

## MLC 60 Series

MediaLink Controllers



## 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.

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

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

**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.

## 安全须知 • 中文



这个符号提示用户该设备用户手册中有重要的操作和维护说明。



这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

### 注意

**阅读说明书** • 用户使用该设备前必须阅读并理解所有安全和使用说明。

**保存说明书** • 用户应保存安全说明书以备将来使用。

**遵守警告** • 用户应遵守产品和用户指南上的所有安全和操作说明。

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

## 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 la contourner ni de la désactiver.

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

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

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

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

**Lithium Batterie** • Il a danger d'explosion s'il y a un remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé 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 Erdschluß, 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. Desacar las baterías usadas siguiendo las instrucciones del fabricante.

## 警告

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

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

**电源线保护** • 妥善布线，避免被踩踏，或重物挤压。

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

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

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

## FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

**NOTE:** This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.

For more information on safety guidelines, regulatory compliances, EMI/EMF compliance, accessibility, and related topics, [click here](#).

## Conventions Used in this Guide

### Notifications

In this user guide, the following are used:

**CAUTION:** A caution indicates a potential hazard to equipment or data.

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

**TIP:** A tip provides a suggestion to make working with the application easier.

**WARNING:** A warning warns of things or actions that might cause injury, death, or other severe consequences.

### Software Commands

Commands are written in the fonts shown here:

```
^ARMerge Scene, ,Op1 scene 1,1 ^B51 ^W^C
[Ø1] RØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
[Esc][X1]*[X17]*[X20]*[X23]*[X21]CE ←
```

**NOTE:** For commands and examples of computer or device responses mentioned in this guide, the character “Ø” is used for the number zero and “O” represents the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 2Ø8.132.18Ø.48: bytes=32 times=2ms TTL=32
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

```
From the File menu, select New.
Click the OK button.
```

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### Trademarks

All trademarks mentioned in this guide are the properties of their respective owners.

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# Introduction

This section gives an overview of the guide and describes the MLC 60 Series MediaLink® Controllers and their features. Topics include:

- [About This Guide](#)
- [About the MLC 60 Series MediaLink Controllers](#)
- [System Requirements](#)

## About This Guide

This guide provides detailed information and best practice recommendations about cabling and configuring the Extron MLC 60 Series MediaLink Controllers. It provides reference information about specifications, dimensions, and programming of the controllers.

Throughout this guide the general terms “MLC” and “controller” are used interchangeably to refer to any MLC 60 Series controller. “MLC D models” applies to the MLC 62 RS D, MLC 62 IR D, and the MLC 64 RS VC D. “MLC 62” applies to all MLC 60 Series models **except** the MLC 64.

## About the MLC 60 Series MediaLink Controllers

The Extron MLC 60 Series MediaLink Controllers are panels that control a wide range of audio/video systems in any classroom, meeting facility, or auditorium via RS-232 or IR. They act as extended remote control panels, featuring eight (optionally six) labeled backlit buttons for the MLC 62 models or six for the MLC 64 RS VC D. These buttons can be configured via the MLC Windows®-based configuration software to control power, input switching, and volume on a display device or switcher. If desired, you can replace these buttons with ones having different labels, which also are provided with the controller.

The MLC 64 RS VC D model has, in addition to the configurable buttons, a volume control module containing an analog volume control knob and a Mute button. An Extron amplifier can be connected to this module for volume control via the MLC.

All models can control a projector, display, or switcher via IR. In addition, the MLC 62 RS models can control display devices, switchers, and various other items such as lights, a projector lift, or a motorized screen via RS-232, IR, relays, or digital input.

The MLC controllers are housed in secure, compact, one-gang and two-gang sized enclosures, which can be mounted on a wall or furniture, with or without an electrical junction box or mounting bracket.

### MLC Models

**MLC 62 IR D** — US model. Controls devices by IR only; has a one-gang Decora® faceplate and fits in a one-gang US electrical box.

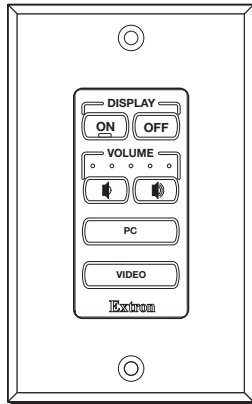
**MLC 62 RS D** — US model. Controls devices by RS-232, IR, relays, and digital input; has a one-gang Decora faceplate and fits in a one-gang US electrical box.

**MLC 62 RS EU** — European model. Controls devices by RS-232, IR, relays, and digital input; has a one-gang Jung frame and fits over a standard one-gang EU electrical box.

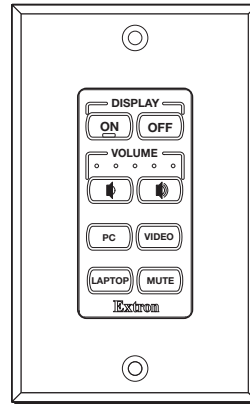
**MLC 62 RS MK** — UK model. Controls devices by RS-232, IR, relays, and digital input; has a standard MK sized frame and fits into a standard one-gang MK electrical box.

**MLC 64 RS VC D** — US model. Controls devices by RS-232, IR, relays, and digital input; has a two-gang Decora faceplate and fits in a two-gang US electrical box. Contains a volume control module with an analog potentiometer for volume control of an Extron amplifier.

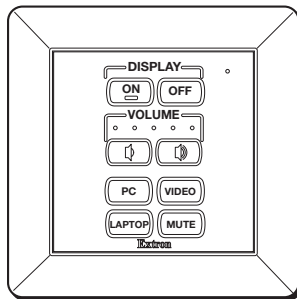
**NOTE:** Only an Extron amplifier with remote volume control capability can be used with this model.



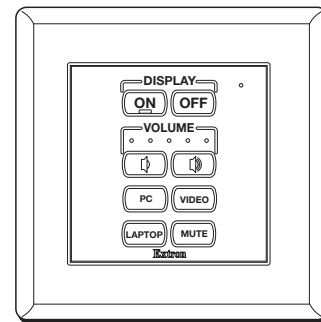
**MLC 62 IR D**



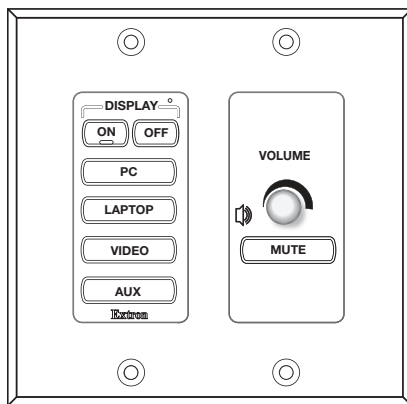
**MLC 62 RS D**



**MLC 62 RS EU**



**MLC 62 RS MK**



**MLC 64 RS VC D**

**Figure 1.** MLC 60 Series Models



The five MLC models have the same button functionality and use the same configuration software. All models can be controlled by pressing the front panel buttons or via a host device using RS-232 communication and simple ASCII commands (Simple Instruction Set, SIS™). They differ from each other in the following ways:

- The MLC 62 IR D rear panel does not contain the Relay, Digital Input, or RS-232 control ports that the RS models have.
- The MLC 64 front panel has seven buttons, one of which (the Mute button) is located below the Volume knob. This button is used only to mute and unmute the volume on an Extron amplifier and cannot be configured to perform other functions.
- Some front, side, and rear panel connectors are located in different places on the MLC RS D (US), EU (Europe), and MK (United Kingdom) models (see “[Panels and Connectors](#)” in the “Features, Cabling, and Operation” section).

### Faceplate alternatives

The MLC 60 Series models are available with the following faceplate configurations:

- **MLC 62 IR D:** The US IR model is delivered with two six-button faceplates in black and white. One black and one white Decora wallplate are also provided. An eight-button faceplate is available to order.
- **MLC 62 RS D:** The US RS-232 model is delivered with two eight-button faceplates in black and white. One black and one white Decora wallplate are also provided. A six-button faceplate is available to order.
- **MLC 62 RS EU:** The European model is delivered with six-button and eight-button faceplates, both in RAL9010 white.
- **MLC 62 RS MK:** The UK model is delivered with six-button and eight-button faceplates, both in white.
- **MLC 64 RS VC D:** The MLC 64 is delivered with seven-button faceplates in black and white.

## Features

Some of the features of MLC 60 Series include:

- **Customizable buttons** — Eight buttons are standard on the MLC 62 RS models, prelabeled as shown in [figure 1](#) on the previous page. The MLC 62 IR D has six prelabeled buttons, and the MLC 64 RS VC D has seven.

An additional set of prelabeled buttons is included with each model, enabling the controller to be customized to suit the application.

Additional buttons are available to order for all models, labeled in English (the default) and other languages. Buttons can be ordered with custom labeling as well.

- **Button backlighting** — The front panel buttons are backlit to facilitate use in low-light environments and to provide certain status (such as whether power is on or off, or which input has been selected).
- **Alternative six-button configuration (MLC 62 RS models only)** — For applications in which input device or button functions are not necessary, the standard eight-button faceplate on the MLC 62 RS can be replaced with a six-button one. Each pair of source selection buttons can be changed to a long, single function button.
- **Device drivers** — A wide variety of Extron certified, ready-to-use device drivers are available via the MLC configuration software, the provided MLC software disk, and the Extron website ([www.extron.com](http://www.extron.com)).

- **IR and RS-232 ports** — The MLC 64 and the MLC 62 RS models each have a dedicated serial port for communicating with most types of projectors or flat panel displays via unidirectional RS-232. They also have an IR/S port, which can be configured for IR or RS-232 control.

The MLC 62 IR D has only an IR port, which is used for IR communication only.

IR and RS-232 display drivers can be downloaded and used to configure the controller.

- **Relays** (RS models) — Two relay ports enable control of room devices such as lights, motorized screens, and projector lifts.
- **Digital Input** (RS models) — A Digital Input port enables monitoring of a switch or sensor to control devices.
- **IR Learning** — The MLC can be configured by IR learning, using the remote control of a switcher or display device to create an IR driver that enables the MLC to control the device.
- **USB configuration port** — The MLC can be configured via a USB mini B port, located on the front or side panel (depending on the model). This port can also temporarily provide power to the MLC during configuration.
- **Volume adjustment:**
  - **The MLC 62** models have individual Volume Up and Down buttons for audio level control, with five LEDs that indicate current audio settings.
  - **The MLC 64** has a volume control module with an analog potentiometer knob to control the audio level for an Extron amplifier that is enabled for remote volume control. The volume control module also contains a Mute button for muting and unmuting the audio (this button cannot be reprogrammed).

**NOTE:** Only Extron amplifiers can be controlled via the MLC 64 volume control module.

- **Macro capability** — Each button can be configured to execute multiple actions through the serial or IR control ports. For example, a button can be configured so that a single press triggers commands to turn on a display, select the RGB input of the display, and trigger a relay.
- **Toggle** — Buttons can be placed in toggle mode, which adds flexibility by enabling two different sets of commands to be executed with alternating presses of the button.
- **Built-in speaker** — A speaker provides audible feedback to confirm user actions when buttons are pressed (except for the Mute button on the VCM module of the MLC 64 RS VC D).
- **Inactivity timer for display shutoff** — An adjustable timer controls automatic shutdown after a specified period of inactivity.
- **Front panel security lockout** — If the MLC is installed in an unsecured environment where easy access is not desirable, a security lockout feature can be implemented to lock out all front panel controls.
- **Activity LED** — A small LED at the top of the MLC front panel lights red, green, or amber to indicate button presses, data transfer, front panel lockout, and other actions.
- **Section 508 Compliant** — The MLC meets or exceeds accessibility standards for Electronic Information Technology. For more information about the Extron Commitment to Accessibility, see the Extron Accessibility web page at [www.extron.com/company/article.aspx?id=accessibility](http://www.extron.com/company/article.aspx?id=accessibility).

## MLC Configuration Software

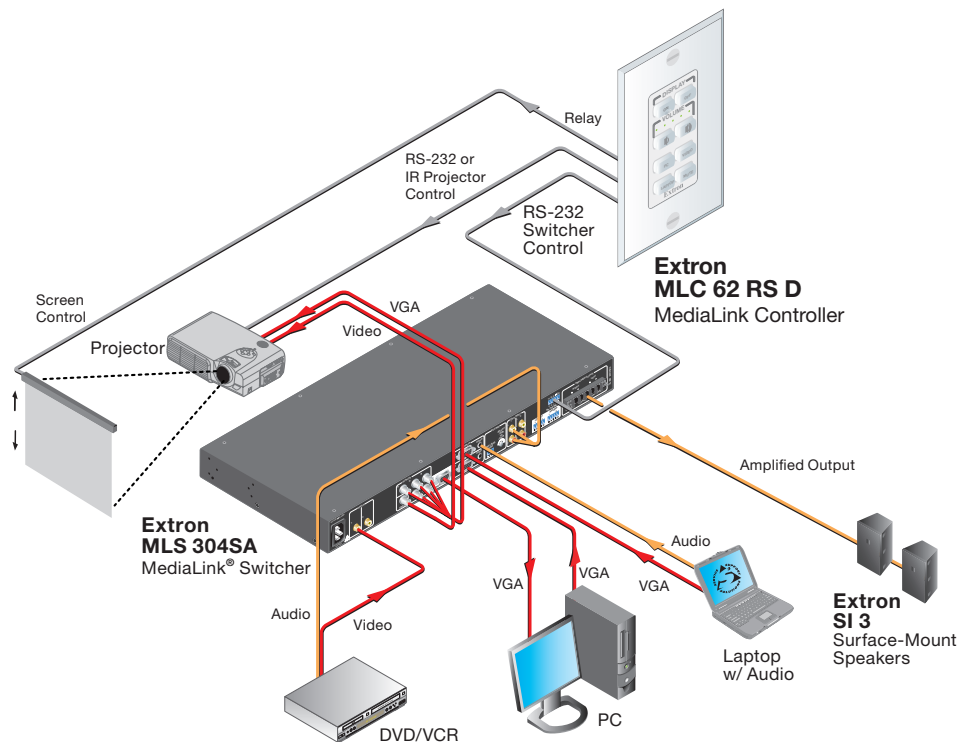
The included MLC Configuration Program is used to configure the MLC buttons and ports via an RS-232 or USB connection. This software, provided on a DVD that is delivered with the product, enables you to set functions for the front panel buttons and to configure the MLC ports in order to control devices via the MLC. The software works in combination with the IR or RS-232 drivers, also provided with the MLC on DVD or at [www.extron.com](http://www.extron.com) (see “Installing the Configuration Software” in the “Software-based Configuration” section to access this program).

## Device Drivers

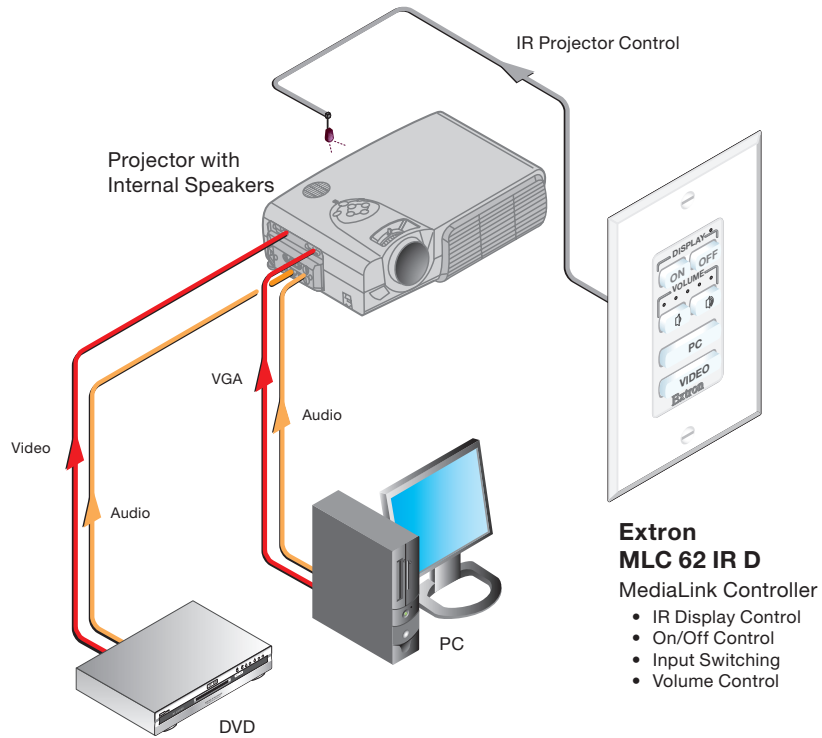
The MLC can control a switcher, projector, or other display device via IR or RS-232 communication. The MLC must have drivers loaded for the devices it will control in order to send commands to those devices. Drivers can be obtained in the following ways:

- You can install IR or an RS-232 driver files from a disk, download them from the Extron website ([www.extron.com](http://www.extron.com)), or download them from Extron via the driver subscription feature within the Windows-based configuration program. The drivers are saved on your computer in a folder located at `c:\Documents and Settings\All Users\Shared Documents\Extron\Driver2` (Windows XP) or `c:\Users\Public\Documents\Extron\Driver2` (Windows 7). You can upload the desired drivers to the MLC using the MLC configuration software.
- You can capture IR commands from the IR remote control of a device through IR Learning using the MLC configuration program to create a driver that the MLC can use. When a driver is created, it can be added to the configuration program so that the commands can be used to configure the MLC to control the device (see the MLC 60 Series help to configure the MLC using IR Learning).

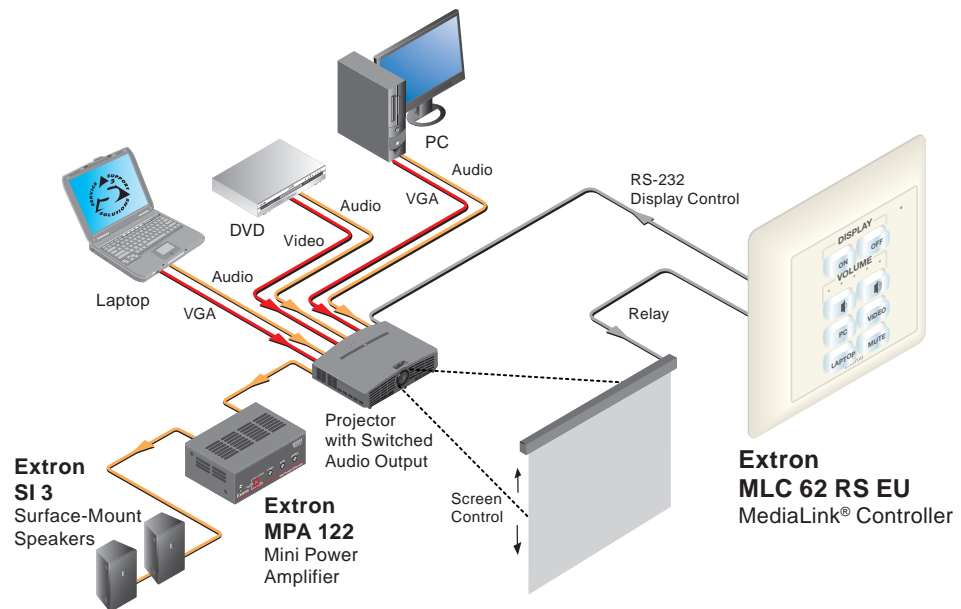
## Application Diagrams



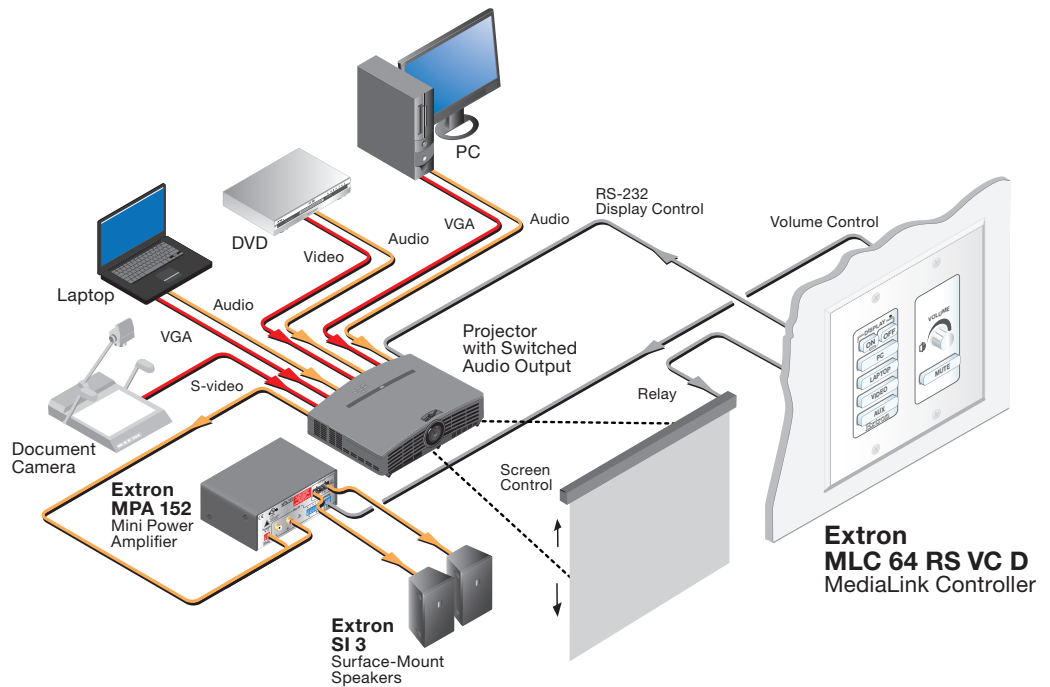
**Figure 2.** MLC 62 RS D Controlling an MLS 304 SA Switcher and a Projector



**Figure 3.** MLC 62 IR D Controlling a Projector



**Figure 4.** MLC 62 RS EU Controlling a Projector and Screen



**Figure 5. MLC 64 RS VC D Controlling a Projector and Screen**

## System Requirements

The minimum PC system requirements for installing the configuration software include:

- Intel® Pentium® III 1-GHz processor
- Microsoft® Windows XP SP2 and Windows 7
- Microsoft.NET Framework 2.0
- 512 MB of RAM
- 50 MB of available hard disk space

# Features, Installation, and Operation

This section describes the front, side, and rear panel features of the five MLC models, and provides procedures for installing and operating them. Topics include:

- [Installation Checklist](#)
- [Panels and Connectors](#)
- [Installation](#)
- [Configuring the MLC via the USB Port](#)
- [Mounting the MLC 60 Series Controllers](#)
- [Accessing Covered Panel Features After Mounting](#)
- [Front Panel Security Lockout \(Executive Mode\)](#)
- [Resetting the MLC Using the Reset Button](#)
- [IR Learning](#)

## Installation Overview

1. Prepare the installation site as follows:
  - a. Measure and cut the hole in the mounting surface.
  - b. Prepare and pull the cables through the electrical box or mounting bracket.
  - c. Install the electrical box or mounting bracket. (Installation instructions for the electrical box are provided with it.)
2. (Optional) Make any desired changes to the buttons installed in the faceplate, substituting any of the provided additional buttons (see [Replacing Buttons](#), later in this section).

