally closed or normally open.

Projector Comm — In this area you can set the communications protocol (baud rate, parity, data bits) that is required by the projector.

Misc. Options — This section provides a way to send (or not send) commands while the display is off or powering down or powering up, to mute/unmute MLS switcher or projector audio, and to repeat power-down commands. If the Repeat Power-Down box is checked and IR codes are stored for the power-down command, the MLC will send out IR power-down codes twice. For MLCs that have firmware version 1.04 and higher, if the Auto Onbox is checked, the MLC sends a display power-on command when any MLC front panel button is pressed.

Limit initial power-up volume — Here you can specify an attenuation level for the initial audio volume when the display is powered on. If the Limit initial power-up volume box is not checked (not enabled) or if the limit is set to 100%, the volume will not be limited (attenuated) when the projector/switcher turns on.

Auto shutoff — If Auto shutoff is enabled, the controller monitors the time elapsed since the last button press or knob rotation and sends a display power off command (or that command and any other commands associated with the Display Power button) after a set period of inactivity. That period can be selected in fifteen-minute increments to be as long as 480 minutes (8 hours).

Reset to Factory Defaults —

Total Factory Reset (MLC + MLS)! is a global system reset that clears all settings (including audio adjustments and IR and RS-232 commands and drivers) in *both* the MLC and in an attached MLS switcher. To reset the switcher only, manually press and hold the Menu and Next keys on the front panel while connecting the switcher to an AC power source.

Total Factory Reset (MLC only)! is a global reset that clears all settings (including button configuration and IR and RS-232 commands and drivers) in the MLC only. This does not affect the settings and adjustments that are specific to an MLS switcher (audio adjustments, for example).

Projector Volume Options —

Rate refers to the speed at which volume control commands are sent to the projector or switcher. The fastest command-sending rate is 0, the slowest is 3. If the MLC is set to control the projector's audio volume instead of controlling a MediaLink Switcher's volume, select the settings here that match the projector's volume control settings. Some projectors use **increment/decrement** commands to change the volume, some use a **table** of predetermined levels. If the projector uses the table method of adjusting volume, the number of steps used for volume adjustment is indicated in the lower right corner. Refer to the projector's manual or the display driver setup document for details.


Serial Communication, cont'd

Saving and restoring configurations

The MLC can be configured by various means (IR learning, downloading, or combinations of those methods), and the configuration settings can be saved to a file for later use.

1. In the MediaLink Control Program, select File, then select Save Configuration as... .
2. Save the file as *(filename)*.MLK. An unlimited number of configuration files can be saved as long as each file has a unique file name ending in .MLK.
3. To retrieve the configuration from within the MediaLink Control Program, select File, then select Restore Configuration from... . A set of all the controller, switcher, and audio adjustment settings, and also drivers will be downloaded into the MLC.

Using the help program

For information on program features, press the F1 computer key, or click on the  Help menu from within the MediaLink control program, or double-click on the MediaLnk Help icon in the Extron Electronics group or MediaLnk.HLP folder.

For explanations of buttons or functions, click on the tabs in the help screen to reach the desired screen. Use a mouse or the Tab and Enter keys to select a button/function. A description and tips on using the program will appear on screen.

Downloading and using projector drivers

The MLC must be set up (configured) before it can control other equipment. Extron provides preset configurations in the form of projector driver files. Projector drivers assign projector commands to the MLC's front panel controls so that display power and other functions can be used to control the projector.

The most recent projector driver files are available at the Extron Web site at <http://www.extron.com>. To download files to computer, do the following:

1. From the Extron Web site, select Download, then select MLC 206 from the list of products.
2. Select Software and Drivers, then click on MediaLink Projector Drivers.
3. In the Description column in the list of projectors, select and click on the model of projector for which a driver is needed.
4. Follow the instructions that appear on screen.
5. If the projector driver has been successfully downloaded, the projector driver will be displayed in the Windows-based control program. It will also appear in the list of available projector drivers when Load New Extron Driver From... is selected from the control program's File menu.

To view the settings and commands in each projector driver file without loading the driver into the MLC, run the MediaLnk control software in emulation mode.

1. On opening the control program select Emulate instead of one of the comm ports.
2. Select and double-click on the desired projector driver in the (drive):\MediaLink\drivers folder.

To load projector drivers into the MLC, do the following:

1. Upon opening the control program, select and double-click on a comm port.
2. Select the File pulldown menu.
3. Select Load New Extron Driver from... and choose the appropriate driver.

