

## MLC 60 Series

MediaLink Controllers



**Extron Electronics**  
INTERFACING, SWITCHING AND CONTROL

# Safety Instructions

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**주의:** 이 기호 ⚠ 가 제품에 사용될 경우, 장비와 함께 제공된 책자에 나와 있는 주요 운영 및 유지보수(정비) 지침을 경고합니다.

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VCCI-A

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## Conventions Used in this Guide

### Notifications

The following notifications are used in this guide:

#### ATTENTION:

- Risk of property damage.
- Risque de dommages matériels.

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

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

### Software Commands

Commands are written in the fonts shown here:

```
^ARMerge Scene, ,Op1 scene 1,1 ^B 51 ^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” is the capital letter “o.”

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

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

Variables are written in slanted form as shown here:

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

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

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

## Specifications Availability

Product specifications are available on the Extron website, [www.extron.com](http://www.extron.com).

## Extron Glossary of Terms

A glossary of terms is available at <http://www.extron.com/technology/glossary.aspx>.

# Contents

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## Introduction ..... 1

About This Guide.....	1
About the MLC 60 Series MediaLink Controllers.....	1
MLC Models.....	1
Features.....	3
Configuration Software.....	5
Device Drivers.....	5
Application Diagrams.....	5
System Requirements.....	7

---

## Features, Installation, and Operation ..... 8

Installation Overview.....	8
Front and Left Side Panels.....	10
MLC D Front Panels.....	10
MLC 62 RS EU and MLC 62 RS MK Front and Side Panels.....	12
Front Panel Features.....	12
Buttons.....	14
Rear Panel Features.....	15
MLC 64 RS VC D Volume Control Module Rear Panel.....	17
Installation.....	18
Removing and Replacing the Faceplates.....	19
Replacing Buttons.....	23
Wiring for RS-232 Control (RS Models Only).....	24
Wiring for IR Control.....	25
Wiring the Relays Port (RS Models Only).....	26
Wiring the Digital Input Port (RS Models Only).....	27