**NOTE:** The Mute button on the MLC 64 volume control module cannot be configured.

3. Attach the cables to the rear panel connectors of the MLC and to the display device or switcher. Attach optional IR Emitters if used, and any switches or sensors needed for other room devices, such as lights, a motorized screen, and so forth). See the following sections as needed for cabling information:
  - [Rear Panel Features](#)
  - [Wiring for RS-232 Control](#)
  - [Wiring for IR Control](#)
  - [Wiring the Relays Port](#)
  - [Wiring the Digital Input Port](#)

4. Wire and connect the MLC power supply (see **“Connecting Power to the MLC,”** later in this section). Connect all other power cords and turn on all the devices, including the MLC.
5. Connect a configuration cable from the computer to the MLC by doing either of the following:
  - Connect a USB A to mini B cable to the MLC USB configuration port and to a USB port on your computer (see **“Configuring the MLC via the USB Port,”** later in this section).
  - Connect an RS-232 cable to the provided 3-pole connector and connect it between the MLC Host/Config port and the computer serial port (see **“Wiring the Host/Config Port,”** later in this section).
6. Download and install the MLC Configuration Program (see **“Installing the Configuration Software,”** in the “Software-based Configuration” section).
7. Download or create drivers for the devices you will be connecting (see **“Obtaining Device Drivers”** or **“Configuring Using IR Learning”** in the “Software-based Configuration” section).
8. Configure the MLC buttons and ports using the configuration program. (See the configuration program help file for these procedures. To access the help file, see **“Installing the Configuration Software”** in the “Software Configuration and Control” section.)

If you are configuring via the USB port, remove the USB cable when you are finished.
9. Test the system: press the MLC buttons, watch the display, and listen to the audio output to determine whether the connected devices are responding correctly (powering on and off, switching inputs, and so forth). If not, ensure all devices are plugged in and receiving power. Check the cabling and make needed adjustments.
10. Disconnect power from the MLC at the source and from all other devices in the system.
11. Mount the MLC to the mounting surface, following the appropriate procedure for your MLC model, discussed later in this section:
  - For MLC 62 D models, see **“Mounting the MLC 62 D.”**
  - For MLC 62 RS EU and MK models, see **“Mounting the MLC 62 RS EU and the MLC 62 RS MK.”**
  - For the MLC 64, see **“Mounting the MLC 64 RS VC D.”**
12. Restore power to the MLC and to the connected devices.

## Front and Left Side Panels

### MLC D Front Panels

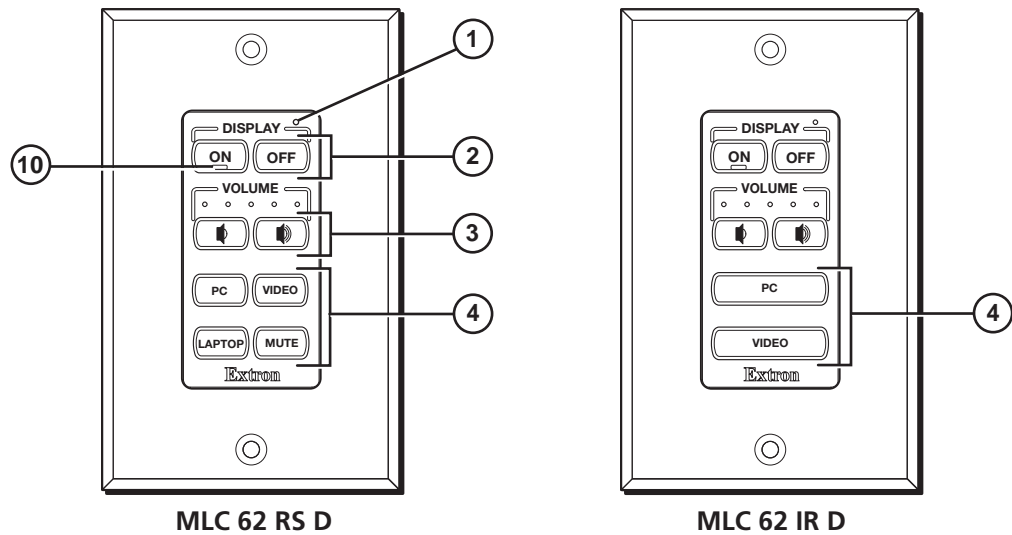
The front panels of the MLC 62 RS D, the MLC 62 IR D, and MLC 64 models contain buttons and indicators that are visible and accessible after the MLC has been mounted. Other front panel controls and connectors are located behind the MLC wallplate and are not visible after mounting (see **“Controls behind the wallplate,”** later in this section).

The numbered callouts below apply to all the following MLC D front panel drawings.

- |  |                           |   |
|--|---------------------------|---|
| ① Activity LED                                 | ④ Input Selection buttons | ⑨ IR Learning sensor                        |
| ② Display power On and Off Buttons             | ⑤ Reset LED               | ⑩ On button identification nub              |
| ③ Volume buttons and LEDs (MLC 62 models only) | ⑥ Reset button            | ⑪ Mute button (MLC 64 only)                 |
|  | ⑦ USB configuration port  | ⑫ Volume control knob (MLC 64 RS VC D only) |
|  | ⑧ DIP switches            |   |

### MLC 62 D front panels

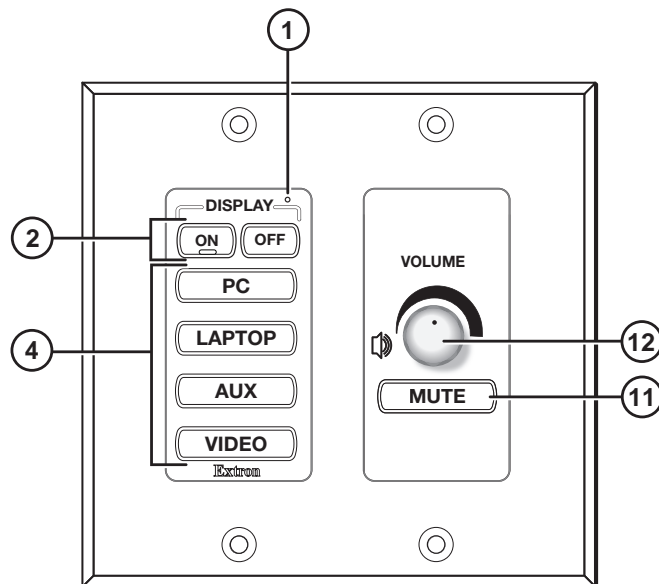
By default, the MLC 62 RS D has eight front panel buttons, and the MLC 62 IR D has six. Both models also have indicator LEDs for volume and activity.



**Figure 6.** MLC 62 RS D and MLC 62 IR D Front Panels

### MLC 64 RS VC D front panel

The MLC 64 RS VC D front panel contains seven buttons, an Activity LED, and a volume control knob.

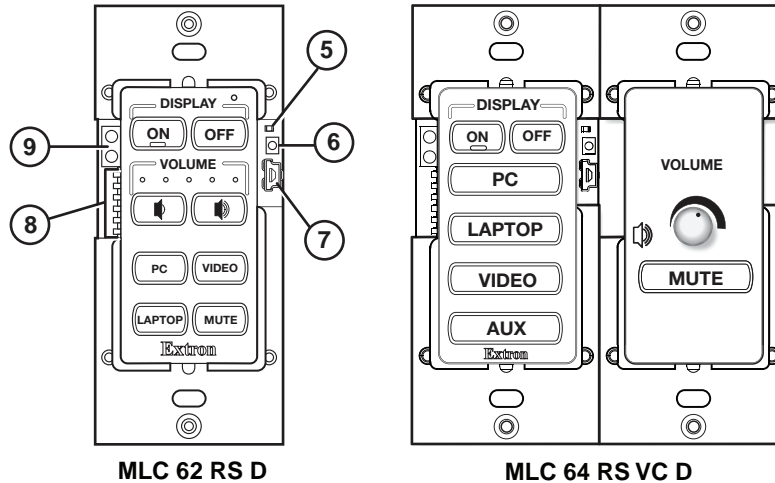


**Figure 7.** MLC 64 RS VC D Front Panel



## Controls behind the wallplate

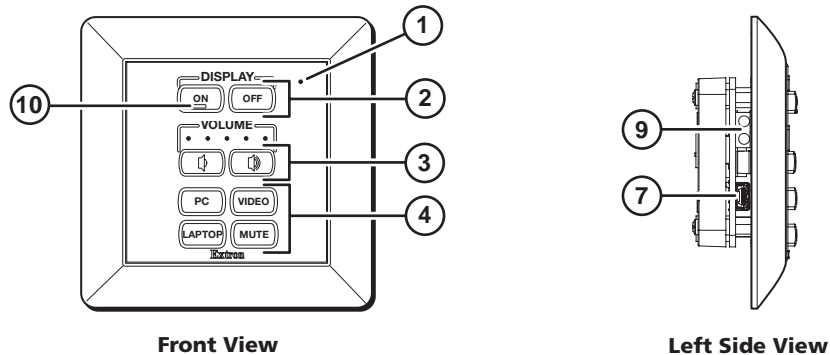
The front panels of the MLC D controllers contain some controls and connectors that are located behind the wallplate when the controller is mounted. To access these features that are covered during normal operation, you must remove the wallplate (see “[Accessing the Covered MLC D Front Panel Features](#),” later in this section).



**Figure 8.** MLC D Front Panel Controls Behind the Wallplate

## MLC 62 RS EU and MLC 62 RS MK Front and Side Panels

The MLC 62 RS EU and MLC 62 RS MK front panels contain the same buttons and indicators as the MLC 62 D models. Other connectors and controls are on the left side panel; to access these features, you must remove the MLC from the installation surface. When the MLC is removed, the wall frame is released from the mounting surface as well, leaving the metal mounting bracket in place (see “[Accessing the MLC 62 RS EU and MLC 62 RS MK Side and Rear Panel Features](#),” later in this section, for removal procedures).



**Figure 9.** MLC 62 RS EU and MLC 62 RS MK Front and Side Panels

**NOTE:** The MLC 62 RS MK is the same size and has the same front and side panel features as the MLC 62 RS EU, with the exception of its larger wall frame, which fits over an MK electrical box.

## Front panel features

① **Activity LED** — This bicolored LED lights green when the MLC front panel buttons are pressed. It blinks red while enabling front panel lockout (executive mode).

② **Display power On and Off buttons** — After configuring these buttons, use them to turn the connected display device or switcher on and off.

The face of the On button contains a nub (⑩), which helps you to identify the button by touch. When the On button is pressed, it blinks rapidly while the connected device is warming up. When the Off button is pressed, it blinks slowly while the device is cooling down. When this delay period has elapsed, the power button that was pressed remains brightly lit.

By default, only one of these two buttons can be selected (active) at once. Using the MLC configuration software, you can associate other functions and relays with each of these buttons (see the configuration software help file).

③ **Volume buttons and LEDs (MLC 62 models only)** — Use these buttons to adjust the audio volume. Each Volume button flashes when pressed and continues to flash while being held.

The volume indicator LEDs above the buttons give indications of change to the volume level as follows:

- When the RS-232 or IR/S port has been configured with a serial driver that contains a volume table, the five LEDs light in order from left to right to show volume level increments.
- If the current driver does not contain a volume table, the first two LEDs on the left blink each time the Volume Down button is pressed, and the last two LEDs on the right blink each time the Volume Up button is pressed, indicating a volume level decrement or increment.

④ **Input selection buttons** — These buttons can be used to select the desired audio or video input for the connected device or for a variety of other functions. By default the buttons are set up as follows:

- **MLC 62 RS models:** Three of these buttons are set to input mode, meaning that they are a mutually exclusive group and only one of the buttons can be selected (active) at a time. The active input button remains brightly lit, while all other input buttons remain dimly lit. The fourth button, labeled Mute, is set in Toggle mode and is not grouped with the others.
- **MLC 62 IR D:** Two double-sized buttons are grouped in input mode and are mutually exclusive.
- **MLC 64 RS:** Four double-sized buttons are grouped in input mode and are mutually exclusive.

You can change this button behavior by using the configuration software to change the operating mode of the button (see the MLC 60 Series configuration program help file for more information).

⑤ **Reset LED** — Indicates the status of a reset in progress.

⑥ **Reset button** — Press this reset button to initiate factory firmware or configuration resets (see “[Resetting the MLC Using the Reset Button](#),” later in this section).

- ⑦ **USB configuration port** — Connect a USB cable (USB A to mini B) between your computer and this port to configure the MLC via the configuration software and to update the firmware. This port can also provide power to the MLC during configuration.

**NOTE:** Do not use this port as the permanent power source for the MLC. It should be used for power only during button and port configuration.

- **On the MLC D models**, the USB port is located at the right edge of the front panel behind the wallplate. To access this port after installation, you must remove the wallplate from the unit.
  - **On the MLC 62 EU and MK**, the USB port is located on the left side panel. To access this port after installation, you must detach the MLC from the installation surface.
- ⑧ **DIP switches** — Reserved for future use
- ⑨ **IR Learning sensor** — This sensor enables the MLC to learn IR commands from the hand-held remote control of a display device or switcher. The IR-learned commands are used to create an IR driver, then configured to be played back with any button press (see “[IR Learning](#),” later in this section).

**NOTE:** Before performing IR Learning to create a driver, check to see if an Extron driver exists for your device (see “[Obtaining Device Drivers](#)” in the “Software-based Configuration” section).

- ⑩ **On button identification nub** — Power On button face contains a raised nub that helps you to identify the On button by touch in a dark or dimly lit room.
- ⑪ **Mute button (MLC 64 only)** — Press this toggle button to mute and unmute the volume on the Extron amplifier connected to the volume control module.
- ⑫ **Volume control knob (MLC 64 only)** — Rotate this knob to increase or decrease the volume on the Extron amplifier connected to the volume control module.

## Buttons

The front panel button illumination provides status on what the MLC is doing. The buttons are lit while the MLC has power. When a button has been pressed and is active or on, it lights brightly. While a button is inactive or off, it is lit dimly.

When buttons are grouped together, only the button that is pressed lights brightly. The other buttons in the group remain dim. (See the configuration software help file for information on grouping buttons; see “[Installing the Configuration Software](#)” in the “Software Configuration and Control” section to obtain the software.)

You can remove buttons and replace them with buttons having different labels. You can then configure the new buttons with the functions that their labels represent, using the configuration software (see the MLC 60 Series configuration program help file for detailed procedures for configuring the buttons).

Each Display On/Off and input selection button can be set up to perform a sequence of several functions, which can be combinations of the following options:

- **A driver operation** — Execute an RS-232 or IR control command that is part of a device driver (for a projector, VCR, DVD player, switcher, and so forth).
- **A relay operation** — Execute a relay command to a room device such as a motorized screen or a projector lift.
- **Setting a time delay** — Insert delays between executed commands.

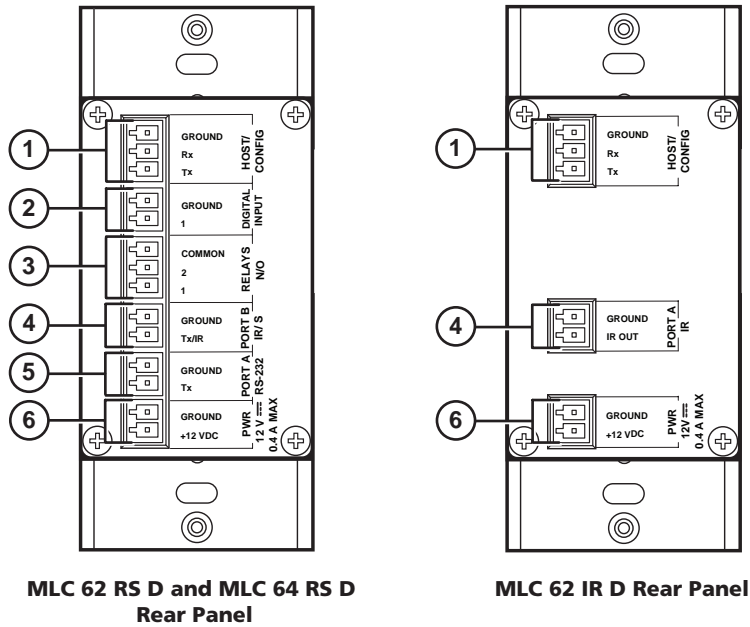
- **Setting the button flashing rate** — Specify fast or slow flashing of a front panel button and the number of seconds the button flashes.

**NOTE:** While a button is flashing, all other front panel buttons are disabled.

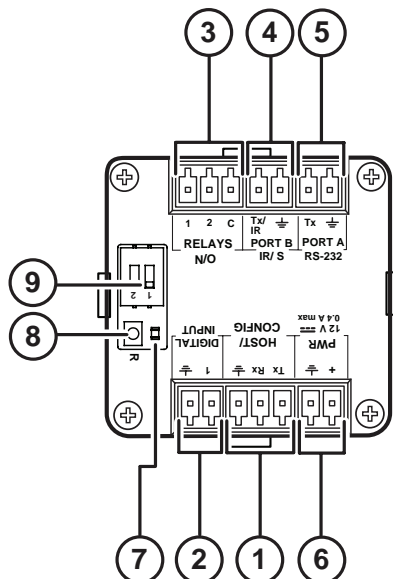
- **A user-defined RS-232 operation** — Issue a non-driver-associated RS-232 command (one that you programmed separately), such as an SIS command, via the IR/S or the RS-232 port.
- **Button emulation** — Initiate a series of button functions with a single button press.

## Rear Panel Features

See the wiring and installation sections, later in this section, for connection information.



**Figure 10.** MLC 60 Series D Models Rear Panels



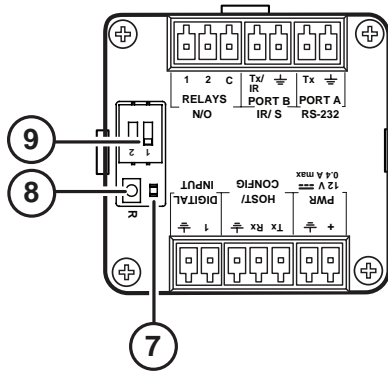
**Figure 11.** MLC 62 RS EU and MLC 62 RS MK Rear Panel

- ① **Host/Config port** — This bidirectional RS-232 serial port can be used for configuration and firmware updates in the same way as the USB port (⑦ in the “**Front and Left Side Panels**” section, earlier in this section). The baud rate is 9600 bps. This port can be used as a backup for the USB Configuration port (although you cannot power a device through it).
- ② **Digital Input port (RS models only)** — This port enables the MLC to monitor devices such as push buttons, switches, motion sensors, and moisture sensors and provides an additional way to trigger functions on the MLC. Connect a switch or a sensor to this 2-pole captive screw connector to initiate commands via the MLC to the display device, switcher, or other room devices such as lights or a motorized screen.
- ③ **Relay ports (RS models only)** — These relays allow control of room devices such as motorized screens, lights, and projector lifts. They are normally open relays and are rated at 24 V, 1 A. Low-power devices can be connected directly to the relay ports; devices requiring more than 24 V can be connected through a third-party low-voltage controller (LVC).
- ④ **IR/S or IR port** — This port provides unidirectional communication to control a switcher or a display via RS-232 or IR. For IR control, one or two IR emitters can be connected with a maximum of 50 feet (15 m) distance from port to emitter.
  - **RS models:** On all MLC 60 Series RS models, this port is labeled “Port B IR/S.” It can be set up via the configuration software to send out unidirectional RS-232 (the default) or IR commands. In the Configuration software, this port is called **Port B (IR/S)**.
  - **MLC 62 IR D:** On the IR-only model, this port is labeled “Port A IR” and issues only IR commands. In the Configuration software, this port is called **Port A (IR)**.
- ⑤ **RS-232 port (RS models only)** — This serial port, labeled “Port A RS-232,” provides unidirectional communication to control a switcher or a display via RS-232. In the Configuration software, this port is called **Port A (RS-232)**.
- ⑥ **PWR (power) connector** — Connect the supplied 12 VDC, 1 A power supply (or any other power supply capable of providing 12 VDC) to this 2-pole captive screw connector.

- CAUTIONS:**
- The power supply must not be permanently fixed to the building structure or similar structures.
  - The power supply must not be located within environmental air handling spaces or the wall cavity.
  - The installation must be in accordance with the applicable provisions of the *National Electrical Code ANSI/NFPA 70, Article 725* and the *Canadian Electrical Code, Part 1, Section 16*.
  - The power supply must be located within the same vicinity as the Extron AV processing equipment in an ordinary location, Pollution Degree 2, secured to a podium, a desk, or an equipment rack within a dedicated closet.
  - Always use a power supply specified by Extron for the MLC. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the MLC.

## Rear Panel Features on MLC 62 RS EU and MLC 62 RS MK Only

The items listed in this section are located on the rear panel of the MLC 62 RS EU and the MLC 62 RS MK only. On the MLC D models, these items are on the front panel, behind the wallplate (see “[Rear Panel Features](#)” for the descriptions of features ① through ⑥).

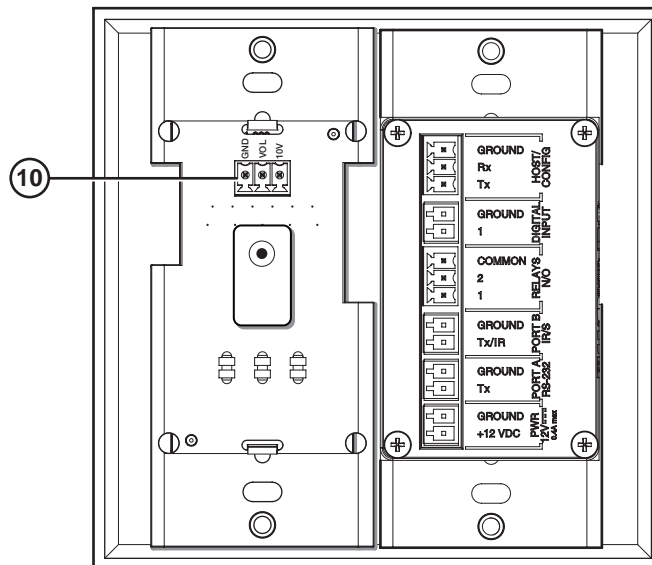


**Figure 12. Features on MLC 62 RS EU and the MLC 62 RS MK Rear Panels Only**

- ⑦ **Reset LED** — Indicates the status of a reset in progress.
- ⑧ **Reset button** — Press this reset button to initiate factory firmware or configuration resets (see “[Resetting the MLC Using the Reset Button,](#)” later in this section).
- ⑨ **DIP switches** — Reserved for future use

## MLC 64 RS VC D Volume Control Module Rear Panel

The MLC 64 RS VC rear panel is illustrated below. The MLC module rear panel (right side as you view it from the back) has the same features as that of the MLC 62 RS D (see [figure 11](#), earlier in this section).



**Figure 13. MLC 64 RS VC D Rear Panel VCM Features**

- ⑩ **Volume control module connector (MLC 64 RS VC D only)** — Connect an Extron amplifier to this 3-pole, 3.5 mm captive screw connector to enable volume and mute control by the MLC (see “[Wiring the Volume Control Module \(MLC 64 RS VC D Only\),](#)” later in this section).

**NOTE:** Use only Extron amplifiers with the MLC 64 RS VC D.

## Installation

The MLC 60 Series can be installed as listed below:

- The MLC 62 D models can be installed in a standard one-gang electrical wall box or a one-gang Decora mounting bracket (“mud ring”).
- The MLC 64 RS VC D can be installed a two-gang electrical box or mounting bracket.
- The MLC 62 RS EU can be installed in a standard one-gang EU junction box.
- The MLC 62 RS MK can be installed in a standard one-gang MK junction box.

- CAUTIONS:**
- Installation and service must be performed by authorized personnel only. UL listed electrical boxes are recommended.
  - Ensure that the junction box is grounded properly.
  - When stripping wires for use with the captive screw connectors, leave 3/16 (5 mm) of bare wire to insert into the connector.
    - Exposing more than 3/16 inch of the copper wires could allow the stripped wires to touch each other, causing a short circuit. This could result in the external DC power supply overheating and burning.
    - Stripping the wires to expose less than the recommended amount may cause them to slide out of the connector too easily, even if they are tightly pinched by the captive screws.

## Removing and Replacing the Faceplates

Each MLC model is delivered with a faceplate (bezel) attached. This faceplate can be removed if you want to replace any of the buttons or exchange the faceplate for another.