Key to file names

File name	Description
_____.MLL	Extron-supplied projector driver library files. These files contain commands and settings pertinent to a particular projector.
_____.MLK	User-saved MLC/MLC-MLS/MLS configuration file. This includes adjustments/settings and whatever driver (if any) was installed in the MLC at the time the file was saved.

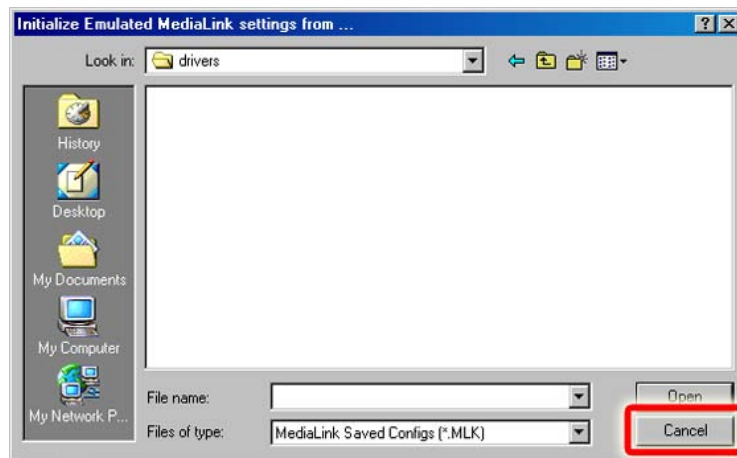
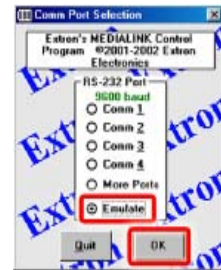
Serial Communication, cont'd

Using the emulation mode

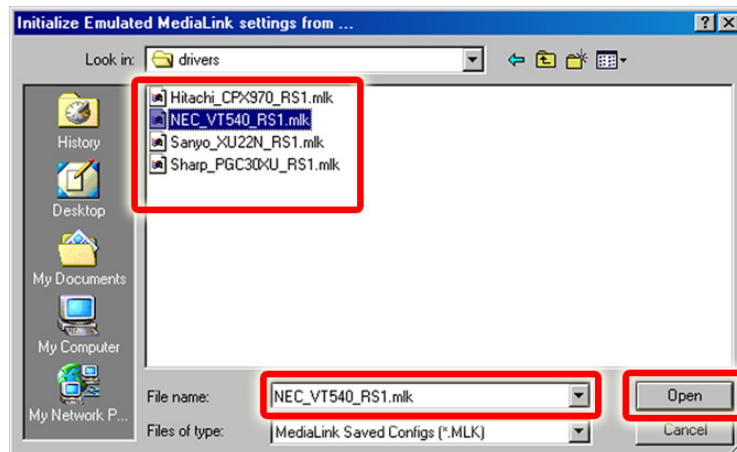
The MediaLink Control Program features an emulation mode so you can set up a MediaLink system before equipment is available on site. In emulation mode a MediaLink Controller is always included in the system. You select which (if any) MLS switcher and which control modules (if used) will be connected to the MLC.

You can save the emulated settings to a configuration file, then load that configuration file to the MLC when equipment is available.

1. Start the control program. In the Comm Port Selection screen, click on the Emulate radio button, then click on OK. The *Initialize Emulated MediaLink Configuration from...* dialog box appears.
3. You can create a new configuration starting from the default settings (see 3a), or you can base the configuration on an existing setup (see 3b).
- 3a. If you will be creating a brand new configuration, select Cancel (as shown below) instead of following step 3b. The emulated system will start out with the MLC and MLS default settings.

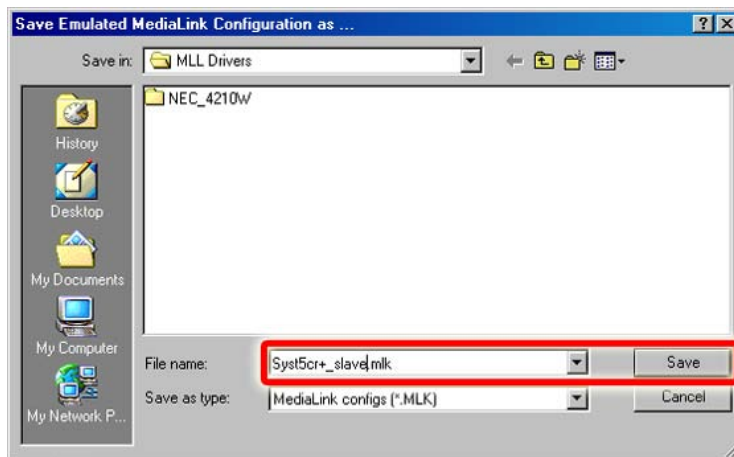


- 3b. Alternatively, to create a configuration based on an existing (previously saved) configuration file, select the appropriate configuration (__.MLK) file.