Wiring the Host/Config Port.....	28
Wiring the Volume Control Module (MLC 64 RS VC D Only).....	29
Connecting Power to the MLC.....	29
Configuring the MLC via the USB Port.....	30
IR Learning.....	33
Mounting the MLC 60 Series Controllers.....	34

Mounting the MLC 62 D.....	34
Mounting the MLC 64 RS VC D.....	36
Mounting the MLC 62 RS EU and the MLC 62 RS MK.....	38
Mounting the MLC EU in a Raceway Using Spacers (Optional).....	39
Accessing Covered Panel Features After Mounting.....	41
Accessing the Covered MLC D Front Panel Features.....	41
Accessing MLC 62 RS EU and MLC 62 RS MK Side and Rear Panel Features.....	42
Front Panel Security Lockout.....	43
Locking Using the Front Panel Buttons.....	43
Resetting the MLC Using the Reset Button.....	43

---

## Software-based Configuration ..... 45

About the MLC 55, 62 and 64 Series Configuration Program.....	45
Computer System Requirements.....	45
Downloading and Installing the Configuration Software.....	46
Starting the Configuration Software.....	47
Accessing the Help File.....	49
Obtaining Device Drivers.....	50
Downloading Drivers Using the Configuration Program.....	50
Downloading Drivers from the Web.....	53

---

## SIS Control..... 56

Host-to-Controller Communications.....	56
Controller-initiated Messages.....	56
Error Responses.....	56
Using the Command and Response Table.....	57
Symbol Definitions.....	57
Command and Response Table for SIS Commands.....	60



# 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.

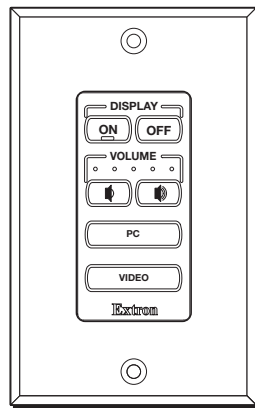
The MLC controllers are housed in secure, compact, one-gang and two-gang sized enclosures, which can be mounted on a wall or furniture, with or without an electrical junction box or mounting bracket.

## MLC Models

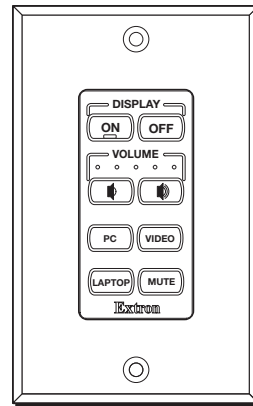
- **MLC 62 IR D** — US model. Controls devices by IR only; has a one-gang Decora® faceplate and fits in a one-gang US electrical box.
- **MLC 62 RS D** — US model. Controls devices by RS-232, IR, relays, and digital input; has a one-gang Decora faceplate and fits in a one-gang US electrical box.
- **MLC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

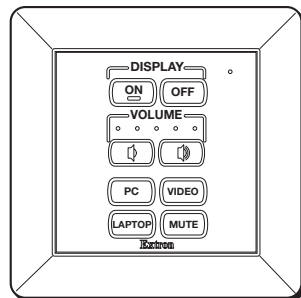
**NOTE:** Only an Extron amplifier with remote volume control capability can be used with this model.



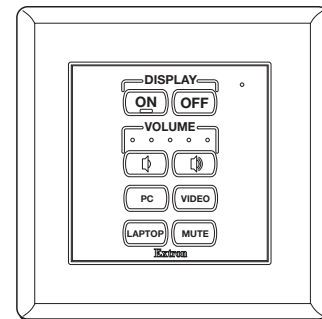
**MLC 62 IR D**



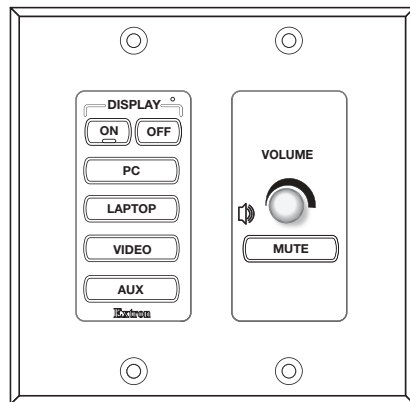