Replacement kits containing six-button or eight-button faceplates and additional buttons can be ordered (see “[Part Numbers and Accessories](#)” in the “Reference Information” section or the Extron website at [www.extron.com](http://www.extron.com) for information on parts that are provided or available to order for each MLC model).

### Removing and replacing an MLC D faceplate

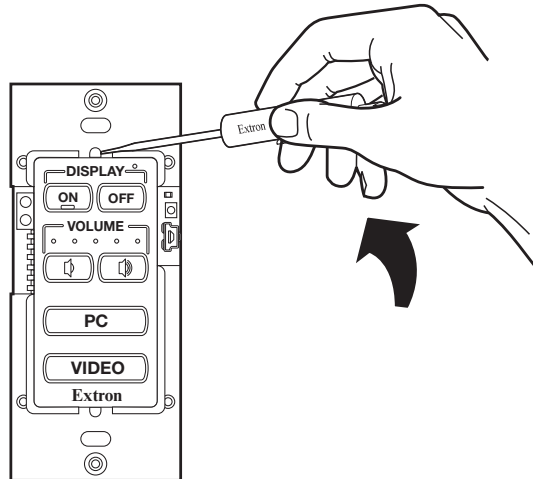
The MLC D models are delivered with a black faceplate attached. If desired, you can remove this faceplate and replace it with the white one that is also provided with the product. (Matching black and white Decora wallplates are also provided.)

1. Remove the faceplate from the MLC D as follows:

At the center top and bottom of the faceplate are tabs, which insert into slots on the MLC main board and hold the faceplate in place. For each tab:

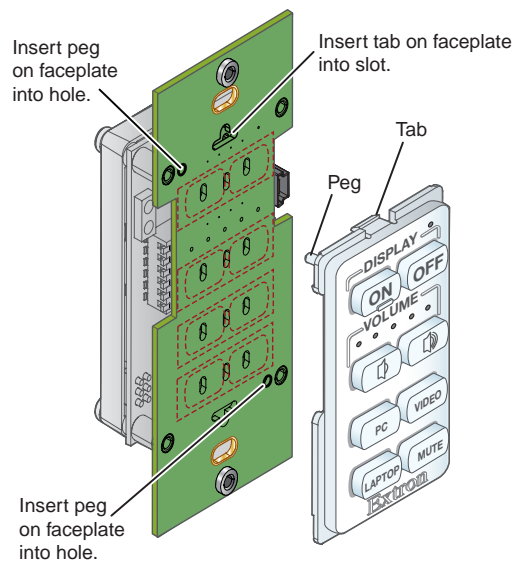
- a. Insert the flat end of the provided Extron Tweezer or other small screwdriver into the hole above or below the tab.
- b. Pressing each tab in and up, pry the top and bottom of the faceplate away from the board.

See the illustration on the next page.



**Figure 14. Removing the Faceplate (MLC 60 Series D Models)**

2. If you are switching faceplates, transfer the buttons from the faceplate you removed to the replacement one.
3. Make any desired button changes (see [“Replacing Buttons,”](#) later in this section).
4. To attach the faceplate, make sure that both the faceplate and the MLC board are **upright** and line up the pegs in upper-left and lower-right corners on the back of the faceplate with the two diagonal holes on the MLC board.
5. Press the faceplate onto the board with the pegs in the holes until the tabs at the top and bottom of the faceplate snap into their slots on the board (see the illustration below).



**Figure 15. Attaching the Faceplate (MLC 60 Series D Models)**



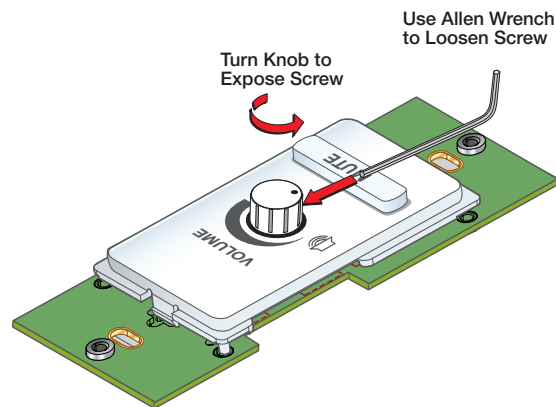
## Removing and replacing the MLC 64 VCM module knob and faceplate

The MLC 64 is provided with one black and one white VCM faceplate and volume control knob. You can change the faceplate, knob, or both on the volume control module as described in the following procedures.

### Replacing the MLC 64 volume control knob

**NOTE:** It is not necessary to remove the faceplate or the board from the wallplate in order to replace the knob.

1. Rotate the knob to its lowest setting (the dot on the knob should be aligned with the bottom edge of the volume icon on the faceplate) to line up the notch in the edge of the knob with the notch in the edge of the hole in the faceplate, enabling you to access the hex screw on the knob.
2. Insert the small Allen wrench (provided) into the opening created by the two notches, until it stops.
3. Give the Allen wrench a one-half turn counterclockwise to loosen the hex screw holding the knob.



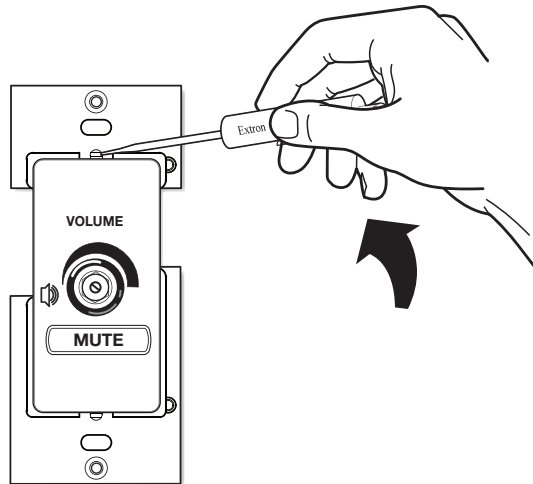
**Figure 16.** Removing the Volume Knob

4. Lift off the knob.
5. Press the new knob onto the spindle of the VCM, making sure that the spindle is turned all the way to the left and that the dot on the knob is aligned with the bottom edge of the volume icon on the faceplate.
6. Tighten the hex nut by inserting the Allen wrench and giving it one-half turn clockwise.

### Replacing the MLC 64 volume control module faceplate

To change the faceplate on the MLC 64 volume control module, you must remove the volume control module from the wallplate.

1. Remove the volume control knob from the faceplate (see "[Replacing the MLC 64 volume control knob](#)," steps 1 through 4, above).
2. At the center top and bottom of the faceplate are tabs, which insert into slots on the VCM module board and hold its faceplate in place. For each tab:
  - a. Insert the flat end of the provided Extron Tweaker or other small screwdriver into the hole above or below the tab (see the illustration on the next page).
  - b. Pressing each tab in and up, pry the top and bottom of the faceplate away from the board.



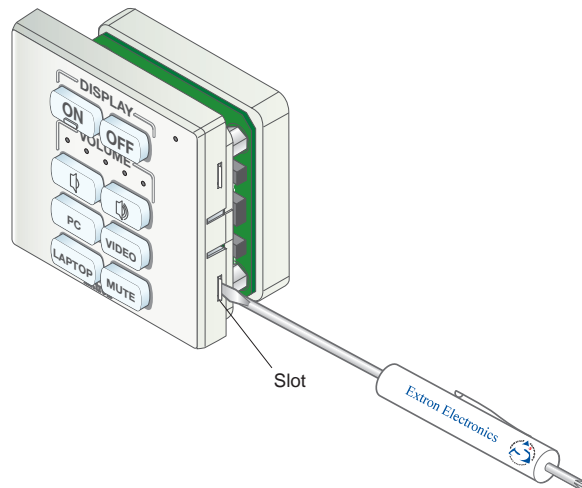
**Figure 17. Removing the MLC 64 Volume Control Module Faceplate**

3. Making sure that both the faceplate and the volume control module board are **upright**, line up the pegs in the upper-left and lower-right corners of the new faceplate with the holes in the board.
4. Press the faceplate onto the board until the tabs at the top and bottom of the faceplate snap into their slots on the board.

### Removing and replacing the MLC 62 RS EU and MK faceplates

The MLC 62 RS EU and MK are each provided with an eight-button and a six-button faceplate and matching wall frame. If desired, you can remove the faceplate to change buttons or to replace it with a different one.

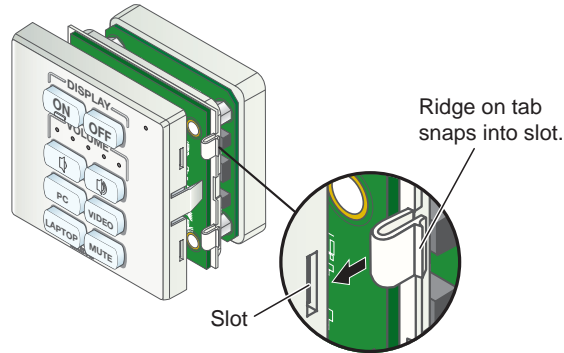
1. Remove the MLC 62 RS EU or MLC 62 RS MK faceplate as follows:
  - a. On the right and left edges of the MLC faceplate are two pairs of slots, into which two small tabs on either side of the MLC fit. Insert the flat end of the provided Extron Tweezer or other small screwdriver into one of the side slots.



**Figure 18. Removing the Faceplate (MLC 62 RS EU and MLC 62 RS MK)**

- b. Press inward with the screwdriver until the tab snaps free of its slot.
- c. Repeat steps **a** and **b** for the other tab on the same side of the faceplate.
- d. Lift the faceplate up and off the MLC. If the faceplate does not come free of the MLC, repeat steps **a** through **c** for the two tabs on the other side of the unit.

2. If you are switching faceplates, transfer the buttons from the faceplate you removed to the replacement.
3. Make any desired button replacements (see “[Replacing Buttons](#),” below).
4. Replace the faceplate as follows:
  - a. Hold the MLC with its board against the back of the faceplate, aligning the two tabs on each side of the unit with the two slots on each side of the faceplate.



**Figure 19. Replacing the Faceplate (MLC 62 RS EU)**

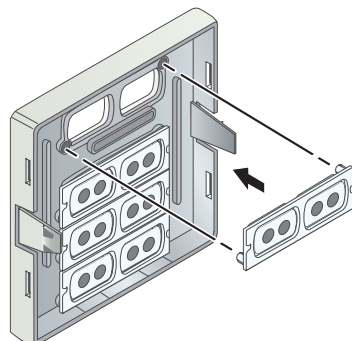
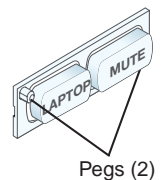
- b. Each tab has a ridge that must snap into a slot on the side of the MLC. Press the MLC into the faceplate until the tab ridges snap into their slots. Check to make sure that all four tabs are securely in place.

## Replacing Buttons

Additional labeled buttons are provided with the MLC and are available to order from the Extron website at [www.extron.com](http://www.extron.com). These buttons can be used to replace the factory-installed buttons in the MLC faceplate.

Each row of single-sized buttons is a single membrane. The entire membrane is removed, so that the buttons are replaced in rows. To replace buttons on the MLC:

1. Remove the faceplate from the MLC (see “[Removing and Replacing the Faceplate](#),” earlier in this section).
2. From the front of the faceplate, press the button or button pair to be replaced back through its slot in the faceplate until the membrane containing the buttons is free.
3. On the back of the faceplate, place the new button or row of buttons through the one or two slots in which they will be installed. Line up the two pegs in the upper-left and lower-right corners of the new button membrane (see the illustration at right) with the holes located at opposite corners of the empty pair of slots in the faceplate.



**Figure 20. Replacing a Button Row**

4. Press the two buttons into the faceplate until the pegs on the membrane are seated in the corresponding holes.
5. Repeat steps 2 through 4 for any additional buttons that you want to replace, then reattach the faceplate.

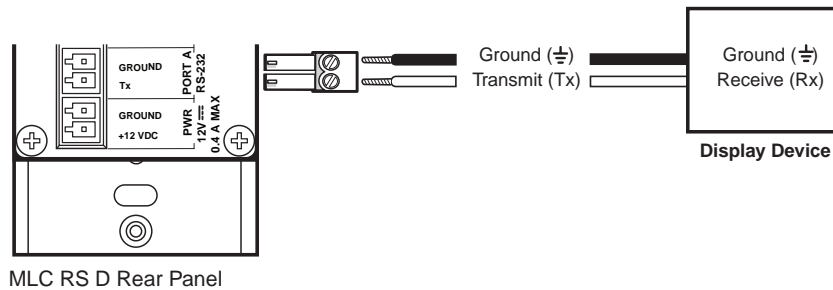
## Wiring for RS-232 Control (RS Models Only)

The MLC 60 Series RS models can send out RS-232 commands through the Port A RS-232 port (Port A) or the IR/S port (Port B) to control a display device or switcher that is connected to the port.

### Connecting to Port A RS-232

Port A RS-232 is a unidirectional serial port to which you can connect a display device or switcher for control via RS-232 as follows:

1. Connect the Rx pin on the display device or switcher to the Tx pin of Port A RS-232.
2. Connect the ground pin of the output device to the MLC Ground pin.



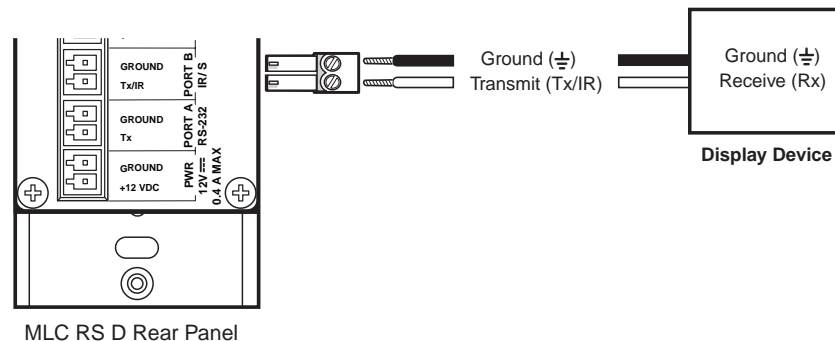
**Figure 21.** Connecting a Display Device to Port A RS-232 of an MLC RS D

Refer to the communication sheets for your device drivers for information on compatible baud rates and cabling type and distance. These communication sheets are accessed via the MLC configuration software and also on the Extron web page at [www.extron.com](http://www.extron.com), **Download** tab (see “**Obtaining Device Drivers**” in the “Software-based Configuration” section or the configuration program help file to view the communication sheets and download the device drivers).

### Connecting to Port B IR/S

This port can be used for either IR or RS-232 unidirectional serial communication. To control a display device or switcher via RS-232 from this port, connect the device as follows:

1. Connect the Rx pin on the display device or switcher to the Tx/IR pin of Port B IR/S.
2. Connect the ground pin of the output device to the MLC Ground pin.

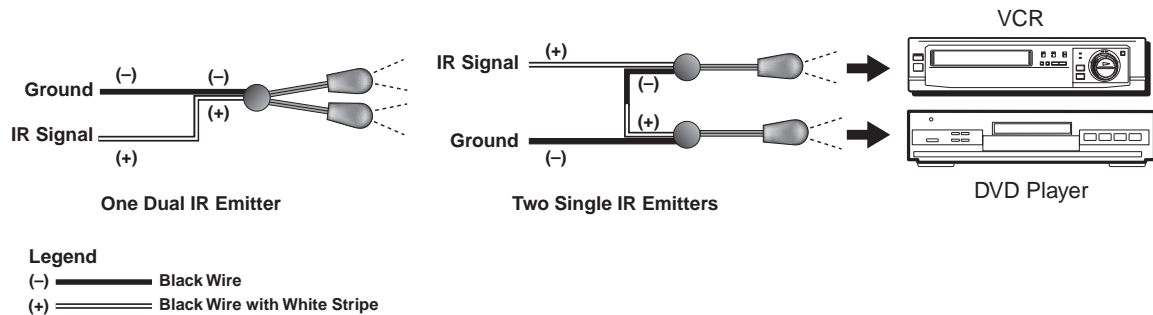


**Figure 22.** Connecting a Display Device to Port B IR/S of an MLC RS D

## Wiring for IR Control

To control devices via infrared (IR) commands from the MLC, connect one or two IR emitters to the IR/S port (RS models) or the IR port (IR model). The IR and IR/S ports provide unidirectional IR signal output to control a display, projector, switcher, or other device such as a VCR or DVD player.

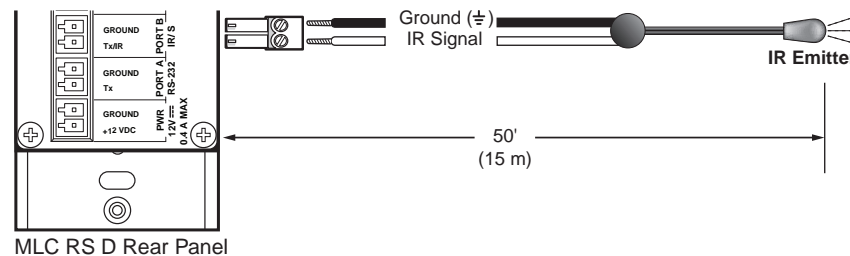
You can connect one or two single IR emitters or one dual IR emitter to the IR or IR/S port to control one or two devices. Because the MLC captive screw plugs have small openings that accept just one wire per pole, to connect two IR emitters to the MLC, insert one ground wire (black) and one IR signal wire (black with a white stripe) in the MLC 62 IR or IR/S port, then connect the IR emitters to those wires, as shown below.



**Figure 23. IR Emitters for the MLC 60 Series**

For IR control, there can be a maximum of 50 feet (15 m) between the IR or IR/S port and the IR emitters.

**Example:** The illustration on the next page shows a single IR emitter connected to the IR/S port of an MLC 62 RS D or an MLC 64 RS D.



**Figure 24. Connecting an IR Emitter to the IR/S Port of an MLC RS D**

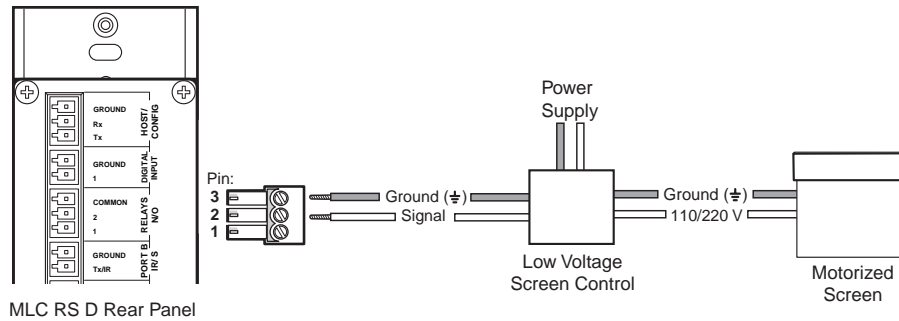
## Wiring the Relays Port (RS Models Only)

Connect one or two devices such as room lights, a projector lift, or a motorized screen (shown in the example on the next page) to the Relays port. This port accommodates two relay connections.

To connect a device to one of the relay ports:

1. Connect the ground wire of the device to pin 3 of the provided 3-pole captive screw connector.
2. Connect the signal wire of the device to pin 1 or 2 of the 3-pole connector.
3. Plug the 3-pole connector into the MLC 3-pole captive screw Relays port.

**Example:** In the illustration on the next page, a low-voltage controller connected to a motorized screen has been wired to pins 2 and 3 of the provided 3-pole captive screw plug. When this connector is plugged into the rear panel Relays port, the device will be connected to the MLC relay port 2 (pins 2 and Common of the MLC 3-pole Relays connector).



**Figure 25. Connecting a Motorized Screen to the Relay Port of an MLC RS D**

To connect devices to **both** relay ports:

1. Connect the ground wires of **both** devices to pin 3 of the provided 3-pole captive screw connector.
2. Connect the signal wire of one device to pin 2 and the other device to pin 1 of the 3-pole connector.
3. Plug the 3-pole connector into the MLC Relays port.

To define the operation of a relay and associate it with a button or a digital input, use the configuration software (see "[Adding relays to buttons](#)" or "[Configuring the Digital Input Port](#)" in the "Software-based Configuration" section or the configuration software help for setup procedures).

## Wiring the Digital Input Port (RS Models Only)

The Digital Input port on the MLC rear panel lets you connect a switch or sensor to control other devices in the room that are connected to the MLC serial, IR, and relay ports. This port measures two states — high and low — of the connection between the switch or sensor and the connected device. The port accepts 0 to 24 VDC input. The threshold voltages are as follows: a voltage below 1.0 VDC is measured as logic **low**, and a voltage above 1.5 VDC is measured as logic **high**.

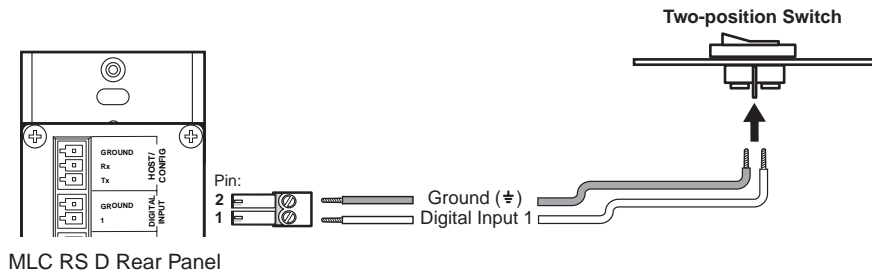
There is also an internal, +5 VDC, selectable, pull-up resistor for this circuit. If a connected device does not have its own power source and will be powered through the controller, configure this port (via the MLC configuration software) with **Input with Pullup** as the digital input mode. If the connected device provides its own power, select **Input** for the digital input mode (see the *MLC 60 Series Configuration Program Help File* to select the digital input mode).

In addition, you can program actions on this port, so that each time a high or low state is detected, one or more functions are performed. An example of this is front panel lockout, or executive mode (see the configuration software help file to configure the Digital Input port).

To wire the Digital Input connector:

1. Connect the ground port of the input device to pin 2 of a provided 2-pole captive screw connector.
2. Connect the signal port of the input device to pin 1 of the captive screw connector.
3. Plug the wired connector into the MLC rear panel Digital Input connector.

**Example:** The diagram below shows a two-position switch connected to the Digital Input port of an MLC 62 RS D.



**Figure 26.** Connecting a Two-position Switch to the Digital Input Port

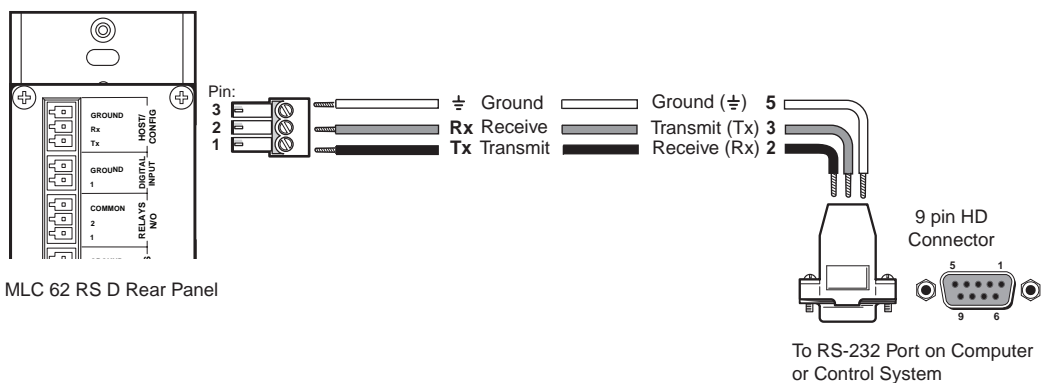
## Wiring the Host/Config Port

The Host/Config port provides an alternative connection by which the MLC can be configured and controlled from a host device or computer. (The primary means of configuring the MLC is through the USB port; see “[Configuring the MLC via the USB Port](#),” later in this section.) In addition, SIS commands can be issued through this port from the computer to control the MLC (see the “[SIS Control](#)” section).