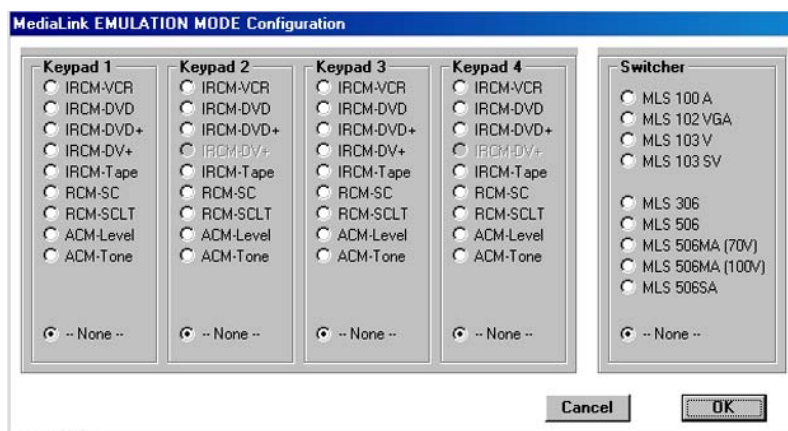


The *Save Emulated MediaLink Configuration as...* dialog box appears.

4. Enter a filename of your choice for storing the configuration settings, then select Save.



The *Emulation Configuration* dialog box appears, as shown below.



5. Select the MediaLink equipment that will be part of the system you want to configure, then click on OK. The Extron MediaLink Control Program windows appear.
6. Select the desired settings in each section of the program.

NOTE *In emulation mode you cannot perform IR learning. You must have an MLC connected to the host computer for IR learning.*

7. To save the configuration for future use, follow steps 1 and 2 in “Saving and restoring configurations” on page 4-23.

Serial Communication, cont'd



MediaLink™ Controllers

Appendix A

Specifications, Part Numbers, and Accessories

Specifications

Part Numbers and Accessories

Specifications, Part Numbers, Accessories

Specifications

Control/remote — controller

Serial control port	RS-232, 9-pin female D connector
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity
Serial control pin configurations	2 = TX, 3 = RX, 5 = GND
Slave switcher control port	(1) 3.5 mm direct insertion captive screw connector, 4 pole
Program control	Extron's control program for Windows® Extron's Simple Instruction Set™ – SIS™

Control — room relays

Number/type	3 momentary or latching (configurable via control software)
Connectors	(1) 3.5 mm direct insertion captive screw connector, 6 pole
Contact rating	24V, 1 A

Control — projector/source

Display/source control port (IR)	(1) 3.5 mm direct insertion captive screw connector, 5 pole (also used for IRCM control)
Display/source control port (RS-232)	(1) 3.5 mm direct insertion captive screw connector, 5 pole
IR learning frequencies	30 kHz to 62 kHz
IR learning distance	4" (10 cm) to 14" (36 cm) from the MLC's faceplate

General

Power	12VDC, 0.38 A from an optional MediaLink Switcher (MLS) <i>or</i> the included 100VAC to 240VAC, 50/60 Hz, external, autoswitchable, 12VDC, 1 A max. power supply.
Temperature/humidity	Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, non-condensing Operating +32° to +122°F (0° to +50°C) / 10% to 90%, non-condensing
Rack mount	Yes, with optional MLM-RAAP rack mounting kit; also furniture or wall-mountable
Enclosure type	Metal
Enclosure dimensions	
MLC 206 faceplate	4.5" H x 6.4" W x 0.1" D (11.4 cm H x 16.3 cm W x 0.3 cm D) (3 gang)
MLC 206 EC faceplate	3.2" H x 6.3" W x 0.1" D (8.1 cm H x 16.0 cm W x 0.3 cm D)
MLC 206 AAP EC faceplate	3.2" H x 9.8" W x 0.1" D (8.1 cm H x 24.9 cm W x 0.3 cm D)
MLC 206 AAP faceplate	4.5" H x 10.1" W x 0.1" D (11.4 cm H x 25.7 cm W x 0.3 cm D) (5 gang)
Controller (all models)	2.75" H x 5.25" W x 1.2" D (fits in a 3 gang box) (7.0 cm H x 13.3 cm W x 3.1 cm D) (Depth excludes connectors and knobs. Allow at least 1.75" depth within the wall or furniture.)
Product weight	
MLC 206	1.7 lbs (0.8 kg)
MLC 206 EC	0.7 lbs (0.3 kg)
MLC 206 AAP EC	0.7 lbs (0.3 kg)
MLC 206 AAP	0.8 lbs (0.4 kg)
Shipping weight (all models)	6 lbs (2.7 kg)
Vibration	ISTA/NSTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE Specifications are subject to change without notice.

Part Numbers and Accessories

Included parts

These items are included in each order for an MLC 206 controller:

Included parts	Replacement part number
MLC 206 (3-gang) (gray, black, white)	60-385-01, -02, -03
or MLC 206 AAP (5-gang) (gray, black, white)	60-460-01, -02, -03
or MLC 206 EC (white)	60-385-10
or MLC 206 AAP EC (white)	60-460-10
IR Emitter	
12VDC, 1 A power supply kit	70-055-01
IEC power cord	
UC 50' (15 m) universal projector control cable	26-518-01
9-pin male-to-male gender changer	10-438-01
Electrostatic discharge grounding kit	
Tweaker (small screwdriver)	
MLC input selection window labels (text)	33-618-01
MLC input selection window labels (text, symbols)	33-750-01
MLC input selection window labels (symbols)	33-751-01
MLC display power/audio volume symbol label (gray or black or white)	33-793-01, -02, -03
MediaLink Controllers User's Manual	
Windows-based MediaLink control software	

Accessories

These items can be ordered separately:

Mounting hardware	Part number
Three-gang mud ring/mounting bracket (gray, white, black)	70-086-02, -12, -22
Three-gang EWB external wall box (gray, black, white)	60-454-01, -02, -03
Five-gang EWB external wall box (gray, black, white)	60-456-01, -02, -03
10X8 EWB external wall box (gray, black, white)	60-457-01, -02, -03

Faceplates	Part number
MLM-5GWP (gray, black, white)	60-407-01, -02, -03
MLM-10X8P (gray, black, white)	60-392-01, -02, -03
MLM-RAAP (gray, black)	60-391-01, -02
MLM-L (gray, black, white)	60-387-01, -02, -03
MLM-LAAP (gray, black, white)	60-389-01, -02, -03

Specifications, Part Numbers, Accessories, cont'd

Miscellaneous accessories	Part number
MLA-Remote IR remote control	70-154-01
IR Link IR signal repeater (gray, black, white)	60-404-01, -02, -03
IR Broadcaster	60-272-01
Current/display power sensor	60-271-01
IRCM-VCR (gray, black, white)	70-148-01, -02, -03
IRCM-DVD (gray, black, white)	70-149-01, -02, -03
IRCM-DVD+ (gray, black, white)	70-179-01, -02, -03
IRCM-Tape (gray, black, white)	70-180-01, -02, -03
IRCM-DV+ (gray, black, white)	70-220-01, -02, -03
ACM-Tone (gray, black, white)	70-181-01, -02, -03
ACM-Level (gray, black, white)	70-182-01, -02, -03
RCM-SC (gray, black, white)	70-183-01, -02, -03
RCM-SCLT (gray, black, white)	70-184-01, -02, -03
AC Net AAP (gray, black, white)	70-150-01, -02, -03

Cables

These cables can be used for the RS-232 control connection between the MLC and the projector:

Projector control cable	Part number
UC 100' (30 m) universal projector control cable	26-518-02
UC 200' (61 m) universal projector control cable	26-518-03

This cable is recommended for connecting an MLC to a MediaLink Switcher and/or to an IR Link or control modules such as IRCMs, ACMs, and RCMs:

Comm-link cable	Part number
50 feet/15.2 meters long	26-461-01
100 feet/30.5 meters long	26-461-02
200 feet/61 meters long	26-461-03
400 feet/122 meters long	26-461-04
Bulk 500 feet/152.4 meters long	22-119-02
Bulk 1000 feet/304.8 meters long	22-119-03