The RS-232 protocol for this connection is 9600 baud, 1 stop bit, no parity, 8 data bits, no flow control.

Use a female 9-pin to bare wire RS-232 cable or a universal control cable (such as UC 50', Extron part number 26-518-01, or UC 100', part number 26-518-02) to connect a Windows-based PC or an RS-232 control system to the MLC via this 3-pole, 3.5 mm captive screw connector as follows:

1. Wire the RS-232 cable to one of the 3-pole captive screw plugs provided with the MLC, as follows:
  - Receive wire to pin 1, which plugs into the Tx (transmit) port
  - Transmit wire to pin 2, which plugs into the Rx (receive) port
  - Ground wire to pin 3, which plugs into the  $\oplus$  (ground) port



**Figure 27.** Connecting a Host Computer or Control System to the Host/Config Port

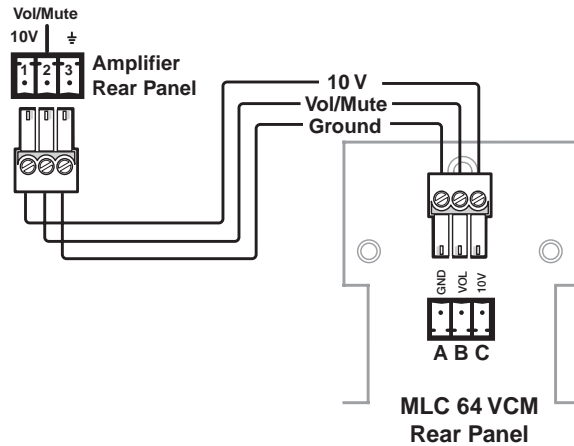
2. Plug the 3-pole connector into the Host/Config port on the MLC rear panel.

## Wiring the Volume Control Module (MLC 64 RS VC D Only)

Connect the remote volume control port of an Extron amplifier to the 3-pole captive screw connector on the rear panel of the MLC 64 volume control module, as shown in the figure below. No software configuration is required for this module.

- NOTES:**
- Choose an Extron amplifier that is capable of remote volume control and muting. Not all Extron amplifiers have remote volume control ports. The MPA 122 or MPA 401 are examples of the type of amplifier to use.
  - Use shielded cable for audio connections to avoid inducing noise.

1. Wire a 3-pole captive screw connector (provided) to an audio cable as shown below:



**Figure 28. Wiring the Volume Control Module**

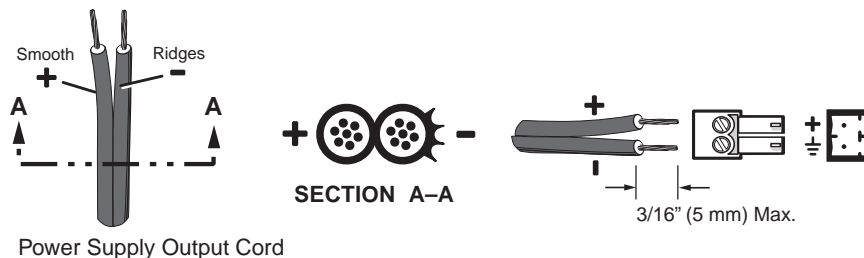
In figure 28:

- **A** = ground
  - **B** = Volume and mute control with DC voltage. The range is 0 to 10 V, where 0 V is mute and 10 V is maximum volume.
  - **C** = 10 VDC reference voltage
2. Plug the wired connector into the 3-pole captive screw connector on the rear panel of the MLC 64 volume control module.
  3. Connect the other end of the audio cable to an Extron amplifier that is capable of remote volume control (such as the XPA 1002).

## Connecting Power to the MLC

See “[⑥ PWR \(power\) connector](#),” earlier in this section, for important cautions about power supplies. Connect the provided 12 VDC, 1 A power supply to the MLC as follows:

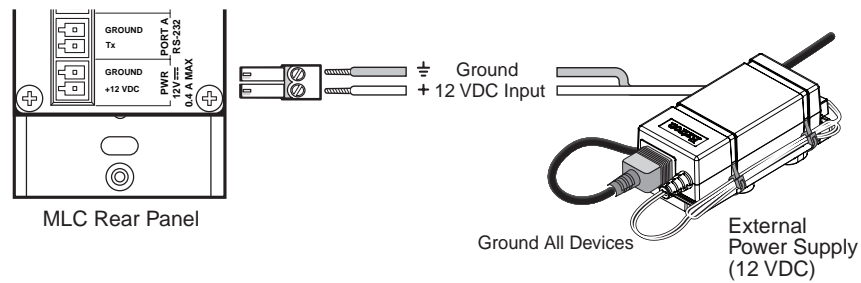
1. Wire one of the supplied 2-pole captive screw connectors as shown below.



**Figure 29. Wiring the Power Connector**



2. Plug the connector into the rear panel Pwr connector. In the example below, a power supply is being connected to the Pwr connector of an MLC 62 RS D.



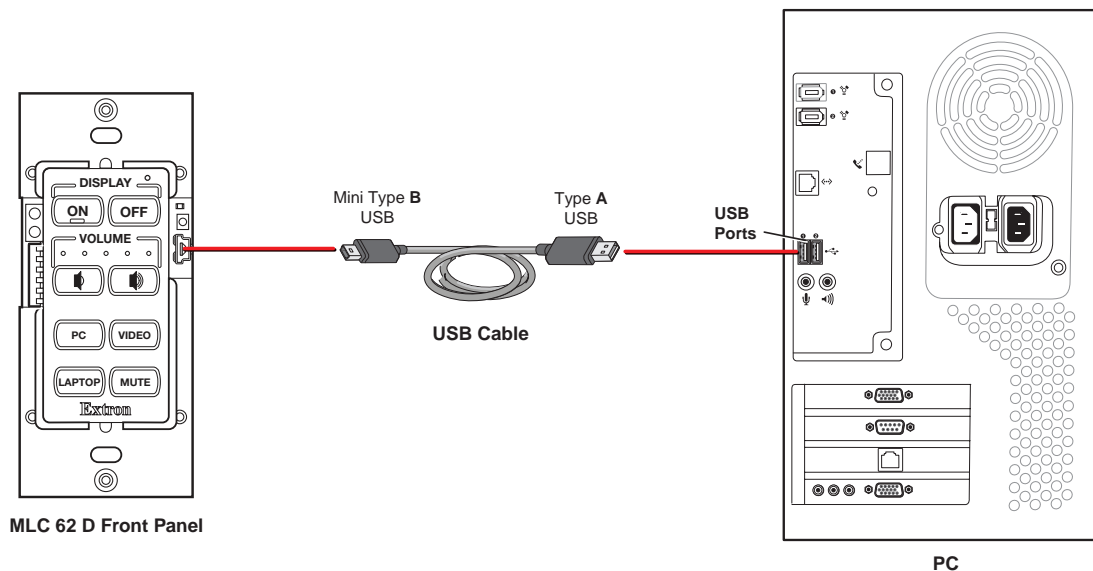
**Figure 30.** Connecting a Power Supply to an MLC

## Configuring the MLC via the USB Port

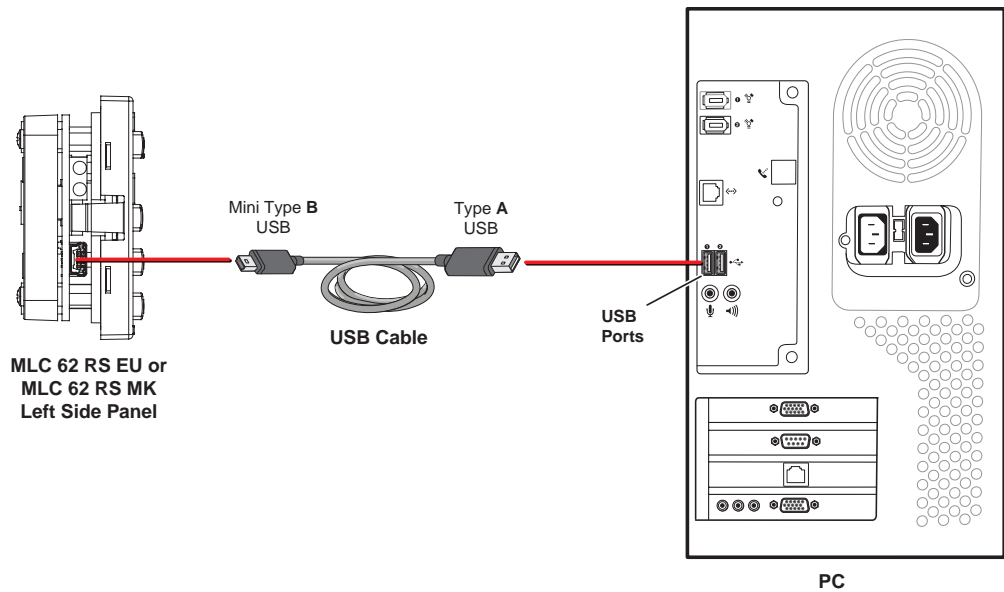
The mini-Type B USB port can be used to configure the MLC via the configuration software and to update the firmware. This USB port also functions as a power source for the MLC during configuration.

**NOTE:** Do not use this port as the permanent power source for the MLC. It should be used for power only during button and port configuration.

1. If the MLC has already been installed, access the USB port as follows:
  - **MLC D models:** Remove the wallplate from the unit to access the USB port, which is located on the front panel behind the wallplate (see "[Accessing the Covered MLC D Front Panel Features](#)," later in this section).
  - **MLC 62 RS EU and MK:** Remove the MLC from the installation surface to access the USB port, which is located on the left side panel (see "[Accessing MLC 62 RS EU and MK Side and Rear Panel Features](#)," later in this section).
2. Connect a USB A to mini B cable between the USB configuration port and the USB port on your computer.



**Figure 31.** USB Port Connection for MLC D Models



**Figure 32. USB Port Connection for MLC 62 RS EU and MLC 62 RS MK**

3. If this is the first time you have connected an MLC to this USB port on your computer, the Found New Hardware Wizard opens. On the first screen, you can specify whether you want the computer to connect to Windows Update in order to search the web for the driver that it needs to communicate with the MLC via the USB port. (If the USB driver already exists on your computer, select **No, not this time.**)



**Figure 33. Found New Hard Wizard Opening Screen**

- Select the **Yes, this time only** radio button if you want your computer to connect to Windows Update only this one time.
- Select **Yes, now and every time I connect a device** if you want the computer to automatically connect to Windows Update to search the web every time the MLC is connected to this USB port.
- Select **No, not this time** if you do not want the computer to connect to Windows Update to search the web (for example, if the driver is already present on your computer).

4. Click **Next**. On the next screen, make sure that the **Install the software automatically (Recommended)** radio button is selected, then click **Next**. (You do not need to insert a disc.)



**Figure 34. Selecting the Radio Button to Install the USB Driver Automatically**

Your computer locates the driver needed for it to communicate with the MLC via the USB port. This driver is loaded to the computer hard drive when the MLC configuration program is installed.

5. When the Completed screen appears, click **Finish** to close the wizard.

**NOTE:** This wizard appears only the **first** time you connect the MLC to each USB port. You do not see the wizard again unless you connect the MLC to a different USB port on your computer.

6. Configure the MLC ports and buttons as desired, using the MLC configuration program (see the configuration software help file for information on these procedures). To obtain the software, see "[Installing the Configuration Software](#)" in the "Software Configuration and Control" section.

7. When finished configuring, disconnect the USB cable from the MLC, and replace the faceplate or return the MLC to its position in the installation surface.

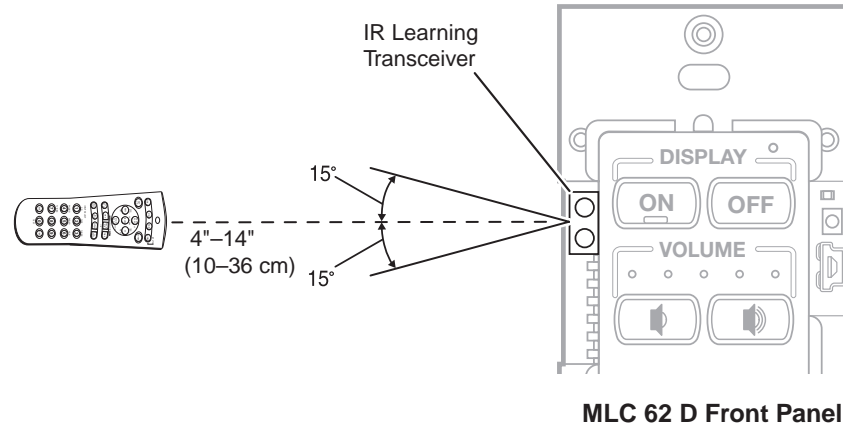
**NOTES:**

- Unlike the rear panel Host/Config port, which can also be used to configure the MLC, the cable to the USB port cannot remain connected when the MLC 62 RS EU or MLC 62 RS MK is mounted, or when the MLC D wallplate is attached.
- If you want to upload a new configuration via USB after the MLC has been mounted, you must detach the MLC D wallplate or remove the MLC 62 RS EU or MLC 62 RS MK unit from the installation surface (see "[Accessing Covered Panel Features after Mounting](#)," later in this section, for the procedures).

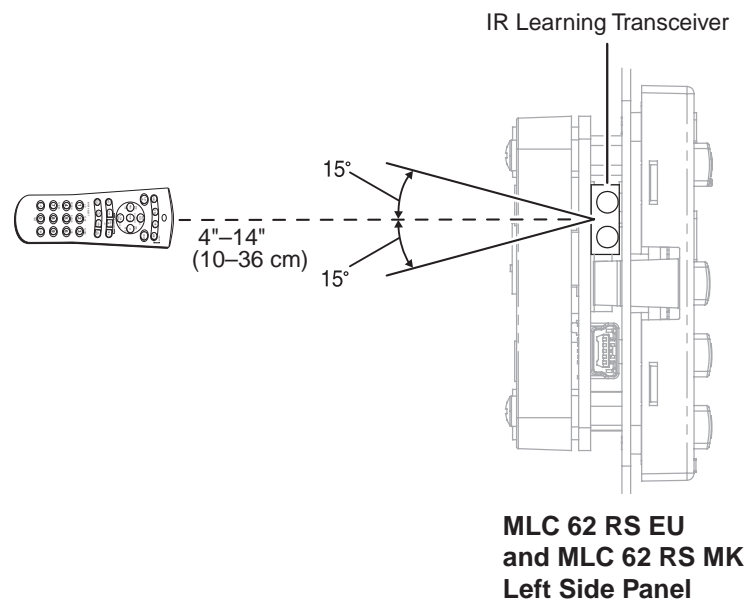
## IR Learning

The IR learning transceiver sensor on the MLC front or left side panel can receive and “learn” commands from the infrared remote controls of other devices via the MLC configuration software. IR Learning enables you to create an IR driver file to control the projector or input devices such as a VCR or DVD player. IR Learning of projector control codes is necessary only if there is no driver available for your projector or if you need to customize the driver.

The IR transceiver accepts infrared signals of 30 kHz to 60 kHz. Point the IR remote control directly at the transceiver for best results. The diagrams below indicate the best distances and angles at which to hold the remote control.



**Figure 35.** IR Learning on an MLC D Model



**Figure 36.** IR Learning on an MLC 62 RS EU or MLC 62 RS MK

To set up the MLC for IR Learning, use the MLC configuration software (see the configuration software help file for the procedures).

## Mounting the MLC 60 Series Controllers

When the system has been cabled, configured, and tested, the MLC can be installed in a wall or furniture. After you have any desired changes to the faceplate or front panel buttons and configured the buttons, mount the MLC as described in the following sections.

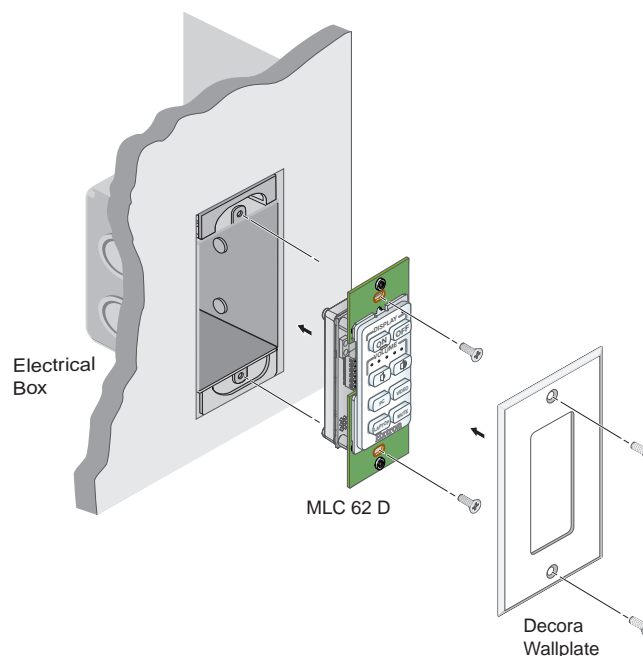
### Mounting an MLC 62 D

You can mount an MLC 62 RS D or MLC 62 IR D to a UL-approved one-gang sized electrical junction box or Decora mounting bracket (included).

#### Mounting an MLC 62 D to an electrical junction box

**CAUTION:** Ensure that the junction box is grounded properly.

1. Mount the electrical junction box in the wall or furniture, following the directions provided with the box.
2. Run the cables through the electrical box.
3. Connect all cables and disconnect power from all devices at the source.
4. Insert the MLC unit into the mounted electrical box.
5. Secure the MLC to the box using two of the provided screws in the slots at the top and bottom of the unit.
6. Fasten the Decora wallplate onto the unit using two of the provided screws in the holes at the top and bottom.

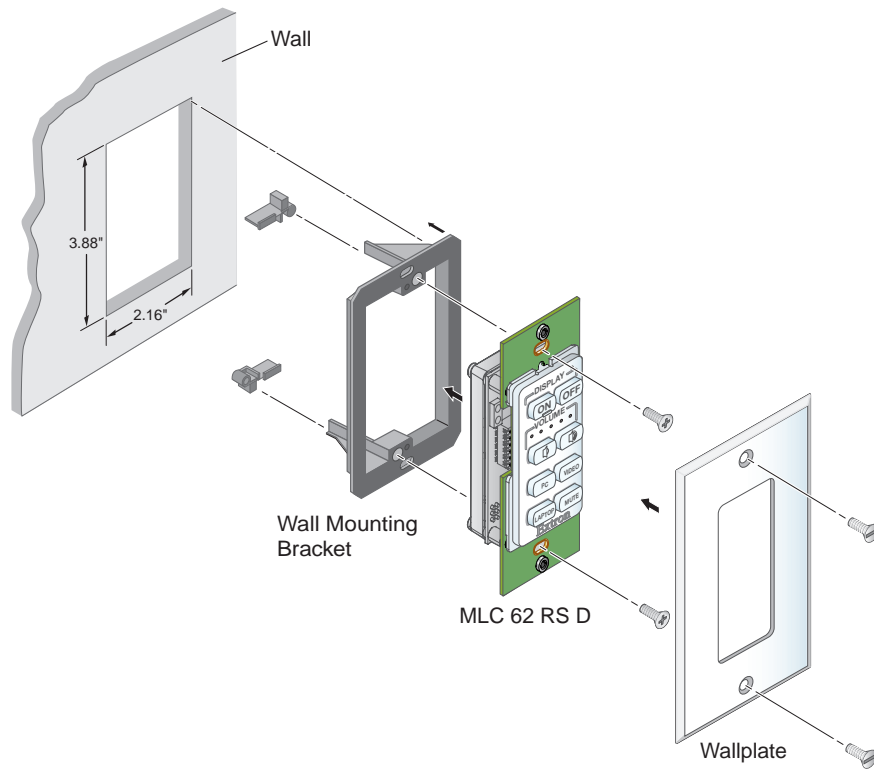


**Figure 37.** Mounting an MLC 62 D in an Electrical Junction Box

## Mounting an MLC 62 D to a Decora Mounting Bracket

A one-gang, Decora style mounting bracket (“mud rings”) is provided with the MLC 62 D models. If desired, you can mount the MLC to this type of bracket instead of to an electrical box. To mount the controller to a Decora style mounting bracket, follow these steps:

1. Cut a hole in the mounting surface large enough to accommodate the provided one-gang mounting bracket.
2. Insert the mounting bracket into the hole.
3. Turn the two screws on the bracket so that the locking arms rotate behind the mounting surface until they clamp securely to it. Do not overtighten.
4. Run the cables through the mounting bracket and attach them.
5. Place the MLC D onto the bracket so that the oval screw holes at the top and bottom of the MLC line up with the oval holes at the top and bottom of the bracket.
6. Place the wallplate onto the MLC front panel, then attach both to the bracket, using two of the provided screws in the holes at the top and bottom.



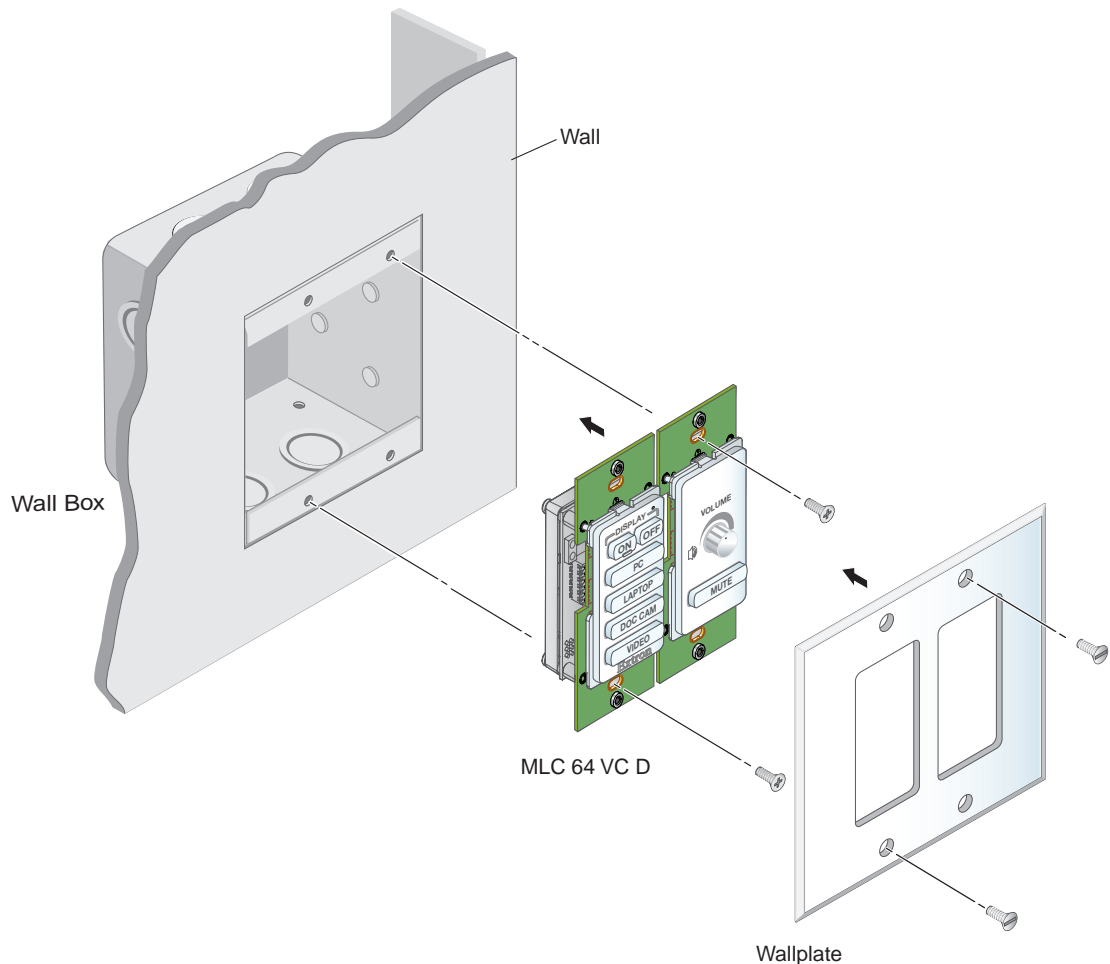
**Figure 38.** Mounting an MLC 62 D to a Decora Mounting Bracket

## Mounting the MLC 64 RS VC D

### Mounting an MLC 64 RS VC D to an electrical junction box

**CAUTION:** Ensure that the junction box is grounded properly.

1. Mount a two-gang electrical junction box in the wall or furniture, following the directions provided with the box.
2. Run the cables through the electrical box.
3. Connect all cables and disconnect power from all devices at the source.
4. Place the MLC and VCM units side-by-side into the mounted electrical box.
5. Secure the MLC and VCM to the box using the provided screws in the oval slots at the top and bottom of the two boards.
6. Fasten the wallplate onto the unit using the four provided black or white screws in the holes at the top and bottom of the wallplate.

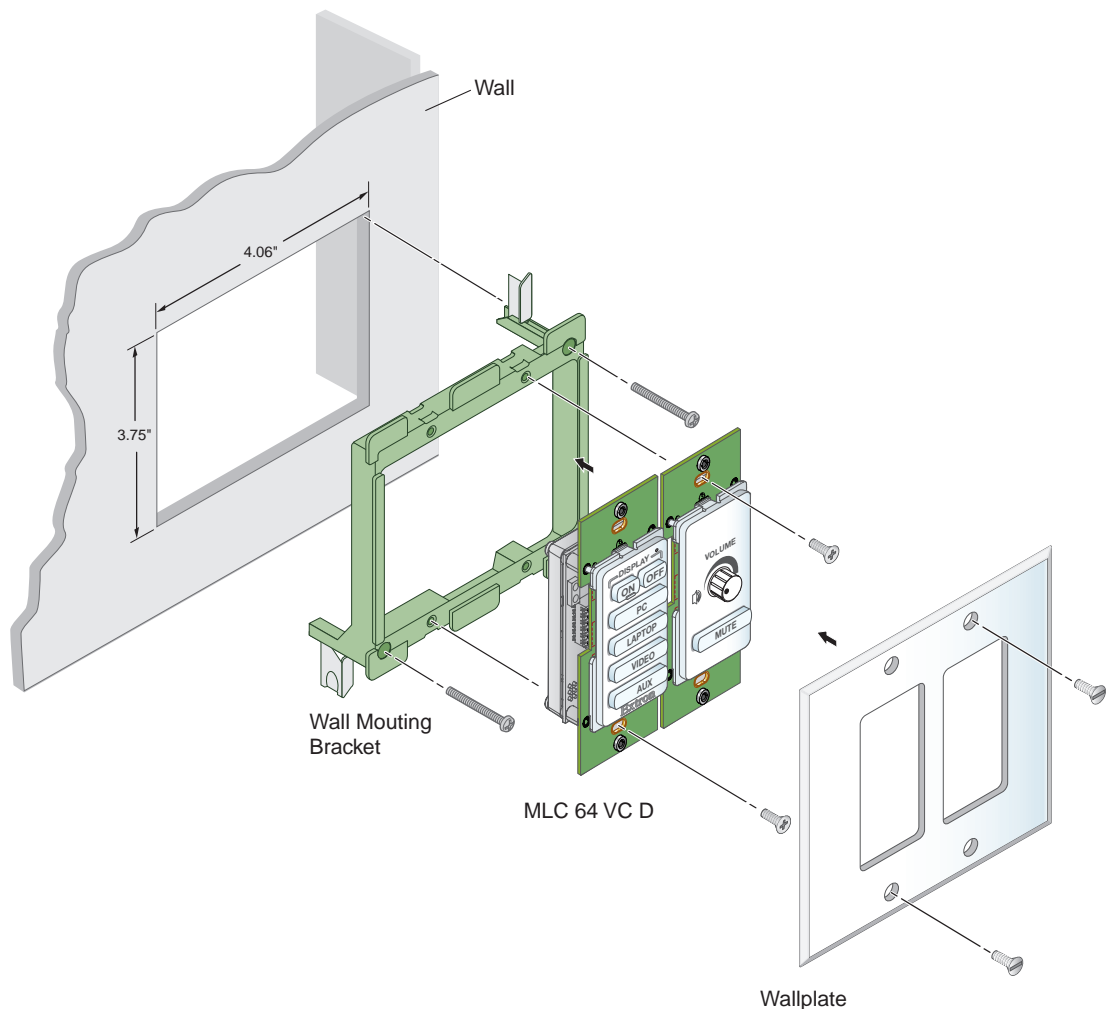


**Figure 39.** Mounting an MLC 64 D to an Electrical Box

## Mounting an MLC 64 RS VC D to a Decora Mounting Bracket

A two-gang Decora mounting bracket is provided with the MLC 64. To mount the MLC 64 to this type of bracket:

1. Cut a hole in the mounting surface large enough to accommodate the provided two-gang mounting bracket.
2. Insert the mounting bracket into the hole.
3. Turn the two screws on the bracket so that the locking arms rotate behind the mounting surface until they clamp securely to it. Do not overtighten.
4. Run the cables through the mounting bracket and attach them.
5. Place the MLC 64 and the volume control module side-by-side onto the bracket so that the centers of the oval screw holes at the top and bottom of both module boards line up with the four holes on the bracket.
6. Insert the four provided silver, rounded Phillips head screws through the oval holes in the two MLC boards and then the round holes in the Decora mounting bracket behind, and tighten the screws.
7. Place the wallplate over the two MLC modules. The front panels should protrude through the slots in the wallplate, while the two boards fit into the recessed area on the back side of the wallplate.
8. Fasten the wallplate onto the MLC boards, using the four provided black or white screws in the holes at the top and bottom of the wallplate.



**Figure 40. Mounting an MLC 64 D to a Two-gang Decora Mounting Bracket**



## Mounting the MLC 62 RS EU and the MLC 62 RS MK

**CAUTION:** Ensure that the junction box is grounded properly.

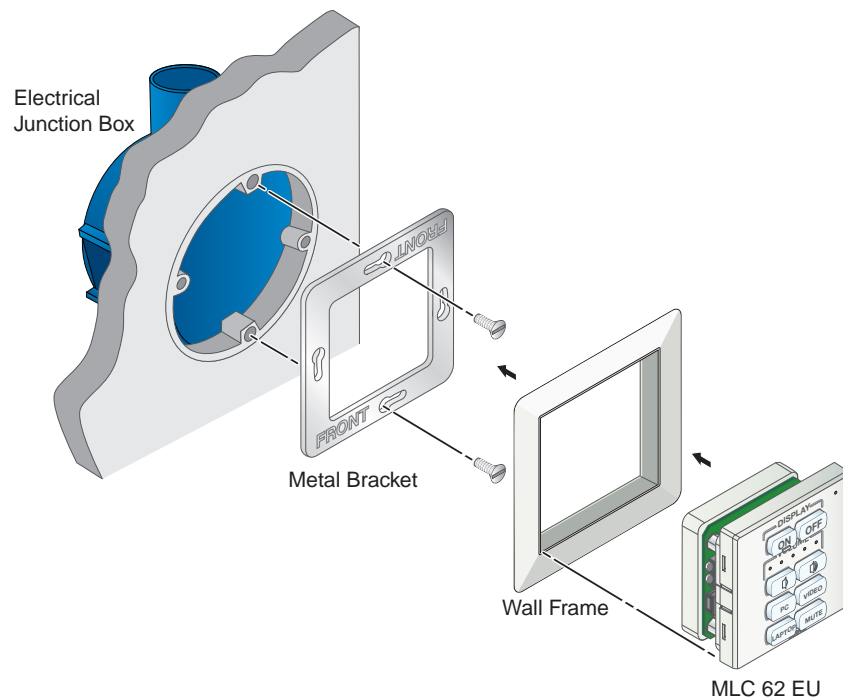
To mount the MLC 62 RS EU and MLC 62 RS MK to an electrical box:

1. Attach the provided metal mounting bracket to the mounted electrical box using two of the included screws in the slots at the top and bottom of the bracket.

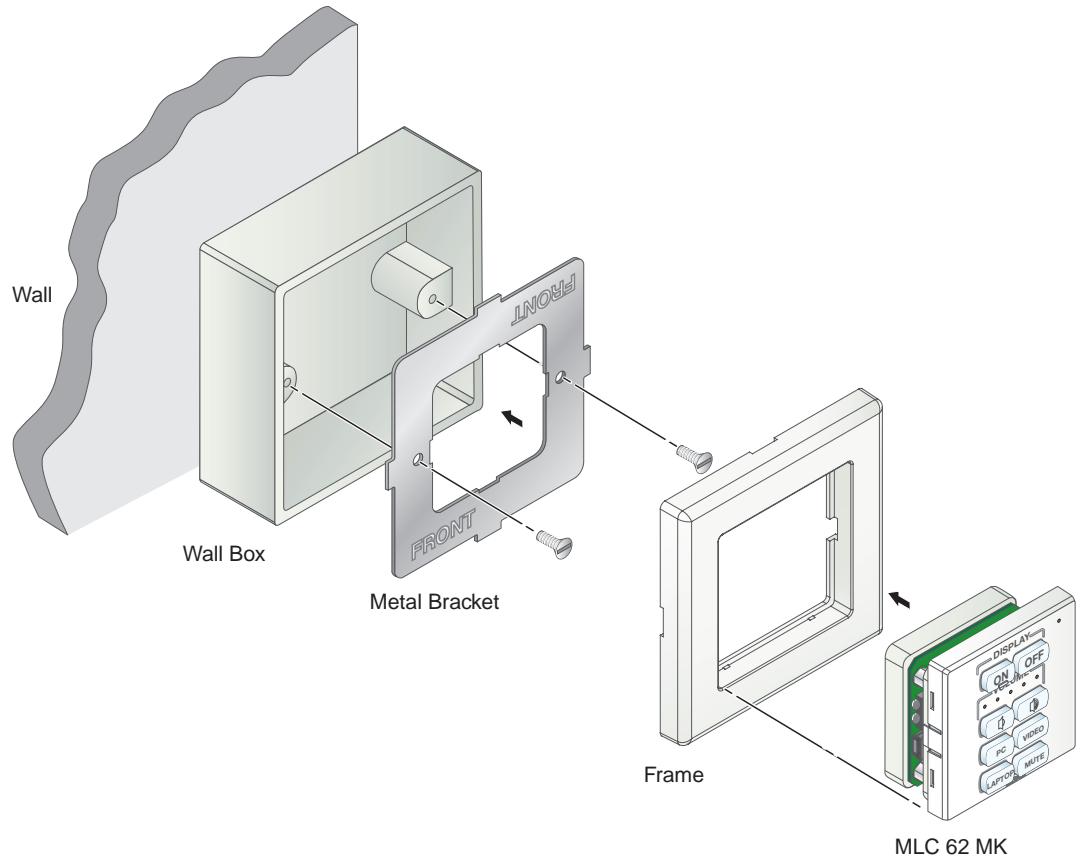
**NOTES:**

- To keep the MLC securely in place and prevent it from being easily pulled from its mounting surface, ensure that the side of the bracket with the word "Front" engraved on it faces **out** (away from the electrical box).
- If you want to be able to remove the MLC easily from its mounting, attach the mounting bracket with "Front" facing inward, toward the junction box.

2. Run the cables through the electrical box and the plastic wall frame.
3. Connect all cables to the MLC and disconnect power from all devices at the source.
4. Align the wall frame to the metal mounting bracket on the mounting surface.
5. Holding the wall frame in place on the bracket, press the MLC into the frame until the unit snaps into place.



**Figure 41.** Mounting the MLC 62 RS EU to an Electrical Box



**Figure 42. Mounting the MLC 62 RS MK to an External Electrical Box**

### Mounting the MLC EU in a Raceway Using Spacers (Optional)

If you are experiencing difficulty with the MLC EU staying in place when installed in a cable raceway, this may be due to a gap between the metal mounting bracket and the wall frame.

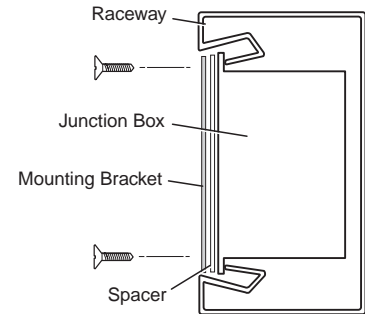
When this gap exists, the tabs on the sides of the MLC do not reach the metal mounting bracket and the MLC does not snap completely into the wall frame.

You can remedy this situation by installing a spacer (provided with the MLC EU) between the metal mounting bracket and the rim of the junction box. This spacer appears very similar to the metal mounting bracket, except that it has holes instead of slots for the mounting screws, it is engraved with the words "Optional Spacer" and "Place behind bracket," and has a slightly larger center opening than the mounting bracket.

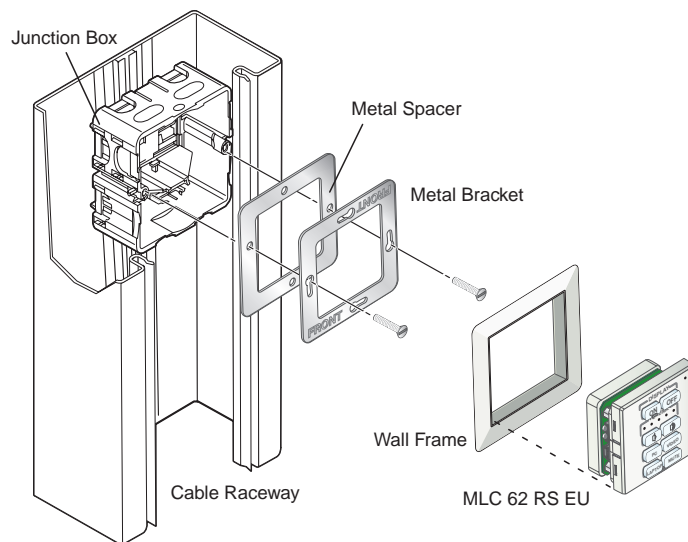
**NOTE:** Do not attempt to use the spacer in place of the metal mounting bracket. Because of its larger opening, the spacer will not hold the MLC EU in place in the wall frame.

To mount the MLC EU to a raceway using the spacer:

1. Mount the electrical box in the raceway.
2. Attach the spacer to the electrical box using two of the included screws in the holes at the sides of the spacer. Leave the screw heads protruding approximately 1/8 inch from the surface of the spacer.
3. With the "Front" label toward you, place the metal mounting bracket onto the spacer so that the screw heads pass through two of the slotted holes in opposite sides of the bracket.



**NOTE:** Ensure that the surface of the mounting bracket containing the word "Front" is facing **out** (away from the spacer and junction box).

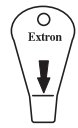


**Figure 43. Mounting the MLC 62 RS EU Using a Spacer**

4. Rotate the mounting bracket as necessary to ensure that the MLC will be positioned straight on the mounting surface and not skewed to either side.
5. Tighten the screws to secure the bracket to the spacer.
6. Pull the cables through the electrical box and the wall frame.
7. Disconnect power from all devices at the source and connect all cables to the MLC.
8. Align the wall frame with the metal mounting bracket on the mounting surface.
9. Press the MLC into the frame until the unit snaps into place.

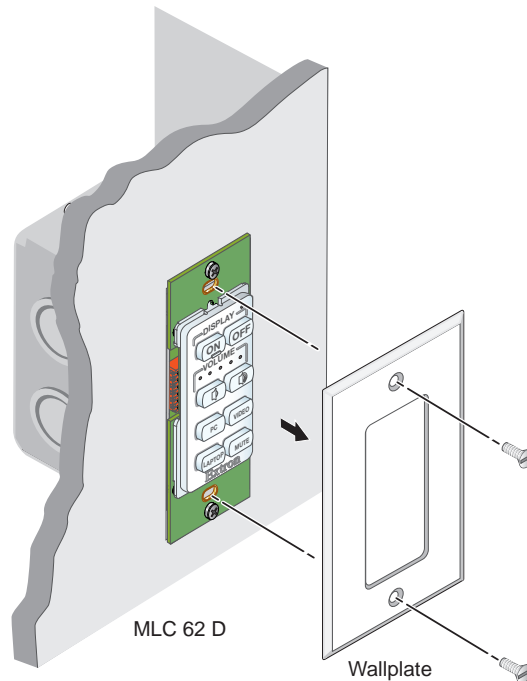
## Accessing Covered Panel Features After Mounting

After the MLC is installed in the mounting surface, you can still access the covered front panel features on the MLC D and the side and rear panel features on the MLC 62 RS EU and MLC 62 RS MK, using the following procedures.



### Accessing the Covered MLC D Front Panel Features

After the MLC D is mounted, the following front panel items are covered by the wallplate: IR sensor, DIP switches, Reset button, and USB connector. To access these controls, remove the two screws at the top and bottom of the wallplate and lift it off the MLC, as shown below.



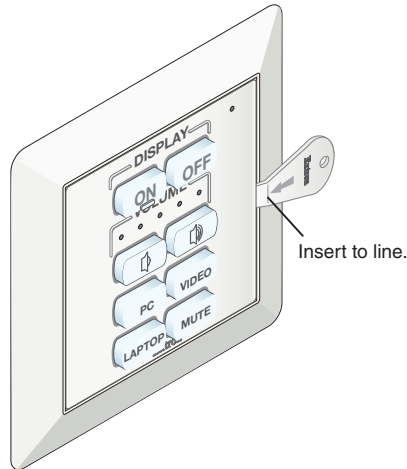
**Figure 44. Removing the MLC D Wallplate**

### Accessing MLC 62 RS EU and MLC 62 RS MK Side and Rear Panel Features

To access the MLC 62 RS EU or MK side and rear panel features after the MLC has been mounted, you must remove the MLC from the installation surface, leaving the metal mounting bracket attached. (Without the MLC unit to hold it in place, the wall frame also is removed.) A removal tool (shown at right) is provided with the product.

To remove the MLC from the mounting surface:

1. Insert the flat tip of the removal tool in the center of the right or left edge of the MLC, between the MLC and the wall frame, all the way to the line below the arrow on the tool.



**Figure 45. Inserting the Removal Tool in an MLC 62 EU**

2. Press the removal tool inward or toward the mounting surface to release the tab holding the MLC in place in the wall frame.
3. If the MLC does not immediately come free of the frame, pry the unit outward (away from the wall) until it is free of the installation surface, then lift it out.

To reinstall the MLC, place it in the wall frame, then press the unit into the metal mounting bracket until all four tabs snap into their slots.

## Front Panel Security Lockout

To prevent accidental changes to settings, the MLC features a front panel security lockout mode for disabling access to controls. When front panel lockout is enabled, all the front panel buttons are disabled. If a button is pressed, all the buttons flash rapidly three times to indicate lockout, but no action occurs.

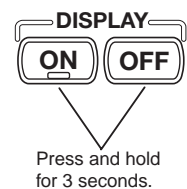
You can lock and unlock the front panel by the following methods:

- Front panel buttons
- The MLC configuration software (see the *MLC 60 Series Configuration Program Help File*).
- SIS commands (see the **Front panel lockout** commands in the “SIS Control” section).

### Locking Using the Front Panel Buttons

To lock the front panel using the buttons, press and hold the On and Off (top two) buttons simultaneously for 3 seconds. All the front panel buttons and the red Activity LED flash three times rapidly.

To unlock the front panel, press and hold the On and Off buttons again for 3 seconds. All front panel buttons flash three times slowly while the Activity LED blinks green three times.



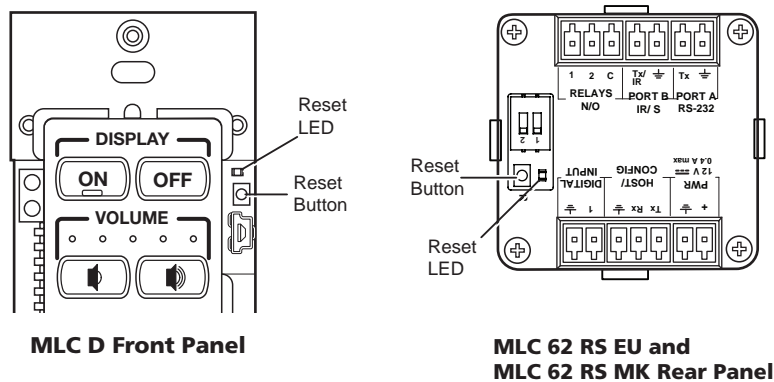
## Resetting the MLC Using the Reset Button

If it becomes necessary to reset the MLC to its default factory firmware or to the default configuration settings that were implemented at the factory, you can use either the Reset button (see below) or the configuration software (see the software help file).

The Reset button is located on the front panel of the MLC D behind the wallplate, and on the rear panel of the MLC 62 RS EU and MK. To access the Reset button, do one of the following, depending on your MLC model:

- Remove the wallplate from the MLC D (see “[Accessing the Covered MLC D Front Panel Features](#),” earlier in this section), **or**
- Remove the MLC 62 RS EU or MLC 62 RS MK from the installation surface (see “[Accessing MLC 62 RS EU and MLC 62 RS MK Side and Rear Panel Features](#),” earlier in this section).

Use the provided Extron Tweaker or other small screwdriver to press the Reset button.



**Figure 46. Reset Button Locations**

You can perform two types of reset:

- **Resetting to the default configuration:**
  1. While the MLC is powered **on**, press and hold the Reset button. The Reset LED remains lit while the button is being held.
  2. After 3 seconds, the Reset LED blinks once. Release the button, then immediately (within 1 second) press it again and release it quickly (momentary press).  
When the reset is finished, the Reset LED blinks four times, indicating that the reset was successful.
- **Resetting to the factory firmware defaults:**
  1. With the MLC powered **off**, press and hold the Reset button.
  2. Continue to hold the button while applying power to the MLC.
  3. When the reset is complete, the front panel buttons scroll (blink in succession in clockwise order). Release the Reset button.

# Software-based Configuration

This section describes basic procedures for setting up the MLC using the MLC 60 Series Windows-based configuration program. The following topics are covered:

- [About the MLC Configuration Program](#)
- [Installing the Configuration Software](#)
- [Starting the Configuration Software](#)
- [Obtaining Device Drivers](#)

For more detailed descriptions and additional configuration procedures, see the configuration program help file.

## About the MLC Configuration Program

An MLC controller must be configured in order for it to be able to control other devices. The Extron MLC 60 Series Configuration Program is used to set up the MLC front panel buttons and rear panel ports and to update firmware. Using this software, you can create configurations on your computer for your MLC and then upload them to the computer via the MLC USB or Host/Config serial port. (The MLC does not have to be connected to the computer while you are creating the configurations.) See the [“Features, Installation, and Operation”](#) section for pin assignments and other details on the configuration ports, and the configuration software help file to create and upload the configurations.

**NOTE:** Extron recommends configuring and controlling the MLC via the USB port. This port can supply power to the MLC during the configuration process.

## Computer System Requirements

The minimum system requirements for the computer on which you install the MLC configuration program include:

- Intel Pentium III 1-GHz processor
- Microsoft Windows XP SP2 (32 bit) or Windows 7 (64 bit)
- Microsoft.NET Framework 2.0
- 512 MB of RAM
- 50 MB of available hard disk space

## Installing the Configuration Software

The software is provided on a DVD that is delivered with your MLC unit. You can also download it free of charge from the Extron website.