MediaLink™ Controllers

Appendix B

Dimensions, Templates, Replacements, and Upgrades

Dimensions

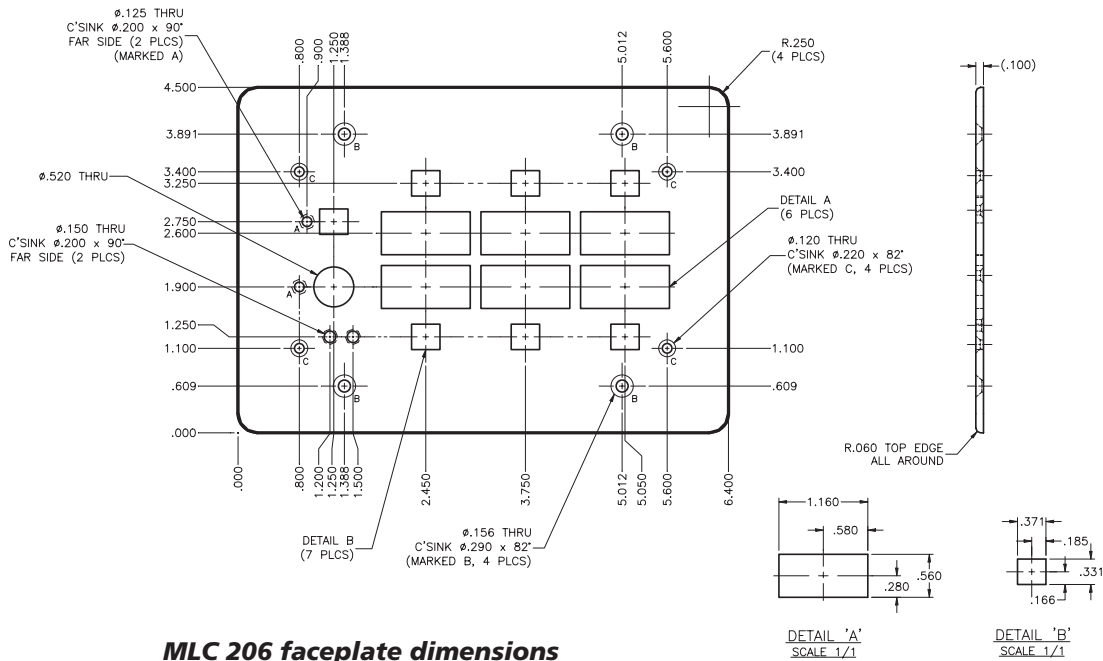
Templates

Replacements and Upgrades

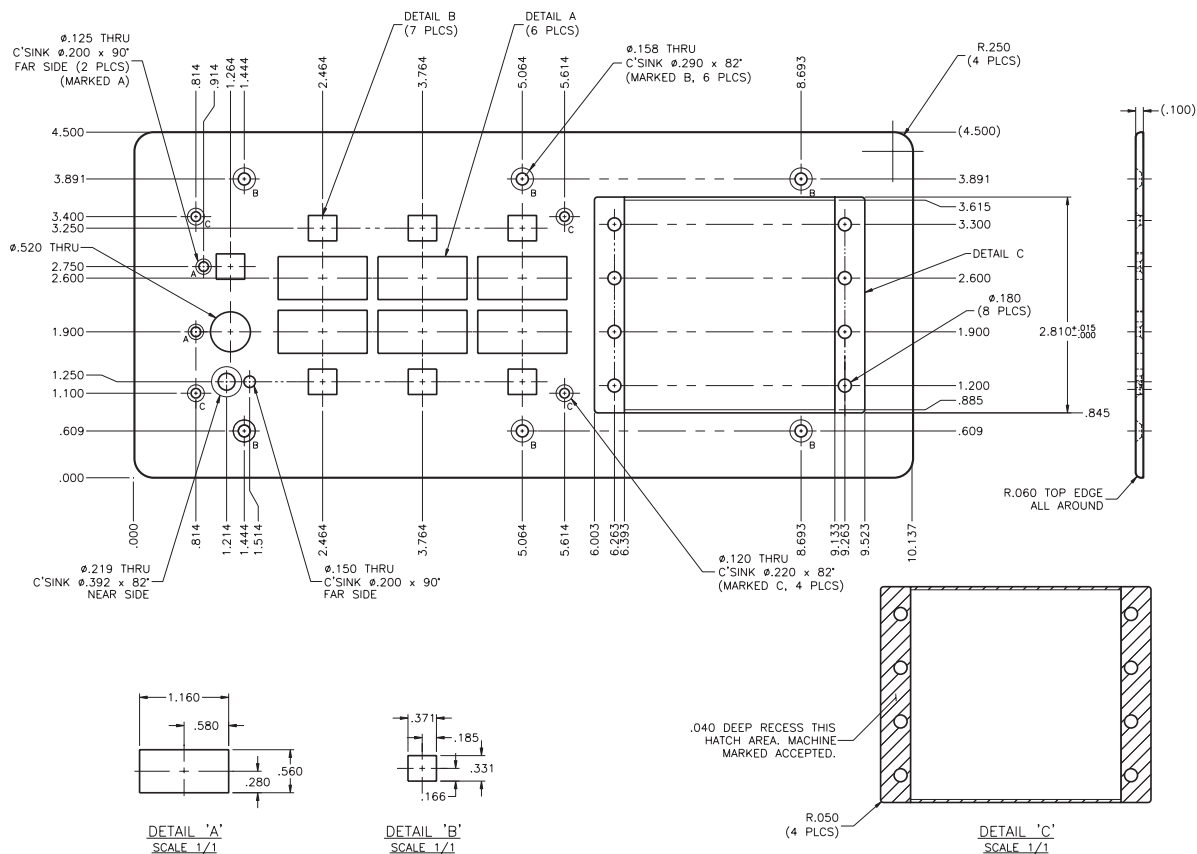
Dimensions, Templates, Replacements, Upgrades