### Downloading and Installing the Software from the Web

If you do not have the software on DVD, download it to your computer from the Extron website as follows:

1. Visit the Extron website at [www.extron.com](http://www.extron.com) and select the **Download** tab.
2. On the Download Center screen, click the **Control Software** button. A Control Software screen is displayed, containing a list of control software products.
3. Click **M** on the linked alphabet at the top or bottom of the screen.
4. On the "M" software products page, scroll to locate MLC, and click the **Download** link at the far right.
5. On the next screen, fill in the required information.
6. Click the **Download MLC60SW7xn.exe** button.
7. Follow the instructions on the download screens to download the software and install it on your computer.

### Installing the Software from the DVD

If you have an Extron DVD containing the MLC software, install it on your computer as follows:

1. Insert the disc into your computer drive. If the disc does not start automatically, open your Windows Explorer and double-click **Launch.exe** on the disk drive to start it.
2. On the Extron software DVD screen, click the **Software** button.



Figure 47. Software Button on the DVD Opening Screen



3. On the Control Software screen, scroll to locate the MLC 60 Series, and click the **Install** link in the far right column.
4. Follow the on-screen instructions to complete the installation on your computer.

## Starting the Configuration Software

To use the MLC to control devices, you must create one or more configurations for it, using the MLC configuration program. A configuration is a set of specifications for button command assignments and port parameters that enable the MLC to control your display device or switcher.

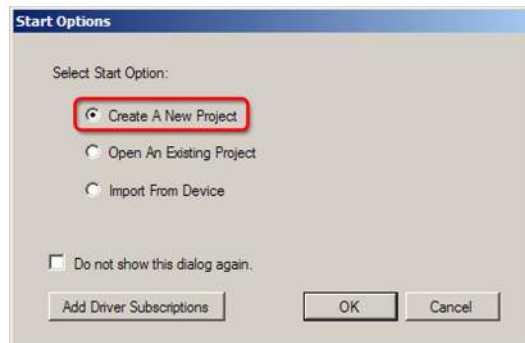
**NOTE:** Configurations can be created away from the job site and without the MLC being connected to the computer.

After you have downloaded and installed the software (see “[Installing the Configuration Software](#),” earlier in this section) and device drivers if necessary (see “[Obtaining Device Drivers](#),” later in this section), begin by creating a new project.

An MLC project is a file (with an .mlp extension) that contains port and button configurations for one or more MLCs. A configuration must be created within a new or existing project. A project can be saved, copied, and edited (for example, by adding or changing configurations within it). You can also create a configuration and add it to an existing project. You can start a new project either when first opening the MLC software or while the software is open and another project is active.

To start the configuration program:

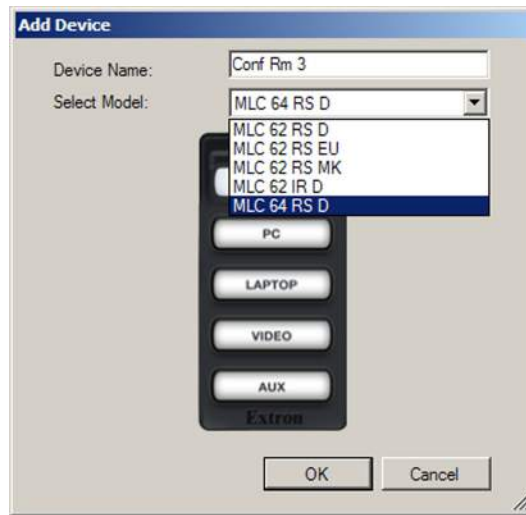
1. Open the MLC 60 Series software by selecting the MLC icon from the **Start** menu on your computer desktop. Select **All Programs\Extron Electronics\MLC 60\MLC 60**. The Start Options window opens in front of the MLC 60 Configuration Program main window.
2. On the Start Options window, select the **Create a New Project** radio button.



**Figure 48.** Start Options Window

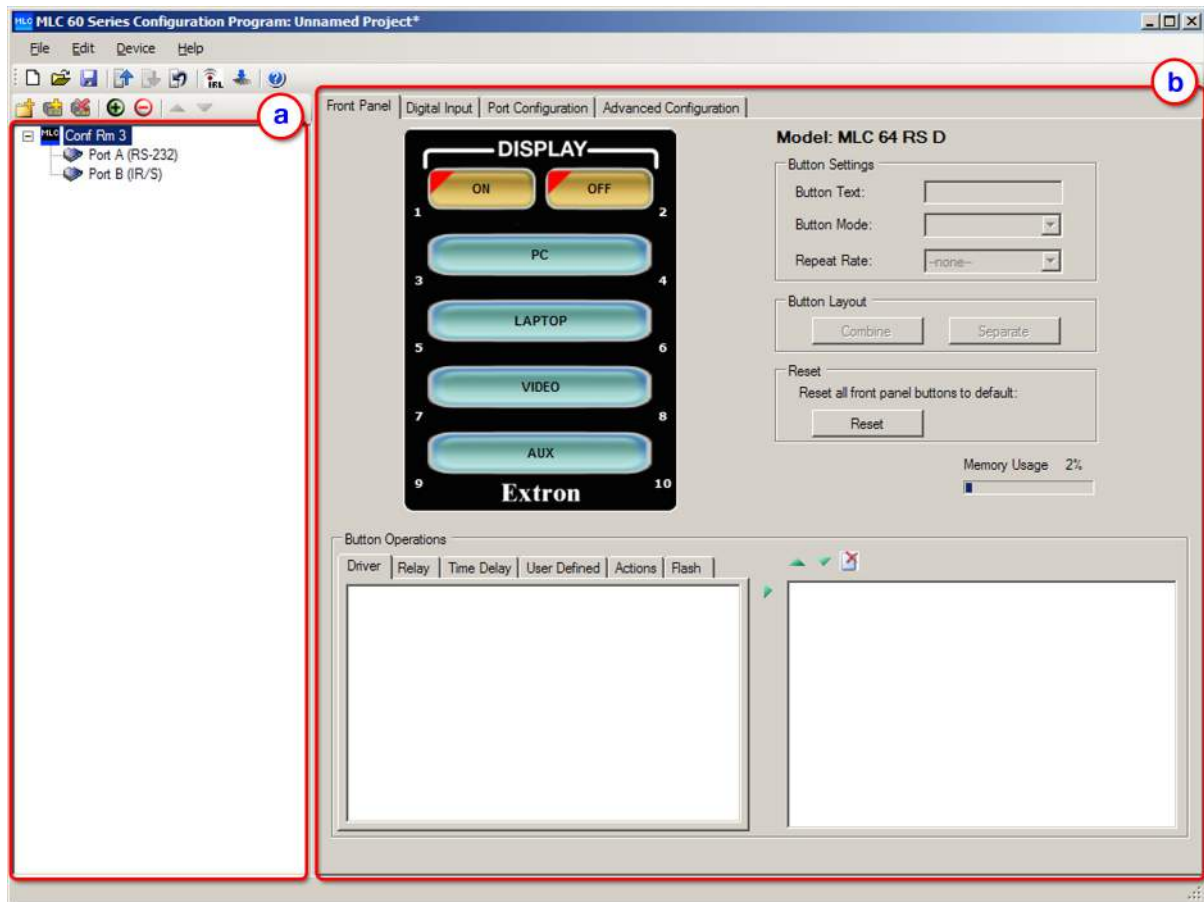
3. Click **OK**. The Add Device dialog box opens, displaying a diagram of your MLC front panel.
4. On the Add Device window, enter a name for your MLC in the **Device Name** field. This becomes the name of the first configuration in the new project.

5. Select your MLC model from the **Select Model** drop-down menu.



**Figure 49.** Add Device Window with Select Model Menu Displayed

6. Click **OK**. The MLC 60 Series main window opens, with the device name you entered displayed in the device configuration tree (left column).



**Figure 50.** The MLC 60 Series Main Window

The MLC 60 Series main window is divided into the following major sections (see the [illustration](#) on the previous page):

- a** The **device configuration tree** enables you to view the list of devices that have been configured, and to organize and save all these device configurations in a single project file.
- b** The **Front Panel tab screen** enables you to configure the buttons and assign all commands to them.

The following is displayed on the MLC window:

- The device configuration name appears in the configuration tree in the left pane, with the names of the two ports to which a device can be connected and controlled via RS-232 or IR: **Port A (RS-232)** and **Port B (IR/S)** for the MLC 60 Series RS-232 models, or **Port A (IR)** for the MLC 62 IR D.
  - The **Front Panel** screen is displayed in the main section of the window and contains a diagram representing the front panel of your selected MLC. (If this screen appears blank when the window is opened, click on the name of the MLC device configuration in the left pane to display it.)
  - In the title bar, the project name is shown as "Unnamed Project\*." (The asterisk following the name indicates that the project has not been saved since changes were made.)
- 7.** Save and name your project as follows:
- a.** From the **File** menu, select **Save As . . .**
  - b.** On the Save As window, give your project file a name and save it to the desired location on your computer.

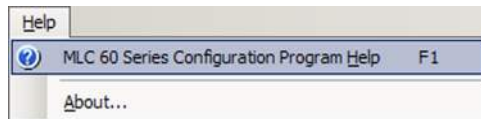
**NOTE:** Your project is saved as a file with the extension **.mlp**.

You are now ready to create configurations for your MLC device by specifying parameters for its ports and buttons (see the configuration software help file for procedures).

## Accessing the Help File

For instructions on creating configurations using the software, see the *MLC 60 Series Configuration Program Help File*. You can access the help file the following methods:

- From the **Help** menu, select **MLC 60 Series Configuration Program Help**.



- Click the **Help** icon on the main window toolbar.



- Press the <F1> key on your computer keyboard.

## Obtaining Device Drivers

The Extron drivers are control files (libraries) of commands created by Extron that are specific to a particular display device or switcher. There are different sets of drivers for serial (RS-232) and IR control. Before you can use the configuration software to configure the MLC buttons and ports, the necessary drivers must be loaded onto your computer. You must then load the appropriate driver for your device to the MLC in order to configure it to control the device.

Serial and IR drivers are available at no charge from the Extron web site at [www.extron.com](http://www.extron.com). You can download them directly from the web or through the configuration software. The same drivers are also provided on the software DVD provided with the MLC.

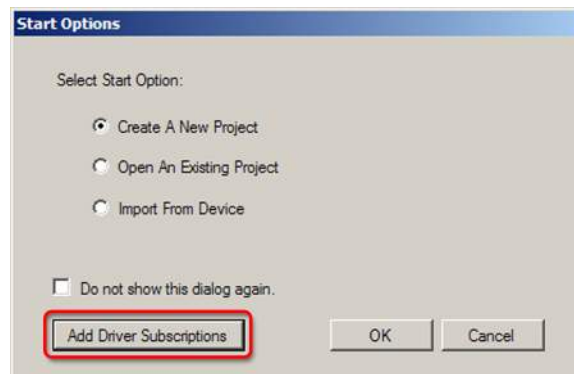
**NOTES:** By default, the drivers that you download are stored in the Driver2 folder on your computer, located at:

- **Windows XP** — c:\Documents and Settings\All Users\Shared Documents\Extron\Driver2
- **Windows 7** — c:\Users\Public\Documents\Extron\Driver2

## Downloading Drivers Using the Configuration Program

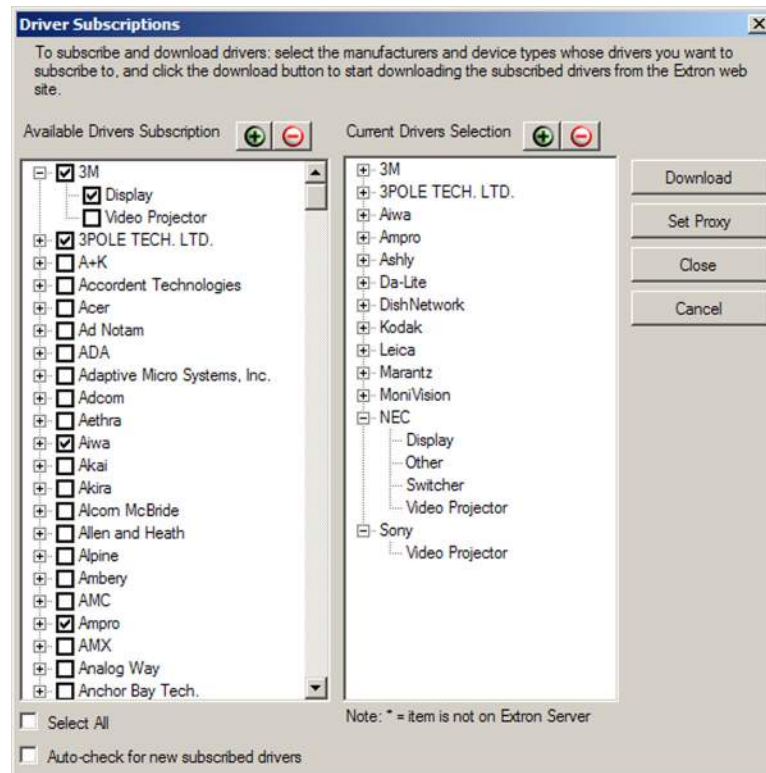
The easiest way to obtain the drivers for your devices is via the MLC configuration program. (You can do this at any time while the software is open, regardless of whether a project has been created.)

1. Click **Start > Programs > Extron Electronics > MLC 60** or double-click the **MLC software** icon (shown at right) on your desktop to launch the MLC software application. The MLC Configuration Program main window opens, with the Start Options window displayed in front of it.
2. On the Start Options window, click the **Add Driver Subscriptions** button.



**Figure 51.** Start Options Window

The Driver Subscriptions window opens. In the Available Drivers Subscription section, select the device types for which you want to download drivers.



**Figure 52. Driver Subscription Window**

- **To select all device types** available from a manufacturer, select the check box in front of the manufacturer name. Each manufacturer whose drivers you select is listed in the Current Drivers Selection column.
- **To select individual device types** from a manufacturer, click the plus (+) sign in front of the manufacturer name to expand it and display all the device types of that manufacturer for which drivers are available, then select the desired device check boxes. To hide the devices, click the minus (–) sign.
- **To expand or collapse the list** of manufacturers and view or hide all their drivers, click the **Expand all** or **Collapse all** buttons (shown at right) at the top of either column.

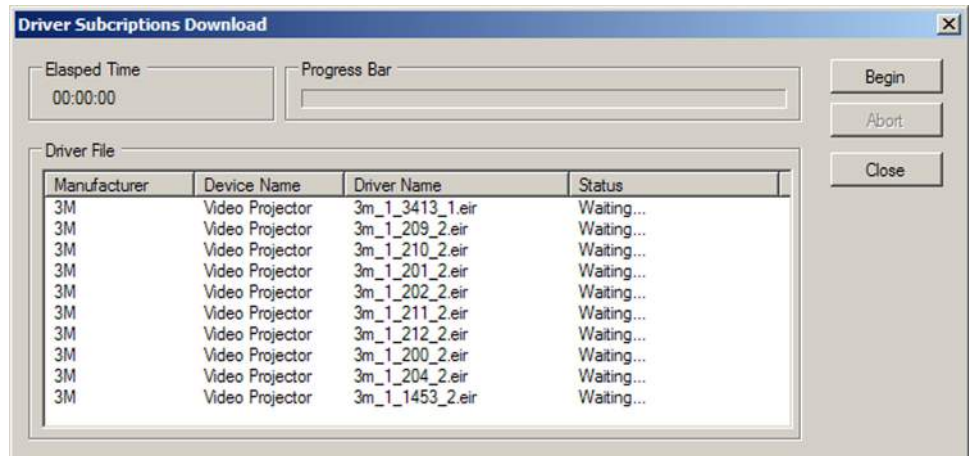


**NOTE:** When you select a device, both the IR and serial drivers for it are downloaded.

3. Make any desired optional selections:
  - Select the **Auto-check for new subscribed drivers** check box if you want the MLC to continually check for and download any updates to your subscribed drivers. When a new version of any of your subscribed drivers is available on the Extron website, that new version is automatically downloaded when the configuration program is started.
  - Click **Set Proxy** if you want to download your drivers using proxy server settings. (Refer to the configuration software help file for more information.)

If you want to close the window without downloading any drivers, click **Close** to save any changes you have made on this window or **Cancel** if you want to discard your changes.

- Click **Download**. The Driver Subscriptions Download window opens, displaying all drivers that have been selected or previously downloaded to your computer.

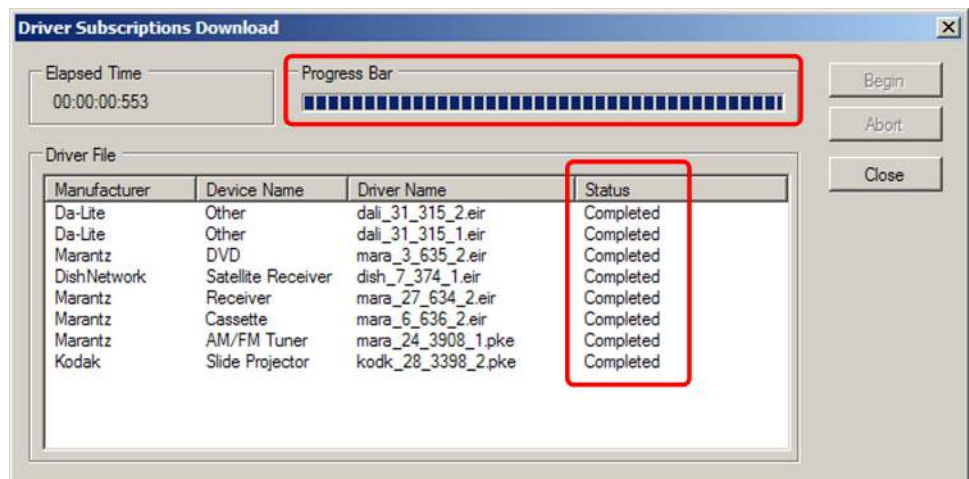


**Figure 53. Driver Subscription Download Screen**

- If a driver on the list is new for your computer, it has the designation "Waiting..." in the Status column.
- If a driver already exists on your computer, its designation is "Already in Driver Catalog."

**NOTE:** Your computer must have an active internet connection to download the drivers.

- On the Driver Subscription Download window, click **Begin** to download the drivers listed in the Driver File section. While the download is in progress:
  - The Progress Bar indicates the progress of the download.
  - The Elapsed Time section shows the amount of time that has passed since the download process started.
  - As each new driver is downloaded, its designation in the Status column changes to "Completed."
- When the Progress Bar and the Status column indicate that the download has completed, click **Close** to close the Driver Subscription Download window.



**Figure 54. Driver Subscriptions Download Screen after a Driver Download**

- Click **Close** on the Driver Subscriptions window when finished.

## Downloading Drivers from the Disc

The software DVD provided with the MLC contains the set of device drivers that are also available from the web. To load the drivers from the DVD to your computer:

1. Load the Extron Software Products DVD into your CD or DVD drive. The disc should start automatically. If it does not, open your Windows Explorer and double-click **Launch.exe** on the CD or DVD drive to start it.
2. On the opening screen, click the **Drivers** button or select the **Drivers** tab at the top of the screen.



**Figure 55.** Drivers Tab and Button on the Software DVD Opening Screen

3. On the Drivers screen, select **MLC 60 Series Device Drivers**.



**Figure 56.** MLC 60 Series Link on the Drivers Screen of the Software DVD

The MLC 60 Series Device Drivers screen opens, displaying a list of all available drivers for use with the MLC 60 Series controllers (see the example below).

**MLC 60 Device Drivers (2887)**

▶ **Download install for current driver package** (Version 8.1.1) (69.4 MB)

Select Interface Type:  ▼

▶ **View All**

Note: Shaded items were recently added and are **not** included in the current driver package.

◀ Previous Next ▶

Model Number	Product Category	Interface	Version	Date Posted	Driver	Communication Sheet	Extron Certified
<b>Bright Sign - HD810</b> Also compatible with : HD1010, HD110, HD2000, HD210, HD410	MPEG Player	Serial	2	Jun 28, 2011	<b>41 KB</b>	38 KB	✓
<b>Brightline - BusMaster</b>	Lighting Control	Serial	2	Mar 29, 2011	<b>34 KB</b>	32 KB	✓
<b>Brightline - RQBridge</b>	Controller	Serial	1	May 17, 2011	<b>59 KB</b>	42 KB	✓
<b>BW Broadcast - TX150</b> Also compatible with : TX300	Other	Serial	1	May 25, 2011	<b>32 KB</b>	33 KB	
<b>BW Broadcast - TX300</b> Also compatible with : TX150	Other	Serial	1	May 25, 2011	<b>32 KB</b>	33 KB	
<b>C Touch - 65'</b>	Display	Serial	1	Oct 20, 2010	<b>49 KB</b>	43 KB	
<b>C Touch - AHA</b>	Touch Display	Serial	1	Apr 21, 2011	<b>37 KB</b>	38 KB	
<b>Canon - LV-7260</b> Also compatible with : LV-X7	Video Projector	Serial	2	Apr 8, 2010	<b>42 KB</b>	39 KB	✓
<b>Canon - LV-7265</b> Also compatible with : LV-7365	Video Projector	Serial	2	Apr 8, 2010	<b>42 KB</b>	39 KB	✓
<b>Canon - LV-7275</b> Also compatible with : LV-7285, LV-7370, LV-7375, LV-7380, LV-7385	Video Projector	Serial	2	Mar 22, 2010	<b>48 KB</b>	43 KB	✓
<b>Canon - LV-7285</b> Also compatible with : LV-7275, LV-7370, LV-7375, LV-7380, LV-7385	Video Projector	Serial	2	Mar 22, 2010	<b>48 KB</b>	43 KB	✓
<b>Canon - LV-7290</b> Also compatible with : LV-7295, LV-7296, LV-7390, LV-7391, LV-8225	Video Projector	Serial	1	May 25, 2011	<b>48 KB</b>	42 KB	✓
<b>Canon - LV-7295</b> Also compatible with : LV-7290, LV-7296, LV-7390, LV-7391, LV-8225	Video Projector	Serial	1	May 25, 2011	<b>48 KB</b>	42 KB	✓

**Figure 57. MLC 60 Device Drivers Page on DVD**

- From the DVD, you can download either the current Extron driver package (containing all IR and serial drivers that were available at the time the package was compiled), or an individual driver.

**To download the driver package:**

**NOTE:** You do **not** need to choose a type from the **Select Interface Type** menu because the driver package contains both types.

- Click **Download install for current driver package**.
- Click **Run** on each of the two File Download - Security Warning windows.
- Follow the instructions on the Driver Install wizard screens to complete installation of the driver package. Unless you specify otherwise, the driver file is placed at one of the following locations on your computer:
  - Windows XP** — c:\Documents and Settings\All Users\Shared Documents\Extron\Driver2
  - Windows 7** — c:\Users\Public\Documents\Extron\Driver2

The MLC Configuration Program supports only driver package 8.1 or later.

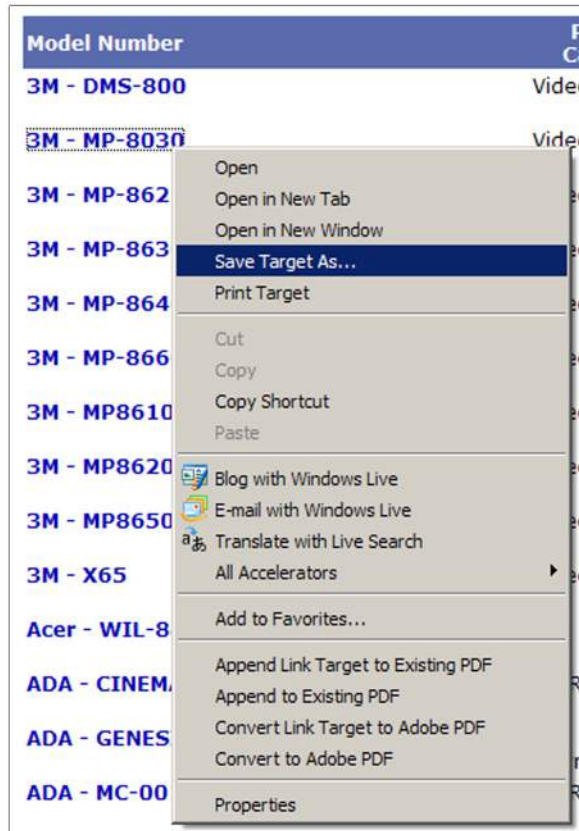


**NOTE:** The DVD may contain additional drivers that became available after the current driver package was created. These new drivers may be on the DVD, but have not been incorporated into the driver package.

To ensure that you are getting all the drivers currently available, use the configuration program to download the drivers (see “[Downloading the Drivers Using the Configuration Program](#),” earlier in this section).

**To download a single driver:**

- a. From the **Select Interface Type** drop-down menu, select **IR** or **Serial** for the type of drivers to view. When you make this selection, only drivers in the current driver package are displayed.
- b. If you want to view all the drivers of the selected type, including those outside the current package, click **View All**.
- c. To view additional pages of driver listings, click **Next**. Click **Previous** to page backward through the drivers list.
- d. Right-click on the name of the desired driver. From the pop-up menu, select **Save Target As . . .**



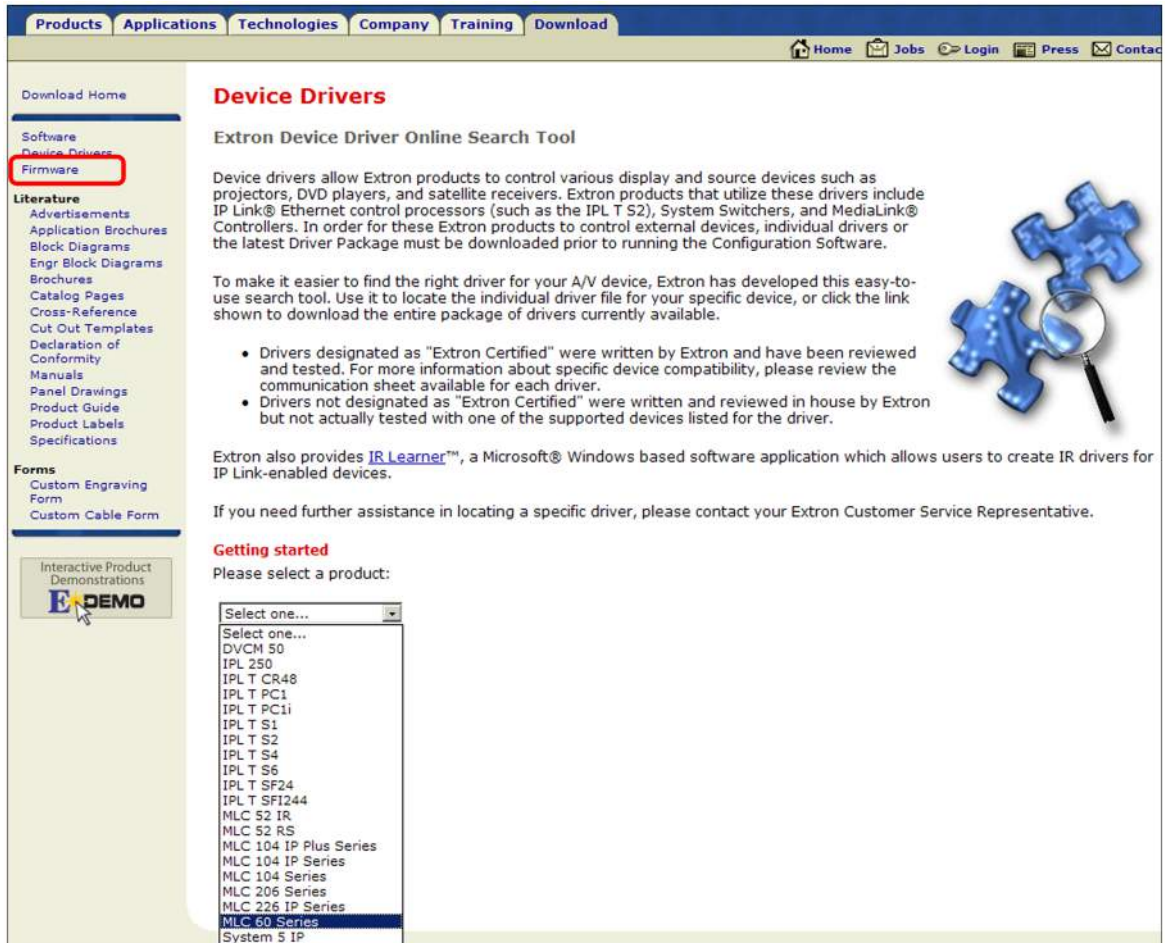
**Figure 58. Saving a Single Driver to the Computer**

- e. On the Save window that opens, save the driver file in the Driver2 folder.

## Downloading Drivers from the Web

Drivers can also be obtained directly from the Extron website as follows:

1. Visit the Extron website at [www.extron.com](http://www.extron.com), and click the **Download** tab.
2. Click the **Device Drivers** link on the left panel of the Download Center screen.
3. From the drop-down menu on the Device Drivers screen, select **MLC 60 Series**.



**Figure 59. Selecting MLC 60 Series from the Device Drivers Drop-down Menu**

4. From the menus on the Extron Online Search Tool screen, select search criteria for the drivers you want to download:
  - From the **Extron Product** menu, select **MLC 60 Series** if it is not already selected.
  - From the **Protocol Type** menu, select **IR, Serial, or All**.
  - From the **Manufacturer** menu, select the manufacturer of the device for which you are downloading the drivers, or **All** to select all device manufacturers.
  - From the **Product Category** menu, select the type of device (for example, video projector) or **All**.
  - From the **Model** menu, select the device model name or number, or **All**.

As you make each selection, the driver list below changes to display all available drivers meeting your selected criteria.

### Device Drivers

**Extron Device Driver Online Search Tool**

[▶ More Information](#)

**Extron Product**  
MLC 60 Series ▼
**Protocol Type**  
Serial Drivers ▼
**Manufacturer**  
All ▼
**Product Category**  
All ▼
**Model**  
All ▼

Check to view only drivers not included in the current package

[▶ Download install for current driver package \(Version 8.1.1\) \(69.4 MB\)](#)  
[▶ Download release notes for current driver package](#)  
[▶ Click here to view Archived Drivers](#)

# | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | All

Note: Shaded items were recently added and are **not** included in the current driver package. [Next ▶](#)

Model Number	Product Category	Interface	Version	Date Posted	Driver	Communication Sheet	Extron Certified
<b>Magenta - MultiView Matrix 8x8</b>	Matrix Switcher	Serial	4	Jul 16, 2009	41 KB	50 KB	
<b>Marantz - SR5004</b>	Receiver	Serial	1	Mar 30, 2010	52 KB	45 KB	
<b>Marantz - ST7001</b>	AM/FM Tuner	Serial	1	Dec 2, 2009	44 KB	37 KB	
<b>Marantz - VS3002</b>	Switcher	Serial	1	Mar 25, 2010	35 KB	36 KB	
<b>Matrix Switch Corporation - HD/SDI</b>	Matrix Switcher	Serial	1	Feb 11, 2010	36 KB	34 KB	
<b>Maxent - MX-42VM11</b>	Display	Serial	1	Aug 5, 2009	60 KB	72 KB	
<b>MechoShade Systems - IQ485</b>	Other	Serial	1	Aug 26, 2009	29 KB	29 KB	
<b>Mitsubishi - EW270U</b>	Video Projector	Serial	2	Jun 9, 2010	44 KB	40 KB	✔
<b>Mitsubishi - EX51U</b> <small>Also compatible with : EX52U, SD510U, XD500U, XD500U-ST, XD510U <a href="#">Click here for complete list</a></small>	Video Projector	Serial	8	Aug 7, 2009	58 KB	65 KB	✔

**Figure 60. Entering MLC 60 Series Driver Search Criteria**

5. Click on the device name whose driver you want to download.

To download all the drivers in the current package, click the **Download install for driver package (Version n)** link.

**NOTE:** The website may contain additional drivers that became available after the current driver package was created. These new drivers may be on the website, but have not been incorporated into the driver package.

If you want to ensure that you are getting all the drivers currently available, use the configuration program to download the drivers (see **“Downloading the Drivers using the Configuration Program,”** earlier in this section).

6. On the Download Center screen, enter the requested information, and click the **Download drivename** button.
7. Follow the directions on the download screens that follow. Unless you specify otherwise, the driver file is placed at one of the following locations on your computer:
  - **Windows XP** — c:\Documents and Settings\All Users\Shared Documents\Extron\Driver2
  - **Windows 7** — c:\Users\Public\Documents\Extron\Driver2

# SIS Control

The MLC can be remotely controlled via a host computer or other control device that is attached to the MLC rear panel Host/Config port. You can issue Simple Instruction Set (SIS) commands to the MLC via the RS-232 or USB interface of your computer or control device with a communication software program such as Extron DataViewer or HyperTerminal. This section contains a list of the SIS commands available for the MLC and describes procedures for issuing them. The following topics are covered:

- [Host-to-Controller Communications](#)
- [Using the Command and Response Table](#)
- [Command and Response Table for SIS Commands](#)

## Host-to-Controller Communications

SIS commands consist of strings 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.

Most responses from the MLC to the host end with a carriage return and a line feed (CR/LF = **↵**), which signals the end of the response character string.

### Controller-initiated Messages

When a local event such as a front panel button press takes place, the MLC responds by sending a message to the host, indicating what selection was entered. No response is required from the host.

The MLC sends the following copyright message only when it first powers on.

(c) Copyright 20nn, Extron Electronics, MLC nn, vn.nn, 60-nnnn-nn

where MLC *nn* is the model name, *vn.nn* is the firmware version number and *60-nnnn-nn* is the model number.

This message does not appear with a USB connection.

### Error Responses

If the MLC is unable to execute a command it receives because the command is invalid or contains invalid parameters, the controller returns an error response to the host. This response consists of the letter E followed by a number and a carriage return with a line feed. The following error response codes can be returned:

E10 – Invalid command or parameter

E13 – Invalid value (out of range)

E14 – Not valid for this configuration

E22 – Busy

## Using the Command and Response Table

The Command and Response Table on the following pages lists valid ASCII command codes, the responses of the MLC to the host, and a description of the command function or the results of executing the command. The ASCII to HEX conversion table below is for use with the table.

	ASCII to Hex Conversion Table															
Space →	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

## Symbol Definitions

- ↵ = CR/LF (carriage return with line feed) (hex 0D 0A)
- ← = Soft carriage return (no line feed) (hex 0D; web | )
- = Space
- Esc = Escape key (hex 1B; web W)
- X1 = Button number: 01, 02, 03, 04, 05, 06, 07, 08, 09, or 10  
Buttons are numbered from front panel top left (01) to bottom right (10).

**NOTE:** The Mute button on the MLC 64 VC D cannot be configured; therefore, it has no number.

- X2 = Relay port number  
1 = Relay 1  
2 = Relay 2
- X3 = Pulse length in increments of 0.5 seconds. The default is 1 (0.5 seconds).  
1 = 0.5 seconds  
2 = 1 second  
...  
255 ≈ 130 seconds
- X6 = Digital input state  
0 = low  
1 = high
- X8 = Firmware version number (displayed to two decimal places: *n.nn*)
- X9 = Volume range level (a 3-digit number; for serial drivers with volume tables only)

**NOTE:** Only positive values are allowed. The volume table levels start with zero.

- X11 = Lockout (executive) mode  
0 = Off  
1 = On

**X12** = Name of the MLC device.

May be up to 24 alphanumeric characters. The first character must be alphabetic; the last character **cannot** be a hyphen or minus sign (-). No blank or space characters are permitted.

**X23** = Status

Ø = disengaged (default)

1 = engaged

**X25** = Firmware compatibility version number (a 3-digit number listed to three decimal places: *nnn.nnn*)

**X26** = Device configuration compatibility version number (a 3-digit number listed to three decimal places: *nnn.nnn*)

**X49** = Default product name: MLC-62-RS, MLC-62-IR, or MLC-64-RS

**X50** = LED status

A 32-digit number, each digit of which represents the status of an LED on the MLC front panel. In **X50**, the LED statuses are represented in descending order from 32 to 1; that is, the first digit on the left represents LED 32, the second digit represents LED 31, and so on. The last digit of the number represents LED 1.

**On the MLC 62 models, the LEDs are numbered as follows:**

LED Number	LED Location
1	Transmit red
2	Transmit green
3, 4, 5, 6	Four LEDs behind "Display" text
7	Button row 1, first LED (button 1)
8	Button row 2, second LED (button 2)
9, 10, 11, 12	Four LEDs behind "Volume" text
13, 14, 15, 16, 17	Volume level indicator LEDs 1 through 5
18	Button row 2, first LED (button 3)
19	Button row 2, second LED (button 4)
20	Button row 3, first LED (button 5)
21	Button row 3, second LED (lights only if buttons 5 and 6 are combined)
22	Button row 3, third LED (button 6)
23	Button row 4, first LED (button 7)
24	Button row 4, second LED (lights only if buttons 7 and 8 are combined)
25	Button row 4, third LED (button 8)
26 through 32	Not used (always 0)

**NOTE:** Dual sized buttons, such as the input buttons on the MLC 62 IR D, each take up an entire button row and have three LEDs apiece.

On the MLC 64, the LEDs are numbered as follows:

LED Number	LED Location
1	Transmit red
2	Transmit green
3, 4, 5, 6	Four LEDs behind "Display" text
7	Button row 1, first LED (button 1)
8	Button row 1, second LED (button 2)
9, 10, 11	Button row 2, LEDs 1 through 3
12, 13, 14	Button row 3, LEDs 1 through 3
15, 16, 17	Button row 4, LEDs 1 through 3
18, 19, 20	Button row 5, LEDs 1 through 3
21 through 32	Not used (The status is always 0.)

Each digit in the **x212** number can be 0 through 4, representing the following possible LED statuses:

- 0 = off
- 1 = dim
- 2 = on (bright)
- 3 = slow blink
- 4 = fast blink

**NOTE:** Unless otherwise indicated, commands are **not** case-sensitive.

## Command and Response Table for SIS Commands

Command	ASCII Command (Host to Unit)	Response (Unit to Host)	Additional Description
<b>Button Selection</b>			
Trigger a button	<code>[Esc] B * [X1] BTNO ←</code>	<code>BtnoB * [X1] ←</code>	Execute the commands programmed to button <code>[X1]</code> . (This command produces the same results as pressing button <code>[X1]</code> on the front panel).  <code>[X1]</code> = 01, 02, 03, 04, 05, 06, 07, 08, 09, or 10.
<p><b>NOTES:</b></p> <ul style="list-style-type: none"> <li>When you press a dual-sized button, such as the Input buttons on the MLC 64, different numbers appear on your screen depending on which side of the button is pressed. For example, if you press the left side of the PC button on an MLC 64, the host response is <code>BtnoB*3</code>, while pressing the right side of that button receives the response <code>BtnoB*4</code>. The entire button lights, however, and the same command is issued regardless of which side is pressed.</li> <li>Use the MLC 60 Series Windows-based configuration software to configure the buttons with commands.</li> </ul>			
<i>Example</i>	<code>[Esc] B * 5BTNO ←</code>	<code>BtnoB * 05 ←</code>	Perform commands assigned to button 5.
<b>Discrete Audio Volume Adjustment on Devices with Volume Tables (MLC 62 RS models only)</b>			
Set volume level <sup>14</sup>	<code>[X9] V</code>	<code>Vol [X9] ←</code>	Set volume table level to <code>[X9]</code> . <code>[X9]</code> can be up to 3 digits; leading zeros are optional.
<p><b>NOTE:</b> Only positive values are allowed. Volume table levels start with 0 (zero). Setting a discrete volume level that is outside of the volume table range results in an E13 error response.</p>			
Increment volume level	<code>+V</code>	<code>Vol [X9] ←</code>	Increase the volume by one volume table increment. <code>[X9]</code> = current volume level.
Decrement volume level	<code>-V</code>	<code>Vol [X9] ←</code>	Decrease the volume by one volume table increment.
View current volume level	<code>V</code>	<code>[X9] ←</code>	Display the current volume level.
<b>Increase and Decrease Audio Volume on Devices without Volume Tables (MLC 62 models only)</b>			
<p><b>NOTE:</b> Attempts to enter an <code>[X9] V</code> (Set volume level) command to set a discrete volume level on a device whose driver does not include a volume table result in an E14 error response.</p>			
Increment volume level	<code>+V</code>	<code>Vol+</code>	Increase the volume level by one step.
Decrement volume level	<code>-V</code>	<code>Vol-</code>	Decrease the volume level by one step.
View volume level	<code>V</code>	<code>- - -</code>	



Command	ASCII Command (Host to Unit)	Response (Unit to Host)	Additional Description
<b>Relay Functions (RS models only)</b>			
Pulse relay	$\overline{X2} * 3 * \overline{X3} 0$	Rly $\overline{X2} * \overline{X23}$ ↵	Set the length $\overline{X3}$ of the pulse specified for relay port $\overline{X2}$ . Values for $\overline{X3}$ represent increments of 0.5 seconds and can range from 1 (0.5 seconds) to 255 (approximately 130 seconds). The MLC response includes status $\overline{X23}$ for the specified relay port. For $\overline{X2}$ : 1 = Relay 1; 2 = Relay 2. For $\overline{X23}$ : 0 = open (disengaged; 1 = closed (engaged).
<i>Example:</i>	2*3*10	Rly2*1 ↵	Relay port 2 will remain closed for pulse intervals of 0.5 seconds.
Toggle relay	$\overline{X2} * 2 0$	Rly $\overline{X2} * \overline{X23}$ ↵	Close and open relay port $\overline{X2}$ . Each time the command is issued, the MLC toggles between the On and Off states. The MLC response includes status $\overline{X23}$ for the specified relay port.
Force relay on	$\overline{X2} * 1 0$	Rly $\overline{X2} * 1$ ↵	Set relay port $\overline{X2}$ to remain closed (on).
Force relay off	$\overline{X2} * 0 0$	Rly $\overline{X2} * 0$ ↵	Set relay port $\overline{X2}$ to remain open (off).
View relay state	$\overline{X2} 0$	$\overline{X23}$ ↵	Show state $\overline{X23}$ of relay port $\overline{X2}$ . For $\overline{X23}$ : 0 = open; 1 = closed.
<b>Digital Input Data Port (RS models only)</b>			
View digital input state	]	$\overline{X6}$ ↵	View status $\overline{X6}$ of the Digital Input port. For $\overline{X6}$ : 0 = low; 1 = high.
<b>Front Panel Lockout (Executive Mode)</b>			
Off	0X	Exe0 ↵	Unlock front panel buttons.
On	1X	Exe1 ↵	Lock all front panel buttons.
View	X	$\overline{X11}$ ↵	View front panel lockout status. $\overline{X11}$ . For $\overline{X11}$ , 0 = off; 1 = on.
<b>Device Naming</b>			
Set unit name	$\overline{Esc} \overline{X12} CN$ ↵	Ipn• $\overline{X12}$ ↵	Set name $\overline{X12}$ for the MLC. $\overline{X12}$ can be up to 24 alphanumeric characters. The first character must be alphabetic; the last character cannot be a hyphen or minus sign. No blank or space characters are permitted.
Set unit name to factory default	$\overline{Esc} \bullet CN$ ↵	Ipn• $\overline{X49}$ ↵	Set the name of the MLC to its factory default name $\overline{X49}$ . $\overline{X49}$ is: <ul style="list-style-type: none"> <li>• MLC-62-RS for RS models</li> <li>• MLC-62-IR for IR models</li> <li>• MLC-64-RS-D for MLC 64</li> </ul>
View unit name	$\overline{Esc} CN$ ↵	$\overline{X12}$ ↵	Show the name of the MLC.

Command	ASCII Command (Host to Unit)	Response (Unit to Host)	Additional Description
<b>Reset/Erase</b>			
Configuration reset	<b>[Esc]</b> ZXXX ←	ZapXXX ←	Reset the MLC configuration to the factory default.
<b>Information Requests</b>			
Query firmware version	Q	<b>[X8]</b> ↵	Display firmware version <b>[X8]</b> to two decimal places.
<i>Example</i>	Q	1.00 ↵	The current firmware version is 1.00.
Query firmware compatibility version	**Q	<b>[X25]</b> ↵	Display firmware compatibility version <b>[X25]</b> .
Query device configuration compatibility version	<b>[Esc]</b> DIMQ ←	<b>[X26]</b> ↵	View the device configuration compatibility version number <b>[X26]</b> .
<p><b>NOTE:</b> Compatibility version numbers are used to track and check for compatibility between the configuration software, firmware, and device configuration versions on the MLC. The device and firmware compatibility numbers (<b>[X25]</b> and <b>[X26]</b>) each consist of six digits. The first three digits are called “major numbers,” and the three digits following the decimal point are “minor numbers.”</p> <p>Whenever the major numbers match, they are considered to be compatible. The minor numbers are used to track changes that have been made but do not affect compatibility. However, if the minor numbers do not match, the version may not be backward compatible. (See “Updating Firmware” in the MLC help file for more information on checking compatibility.)</p>			
<i>Example</i>	<b>[Esc]</b> DIMQ ←	002.100 ↵	Display the current device compatibility number 002.100. Major number is 002; minor number is 100.
Request controller part number	N	60-nnnn-nn ↵	Show the MLC part number: MLC 62 RS D = 60-1005-02 MLC 62 RS EU = 60-1005-35 MLC 62 RS MK = 60-1005-23 MLC 62 IR D = 60-1006-02 MLC 64 RS D = 60-1182-02
Query model name	I	MLC·62·RS·D ↵ or MLC·62·RS·EU ↵ or MLC·62·IR·D ↵ or MLC·64·RS·D ↵	Show the name of the MLC model.

Command	ASCII Command (Host to Unit)	Response (Unit to Host)	Additional Description
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### Query LED status

View LED status

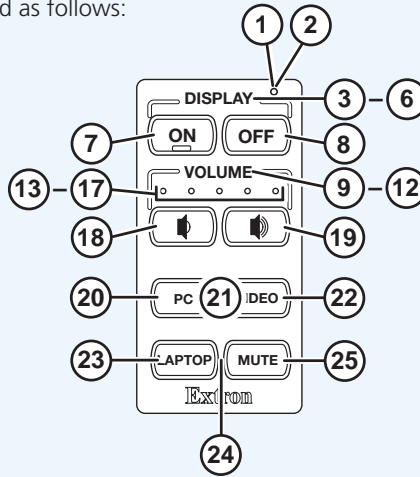
`[Esc] LC ←`

`[X50] ←`

`[X50]` is a 32-digit number, of which each digit represents the status of an LED on the MLC front panel.

**On MLC 62 models**, the LEDs are numbered as follows:

- 1 = Transmit red
- 2 = Transmit green
- 3-6 = Display text LEDs 1 through 4
- 7 = Button row 1, first LED
- 8 = Button row 1, second LED
- 9-12 = Volume text LEDs 1 through 4
- 13-17 = Volume LEDs 1 through 5
- 18 = Button row 2, first LED
- 19 = Button row 2, second LED
- 20 = Button row 3, first LED
- 21 = Button row 3, second LED
- 22 = Button row 3, third LED
- 23 = Button row 4, first LED
- 24 = Button row 4, second LED
- 25 = Button row 4, third LED
- 26-32 = Not used (Their status is always 0)



In `[X50]`, the LEDs are represented in descending order from 32 to 1; that is, the first digit represents LED 32, the second digit represents LED 31, and so on. The last digit represents LED 1. Each digit in `[X50]` can be 0 through 4, representing the following possible LED statuses:

- 0 = off
- 1 = dim
- 2 = on (bright)
- 3 = slow blink
- 4 = fast blink

**NOTE:** Dual sized buttons, such as the input buttons on the MLC 62 IR D, each take up an entire button row and have three LEDs apiece.