Dimensions

The following diagrams have been reduced to fit on the page. All dimensions are given in inches. The symbol "ø" indicates a diameter.



MLC 206 faceplate dimensions



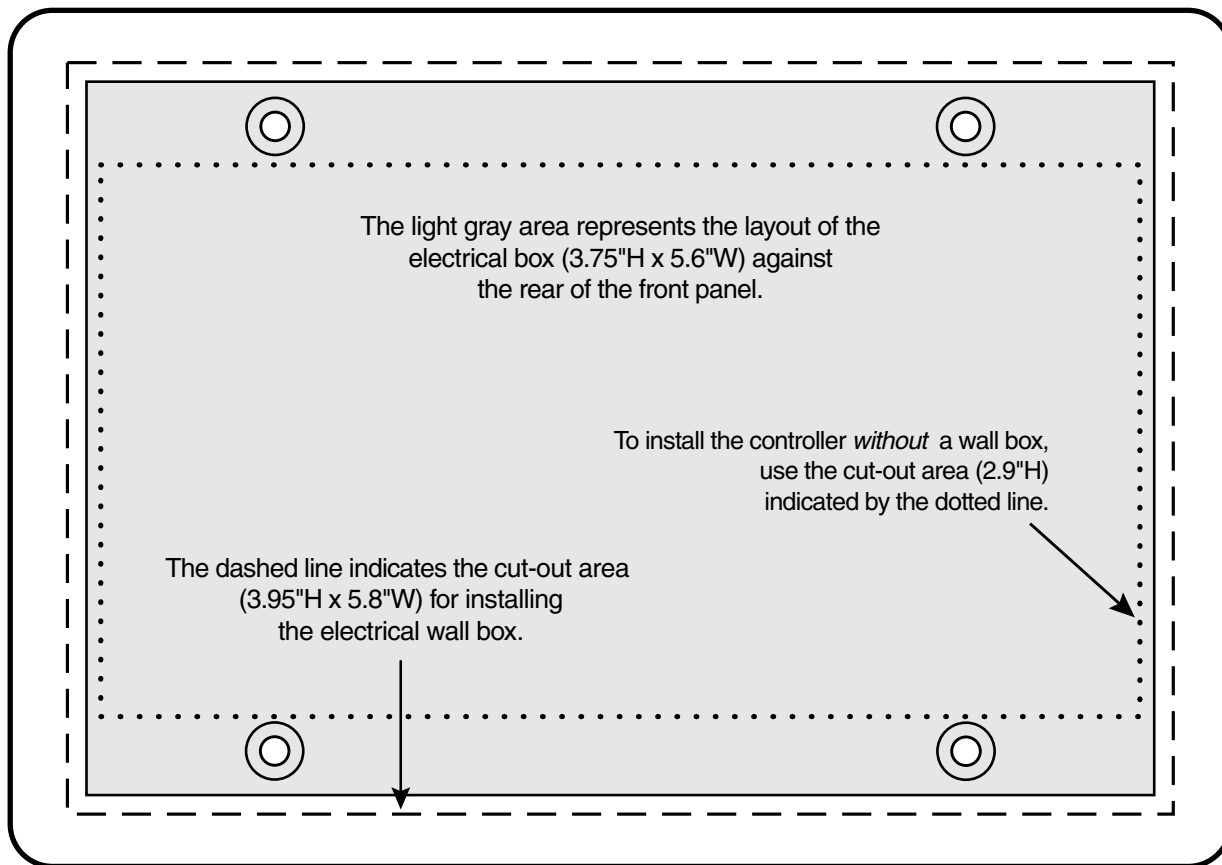
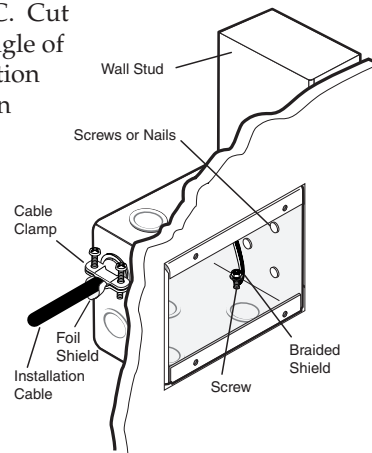
MLC 206 AAP faceplate dimensions