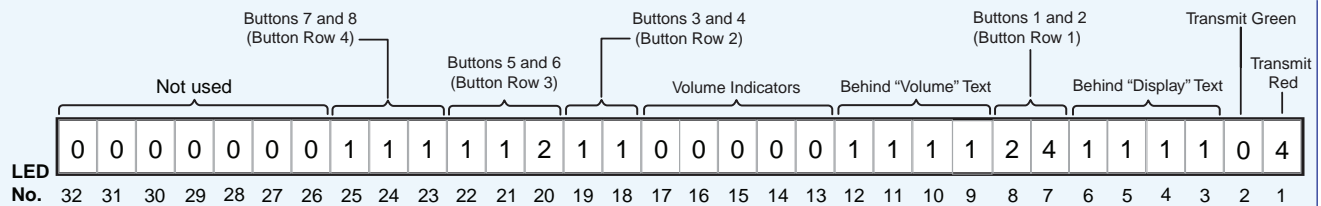
Example (MLC 62)

`[Esc] LC ←`

`00000001111121100000111124111104 ←`

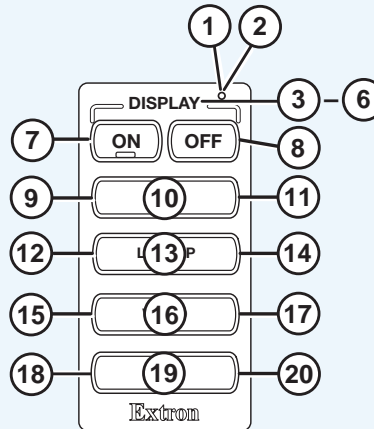
(This example is illustrated in the diagram below.)

In this LED status number, for example, the first digit on the right (LED 1) represents the red Transmit LED. Its status is 4, which indicates that it is blinking rapidly. The LEDs behind the display text (3 through 6) have a status of 1, which means they are dimly lit.



**On the MLC 64**, the LEDs are numbered as follows:

- 1 = Transmit red
- 2 = Transmit green
- 3-6 = Display text LEDs 1 through 4
- 7 = Button row 1, first LED
- 8 = Button row 1, second LED
- 9-11 = Button row 2, LEDs 1 through 3
- 12-14 = Button row 3, LEDs 1 through 3
- 15-17 = Button row 4, LEDs 1 through 3
- 18-20 = Button row 5, LEDs 1 through 3
- 21-32 = Not used (Their status is always 0.)



Example (MLC 64)

`[Esc] LC ←`

`000000000000011111111122231111103 ←`

In this MLC 64 example, the red Transmit LED shows status 3 (blinking slowly). The LEDs behind the Display text show status 1 (dimly lit). LEDs 9, 10, and 11 show status 2 (brightly lit) because the PC button (row 2) is active.

# Reference Information

This section contains the specifications for all models of the MLC and lists names and part numbers of included parts and optional accessories for the product. Topics include:

- [Specifications](#)
- [Part Numbers and Accessories](#)

## Specifications

### MLC 62 Series Specifications

#### Control — host ports

Serial control port.....	1 bidirectional RS-232 on a 3.5 mm captive screw connector, 3 pole
Baud rate and protocol.....	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configuration.....	Pin 1 = Tx, pin 2 = Rx, pin 3 = GND
USB control ports	
Decora® models.....	1 front panel female mini USB B
MK and EU models.....	1 side panel female mini USB B
USB standards.....	USB 2.0, low speed
IR learning frequencies.....	30 kHz to 60 kHz
IR learning distance.....	4" (10 cm) to 14" (36 cm) from the receiver (on front panel for Decora models, side panel for MK and EU models)
Program control.....	Extron configuration program for Windows® Extron Simple Instruction Set (SIS™)

#### Control — serial port (RS models)

Display control port.....	(1) 3.5 mm captive screw connector, 2 pole for unidirectional RS-232 control (±5 V)
Baud rate and protocol (RS-232).....	9600 (default), 19200, 38400, 57600, 115,200 baud; 8 (default) or 7 data bits; 1 stop bit; no parity (default), or even or odd parity

#### Control — IR port (IR models) or IR/serial port (RS models)

IR control port.....	(1) 3.5 mm captive screw connector, 2 pole for IR or IR/Serial* (transmit only) TTL level (0 to 5 V) modulated infrared control (all models) from 30 kHz up to 60 kHz, or ±5 V RS-232 control (RS models, transmit only) *For RS models, IR/serial ports are configurable via software, serial communication is the default.
Baud rate and protocol.....	For RS models: 9600 (default), 19200, 38400, 57600, 115,200 baud; 8 (default) or 7 data bits; 1 stop bit; no parity (default), or even or odd parity

#### Control — relay (RS models)

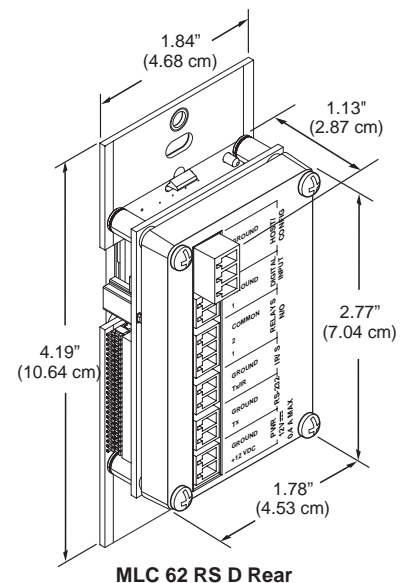
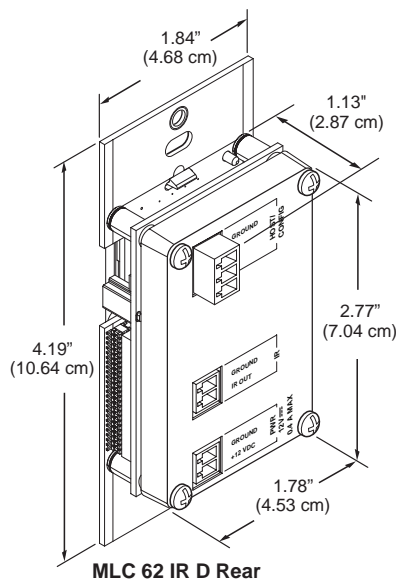
Number/type.....	2 momentary or latching (configurable via software)
Connector.....	(1) 3.5 mm captive screw connector, 3 pole
Contact rating.....	24 V, 1 A

## Control — digital input monitoring port (RS models)

Number/type .....	1 digital input (configurable)
Connector .....	(1) 3.5 mm captive screw connector, 2 pole
Digital inputs	
Input voltage range .....	0-24 VDC
Input impedance.....	12k ohms
Programmable pullup.....	2k ohms to +5 VDC
Threshold low to high.....	>1.5 VDC
Threshold high to low.....	<1.0 VDC

## General

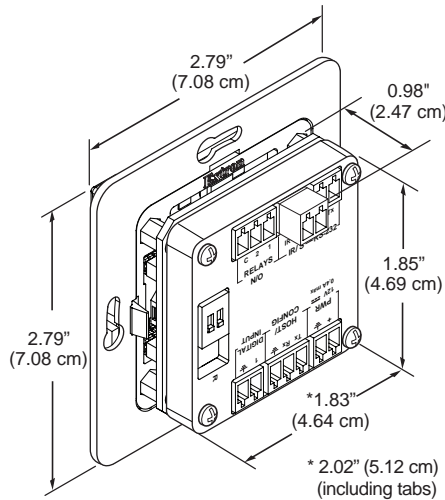
Power supply.....	External
	Input: 100-240 VAC, 50-60 Hz
	Output: 12 VDC, 1 A, 12 watts
Power input requirements .....	12 VDC, 0.4 A, max.
Temperature/humidity .....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
	Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling .....	Convection, no vents
Mounting	
Rack mount .....	No
Furniture or wall mount	
Decora® models .....	Mounts in a standard 1 gang US electrical junction box or with included mud ring.
EU models.....	Mounts in a standard 1 gang EU electrical junction box with 60 mm mounting centers. An adapter frame is included.
MK models .....	Mounts to a standard MK electric type British standard wall box or junction box.
Enclosure type.....	Plastic
Enclosure dimensions	
MLC 62 IR D, MLC 62 RS D	
Faceplate .....	Fits the opening in a 1 gang Decora style wallplate.
Device.....	4.2" H x 1.8" W x 1.5" D (10.7 cm H x 4.6 cm W x 3.7 cm D) (Depth includes connectors and buttons. Allow enough depth in the wall or furniture for the device plus cable clearance.)



MLC 62 RS EU

MLC 62 RS EU

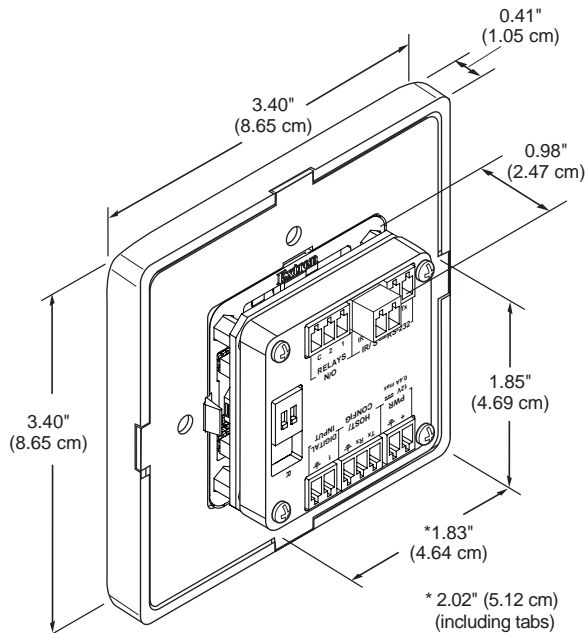
- Faceplate ..... Fits the opening in a 1-gang EU, fits a Jung AS 500 wallplate or other European frame that accepts 55 mm x 55 mm modules.
- Wall frame ..... 3.2" H x 3.2" W x 0.4" D  
8.1 cm H x 8.1 cm W x 1.0 cm D
- Device..... 2.2" H x 2.2" W x 1.5" D  
(5.5 cm H x 5.5 cm W x 3.7 cm D)  
Depth includes connectors and buttons. Allow enough depth in the junction box for device plus cable clearance.)



MLC 62 EU Rear

MLC 62 RS MK

- Faceplate ..... Fits the opening in a 1-gang Jung AS 500 wallplate or other European frame that accepts 55 mm x 55 mm modules.)
- Wall frame ..... 3.4" H x 3.4" W x 0.4" D  
8.6 cm H x 8.6 cm W x 1.1 cm D
- Device..... 2.2" H x 2.2" W x 1.5" D  
(5.5 cm H x 5.5 cm W x 3.7 cm D)  
Depth includes connectors and buttons. Allow enough depth in the junction box for device plus cable clearance.)



MLC 62 RS MK Rear

Product weight	
MLC 62 IR D, MLC 62 RS D.....	1.0 lb (0.5 kg)
MLC 62 RS EU .....	1.0 lb (0.5 kg)
MK models .....	1.0 lb (0.5 kg)
Shipping weight.....	3 lbs (2 kg)
Vibration.....	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety.....	CE, c-UL, UL
EMI/EMC .....	CE, C-tick, FCC Class A, ICES, VCCI Class A
Accessibility .....	Section 508 of the Rehabilitation Act (29 U.S.C. 794d)
MTBF .....	30,000 hours
Warranty.....	3 years parts and labor

- NOTES:**
- All nominal levels are at  $\pm 10\%$ .
  - Specifications are subject to change without notice.

## MLC 64 RS VC D Specifications

### Control — host ports

Serial control port.....	1 bidirectional RS-232 on a 3.5 mm captive screw connector, 3 pole
Baud rate and protocol.....	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configuration.....	Pin 1 = Tx, pin 2 = Rx, pin 3 = GND
USB control port.....	1 front panel female mini USB B
USB standards.....	USB 2.0, low speed
IR learning frequencies.....	30 kHz to 60 kHz
IR learning distance.....	4" (10 cm) to 14" (36 cm) from the receiver
Program control.....	Extron configuration program for Windows® Extron Simple Instruction Set (SIS™)

### Control — serial port

Display control port.....	(1) 3.5 mm captive screw connector, 2 pole for unidirectional RS-232 control (±5 V)
Baud rate and protocol (RS-232).....	9600 (default), 19200, 38400, 57600, 115,200 baud; 8 (default) or 7 data bits; 1 stop bit; no parity (default), or even or odd parity

### Control — IR/serial port

IR control port.....	(1) 3.5 mm captive screw connector, 2 pole for IR/Serial* (transmit only) TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz, or ±5 V RS-232 control (transmit only) *IR/serial ports are configurable via software; serial communication is the default.
Baud rate and protocol.....	9600 (default), 19200, 38400, 57600, 115,200 baud; 8 (default) or 7 data bits; 1 stop bit; no parity (default), or even or odd parity

### Control — relay

Number/type.....	2 momentary or latching (configurable via software)
Connector.....	(1) 3.5 mm captive screw connector, 3 pole
Contact rating.....	24 V, 1 A

### Control — digital input monitoring port

Number/type.....	1 digital input (configurable)
Connector.....	(1) 3.5 mm captive screw connector, 2 pole
Digital inputs	
Input voltage range.....	0-24 VDC
Input impedance.....	12k ohms
Programmable pullup.....	2k ohms to +5 VDC
Threshold low to high.....	>1.5 VDC
Threshold high to low.....	<1.0 VDC

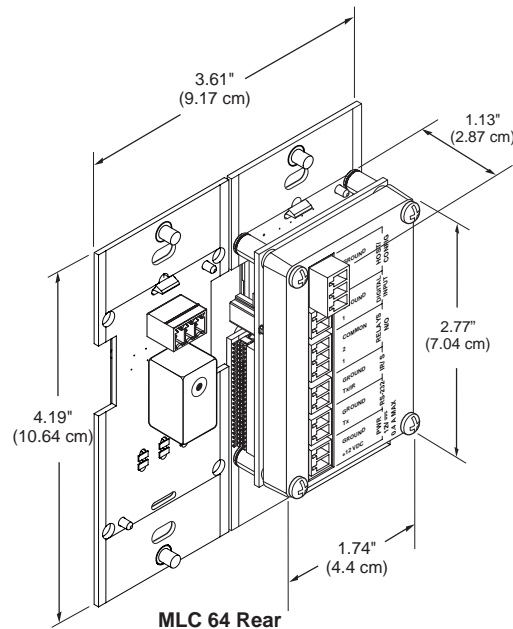
### Control — peripheral audio equipment

Volume control.....	0 to 10 VDC variable voltage, positive logic (the higher the voltage, the higher the volume)
Mute control.....	Momentary push switch with latching contact closure during mute; LED mute indication
Pin configuration.....	Pin 1 = +10 VDC, pin 2 = volume/mute (variable voltage), pin 3 = GND
Reference voltage.....	10 VDC



## General

Power supply	
MLC 64 RS D .....	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A, 12.0 watts
Remote volume control .....	10 VDC, supplied by the Extron device being controlled
Power input requirements	
MLC 64 RS D .....	12 VDC, 0.4 A, max.
Remote volume control .....	Unmute mode: 0.2 watts, 18 mA, 10 VDC Mute mode: 0.4 watts, 42 mA, 10 VDC
Temperature/humidity .....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling .....	Convection, no vents
Mounting	
Rack mount .....	No
Furniture or wall mount .....	Mounts in a standard 2 gang US electrical junction box (1.50" depth) or with included mud ring.
Enclosure type .....	Plastic
Enclosure dimensions	
Faceplate .....	Fits the opening in a 2 gang Decora style wallplate.
Devices .....	4.2" H x 3.6" W x 2.5" D or 1.9" D* Depth includes connectors and buttons. Allow enough depth in the junction box for device plus cable clearance. *Depth including the knob



Product weight .....	1.1 lb (0.5 kg)
Shipping weight .....	3 lbs (2 kg)
Vibration .....	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety .....	CE, c-UL, UL
EMI/EMC .....	CE, C-tick, FCC Class A, ICES, VCCI Class A
Accessibility .....	Section 508 of the Rehabilitation Act (29 U.S.C. 794d)

MTBF ..... 30,000 hours  
Warranty..... 3 years parts and labor

**NOTES:** • All nominal levels are at  $\pm 10\%$ .  
• Specifications are subject to change without notice.

## Part Numbers and Accessories

### Included Parts

These items are included with the MLC 60 Series controllers:

#### MLC 62 RS D

Included Parts	Replacement Part Number
MLC 62 RS D MediaLink Controller	60-1005-02
12 VDC, 1 A external power supply (PS 1210C)	70-775-01
Front faceplates, eight-button, 1 black and 1 white (Include additional buttons with assorted labels)	70-688-12
Decora wallplate, 1-gang, black	
Decora wallplate, 1-gang, white	
Extron Tweaker (slotted Phillips #1 screwdriver)	
<i>MLC 60 Series Setup Guide</i>	
1-gang Decora-style mud ring mounting bracket	
(2) 3.5 mm 3-pole captive screw connectors	
(4) 3.5 mm 2-pole captive screw connectors	
<i>Extron Software Products DVD</i>	

#### MLC 62 IR D

Included Parts	Replacement Part Number
MLC 62 IR D MediaLink Controller	60-1006-02
12 VDC, 1 A external power supply (PS 1210C)	70-775-01
IR Emitter and Shield kit	70-283-01
Front faceplates, six-button, 1 black and 1 white (Includes additional buttons with assorted labels)	70-688-02
Decora wallplate, 1-gang, black	
Decora wallplate, 1-gang, white	
Extron Tweaker (slotted Philips #1 screwdriver)	
<i>MLC 60 Series Setup Guide</i>	
1-gang Decora-style mud ring mounting bracket	
(1) 3.5 mm 3-pole captive screw connectors	
(2) 3.5 mm 2-pole captive screw connectors	
<i>Extron Software Products DVD</i>	

## MLC 62 RS EU

Included Parts	Replacement Part Number
MLC 62 RS EU MediaLink Controller (RAL9010 white)	60-1005-35
12 VDC, 1 A external power supply (PS 1210C)	70-775-01
Front faceplate, 6 button (RAL9010 white)	
Front faceplate, 8 button (RAL9010 white)	
Jung AS500 wall frame (RAL9010 white)	
Extron Tweaker (slotted Philips #1 screwdriver)	
<i>MLC 60 Series Setup Guide</i>	
(2) 3.5 mm 3-pole captive screw connectors	
(4) 3.5 mm 2-pole captive screw connectors	
<i>Extron Software Products DVD</i>	

## MLC 62 RS MK

Included Parts	Replacement Part Number
MLC 62 RS MK MediaLink Controller (white)	60-1005-23
12 VDC, 1 A external power supply (PS 1210C)	70-775-01
Front faceplate, 6-button (white)	
Front faceplate, 8-button (white)	
Front wall frame (white)	
Extron Tweaker (slotted Philips #1 screwdriver)	
<i>MLC 60 Series Setup Guide</i>	
(2) 3.5 mm 3-pole captive screw connectors	
(4) 3.5 mm 2-pole captive screw connectors	
<i>Extron Software Products DVD</i>	

## MLC 64 RS VC D

Included Parts	Replacement Part Number
MLC 64 RS VC D MediaLink Controller	60-1182-02
12 VDC, 1 A external power supply (PS 1210C)	70-775-01
MLC 64 Front faceplate, black, six-button (Includes additional buttons with assorted labels)	
MLC 64 Front faceplate, white, six-button (Includes additional buttons with assorted labels)	
VCM front faceplates, 1 black and 1 white	
Volume control knobs, 1 black and 1 white	
Decora wallplates, 2-gang, 1 black and 1 white	
Extron Tweaker (slotted Philips #1 screwdriver)	
Allen wrench (hex key) (for volume control knob removal)	
<i>MLC 60 Series Setup Guide</i>	
2-gang Decora-style mud ring mounting bracket	
(2) 3.5 mm 3-pole captive screw connectors	
(4) 3.5 mm 2-pole captive screw connectors	
<i>Extron Software Products DVD</i>	

## Accessories

These optional items can be ordered separately:

Accessories	Part Number	For Model
English button kit (MLC 62 RS EU and MLC 62 RS MK models)	70-728-01	MLC 62 RS EU, MLC 62 RS MK
French and German button kit (MLC 62 RS EU and MLC 62 RS MK models)	70-728-11	MLC 62 RS EU, MLC 62 RS MK
MLA VC10 Plus Volume Control Module (MLC 62 models)	60-1090-01	All MLC 62
MPA 152 Stereo Power Amplifier, 15 watts per channel	60-844-01	All
MPA 152 ENERGY STAR® Qualified Stereo Power Amplifier	60-844-02	
MPA 401 Mono Power Amplifier, 40 watts per channel	60-845-01	All
MLS 100A Four Input Stereo Audio MediaLink Switcher	60-497-01	All
MLS 102 VGA Two Input VGA and Four Input Stereo Audio MediaLink Switcher	60-497-04	All
MLS 304SA Four Input MediaLink Switcher with stereo amplifier	60-550-02	All
USB CFG Cable, type A to mini B configuration cable	26-654-06	All
MLC IR/RS-232 one projector communication cable, plenum 50'	26-621-50	All
MLM 62 D 8B faceplate replacement kit, 8-button (MLC D models only)	70-688-12	MLC 62 RS D, MLC 62 IR D
MLM 62 D 6B faceplate replacement kit, 6-button (MLC D models only)	70-688-02	MLC 62 RS D, MLC 62 IR D

# Extron Warranty

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

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

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

## Japan:

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

## Europe, Africa, and the Middle East:

Extron Europe  
Hanzeboulevard 10  
3825 PH Amersfoort  
The Netherlands

## China:

Extron China  
686 Ronghua Road  
Songjiang District  
Shanghai 201611  
China

## Asia:

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

## Middle East:

Extron Middle East  
Dubai Airport Free Zone  
F12, PO Box 293666  
United Arab Emirates, Dubai

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

**NOTE:** If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This begins the repair process.

**USA:** (714) 491-1500

**Asia:** 65.6383.4400

**Europe:** 31.33.453.4040

**Japan:** 381.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron <b>USA - West</b> Headquarters <b>+800.633.9876</b> Inside USA/Canada Only <b>+1.714.491.1500</b> <b>+1.714.491.1517</b> FAX	Extron <b>USA - East</b> <b>+800.633.9876</b> Inside USA/Canada Only <b>+1.919.863.1794</b> <b>+1.919.863.1797</b> FAX	Extron <b>Europe</b> <b>+800.3987.6673</b> Inside Europe Only <b>+31.33.453.4040</b> <b>+31.33.453.4050</b> FAX	Extron <b>Asia</b> <b>+800.7339.8766</b> Inside Asia Only <b>+65.6383.4400</b> <b>+65.6383.4664</b> FAX	Extron <b>Japan</b> <b>+81.3.3511.7655</b> <b>+81.3.3511.7656</b> FAX	Extron <b>China</b> <b>Sales: + 4000.EXTRON</b> <b>+4000.398.766</b> Inside China Only <b>+86.21.3760.1568</b> <b>+86.21.3760.1566</b> FAX	Extron <b>Middle East</b> <b>+971.4.2991800</b> <b>+971.4.2991880</b> FAX
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