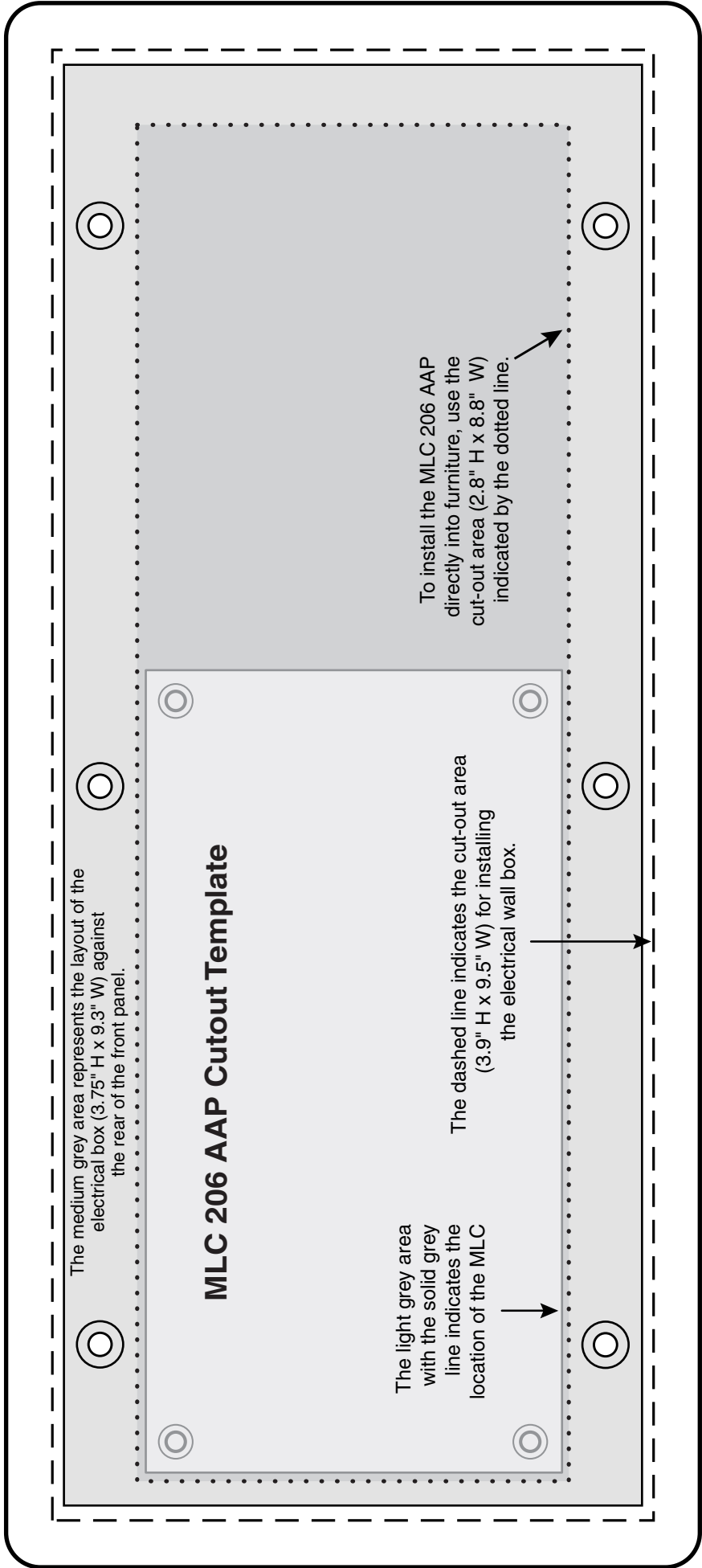
Templates

Use the full size template below (MLC 206) or on the next page (MLC 206 AAP) or a 100% size photocopy of the template as a guide for cutting a hole in a wall or furniture for installing the MLC. Cut out the appropriate dashed or dotted inner rectangle of the template, lay the template against the installation surface (wall/furniture), and mark the opening on the surface.

The controller requires a depth of at least 1.25" (3.2 cm) inside the wall or furniture.

NOTE *If you use a wall box or mud ring, connect it to an earth ground. If you do not use a grounded wall box or mud ring, ground the faceplate to an earth ground, or tie it to the circuit ground via a ground pin on the circuit board.*





Replacements and Upgrades

Firmware replacement

In some cases the MLC's firmware may require replacement with an updated version. We recommend that you send the unit in to Extron for service and updates.

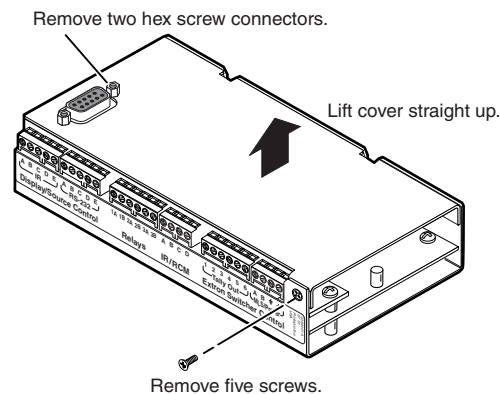
CAUTION *Changes to firmware must be performed by authorized service personnel only.*

Follow these steps to replace firmware in the MLC 206.

1. Disconnect the power supply from the power source.

WARNING *To prevent electric shock, always unplug the MLC from the power source before opening the enclosure.*

2. Remove the MLC from the wall or furniture.
3. Remove the MLC's rear cover.
 - A. Remove the five Philips head screws that fasten the rear cover to the main part of the enclosure.
 - B. If applicable, disconnect the host computer's RS-232 cable from the MLC's 9-pin Control connector.
 - C. Remove the two hex standoffs, which are on either side of the 9-pin Control connector.
 - D. Lift the cover straight off the MLC.

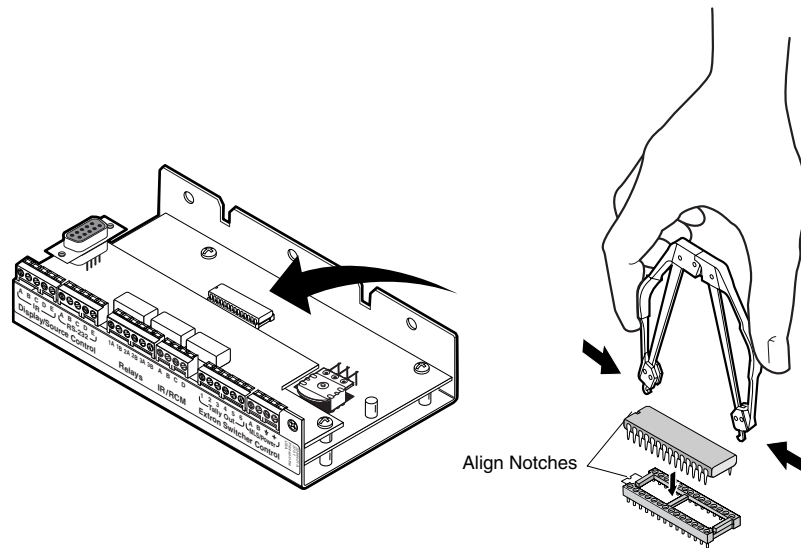


CAUTION *Do not touch any other electronic components inside the MLC. Doing so could damage the MLC. Electrostatic discharge (ESD) can damage IC chips even though you cannot feel it. You must be electrically grounded before proceeding with firmware replacement. A grounding wrist strap is recommended.*

4. Locate the main controller firmware chip on the circuit board, and note which end has the direction indicator notch, as shown in the following illustrations.



Dimensions, Templates, Replacements, Upgrades, cont'd



Locating the firmware IC chip, and aligning the PLCC chip puller tool with firmware chip slots

5. After you are electrically grounded, align the hooks of a PLCC IC puller tool with the slots located in opposite ends of the firmware chip.
6. Insert the hooks into the slots, and squeeze the tool gently to grasp the chip.
7. Pull the chip straight out of the socket, and set it aside.
8. Align the notch on one end of the new firmware IC chip with the socket's notch indicator (in the same orientation as the old chip).
9. Gently but firmly press the chip into place in the socket.
10. Replace the MLC's rear cover, and fasten it with the screws and hex standoffs that were removed in step 3.
11. Re-mount the MLC, and reconnect the power supply to the power source.

Contact an Extron applications engineer if you need further assistance.

FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,
and Central America:**

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805, USA

Asia:

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

Europe, Africa, and the Middle East:

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

Japan:

Extron Electronics, Japan
Daisan DMJ Bldg. 6F,
3-9-1 Kudan Minami
Chiyoda-ku, Tokyo 102-0074
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (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.



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