**MLC 62 RS D**



**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™ or 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 **Front and Left Side Panels** on page 10).

### 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 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

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

An additional set of pre-labeled 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 and the [Extron website](#).

- **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).

<p><b>NOTE:</b> Only Extron amplifiers can be controlled via the MLC 64 volume control module.</p>
--

- **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.
- **Toggling** — 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](http://www.extron.com/company/article.aspx?id=accessibility) web page at [www.extron.com/company/article.aspx?id=accessibility](http://www.extron.com/company/article.aspx?id=accessibility).

## Configuration Software

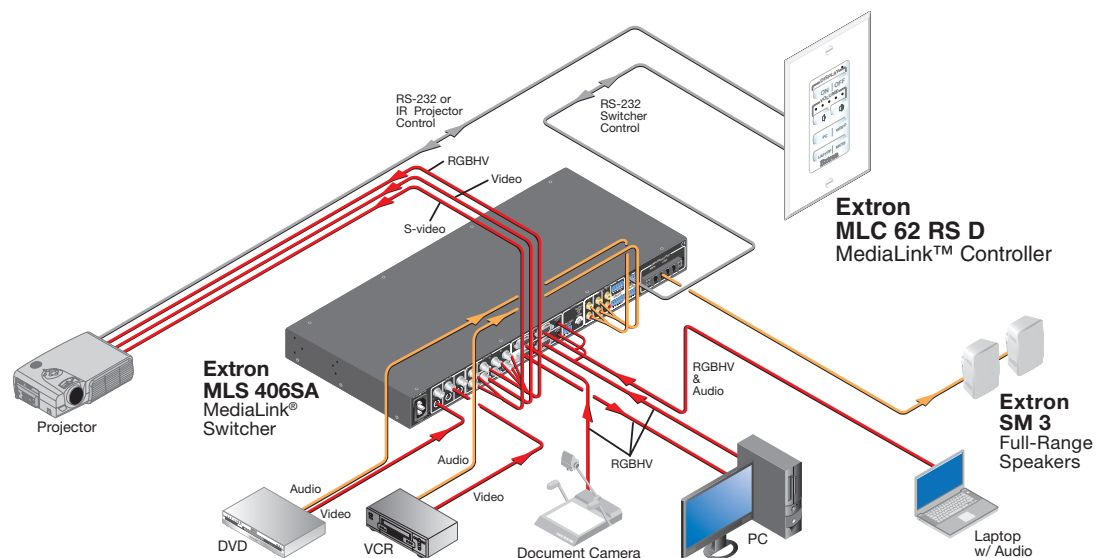
The MLC 55, 62 and 64 Series Configuration Program is used to configure the MLC buttons and ports via an RS-232 or USB connection. This software, available for download from the Extron website, enables you to set functions for the front panel buttons and to configure the MLC ports in order to control devices via the MLC. The software works in combination with the IR or RS-232 drivers, also provided at [www.extron.com](http://www.extron.com) (see [Downloading and Installing the Configuration Software](#) on page 46 to access this program).

## Device Drivers

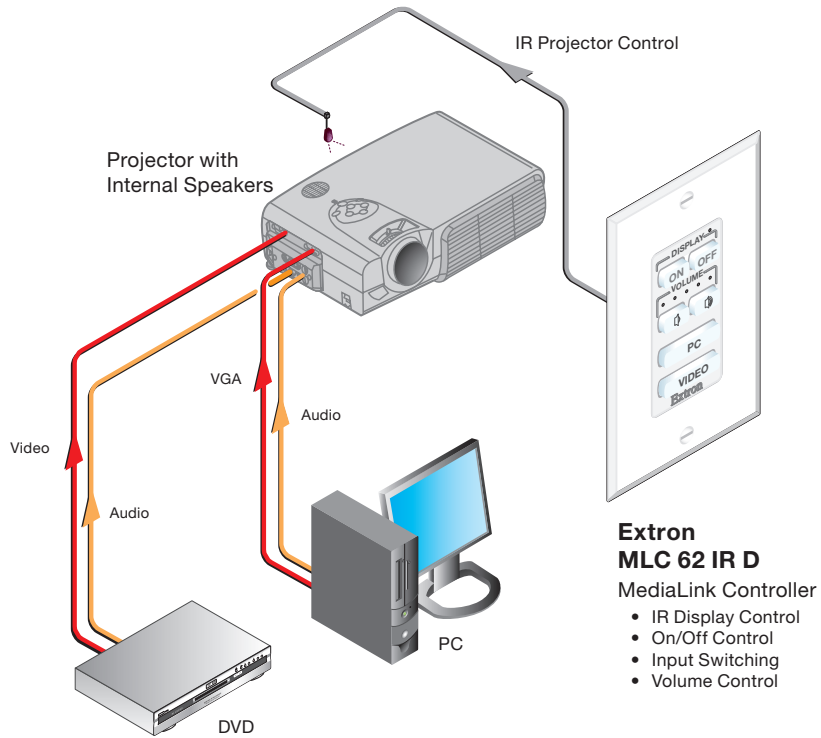
The MLC can control a switcher, projector, or other display device via IR or RS-232 communication. The MLC must have drivers loaded for the devices it will control in order to send commands to those devices. Drivers can be obtained in the following ways:

- You can download IR or RS-232 driver files from Extron via the driver subscription feature within the MLC configuration program. The drivers are saved on your computer in a folder located at `c:\Documents and Settings\All Users\Shared Documents\Extron\Driver2` or at `c:\Users\Public\Documents\Extron\Driver2`. 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 file to configure the MLC using IR Learning).

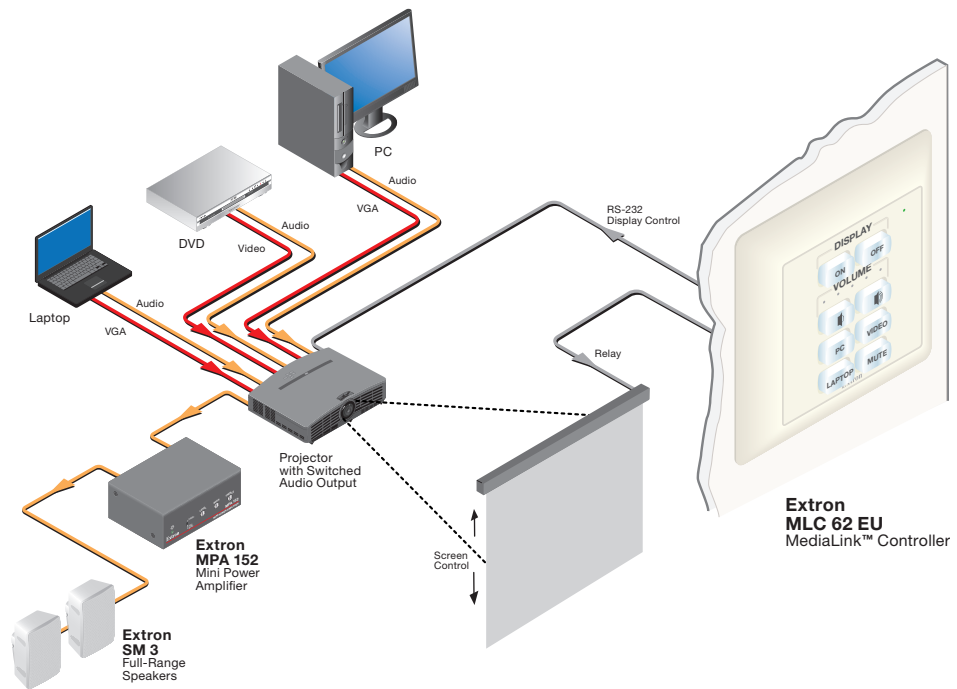
## Application Diagrams



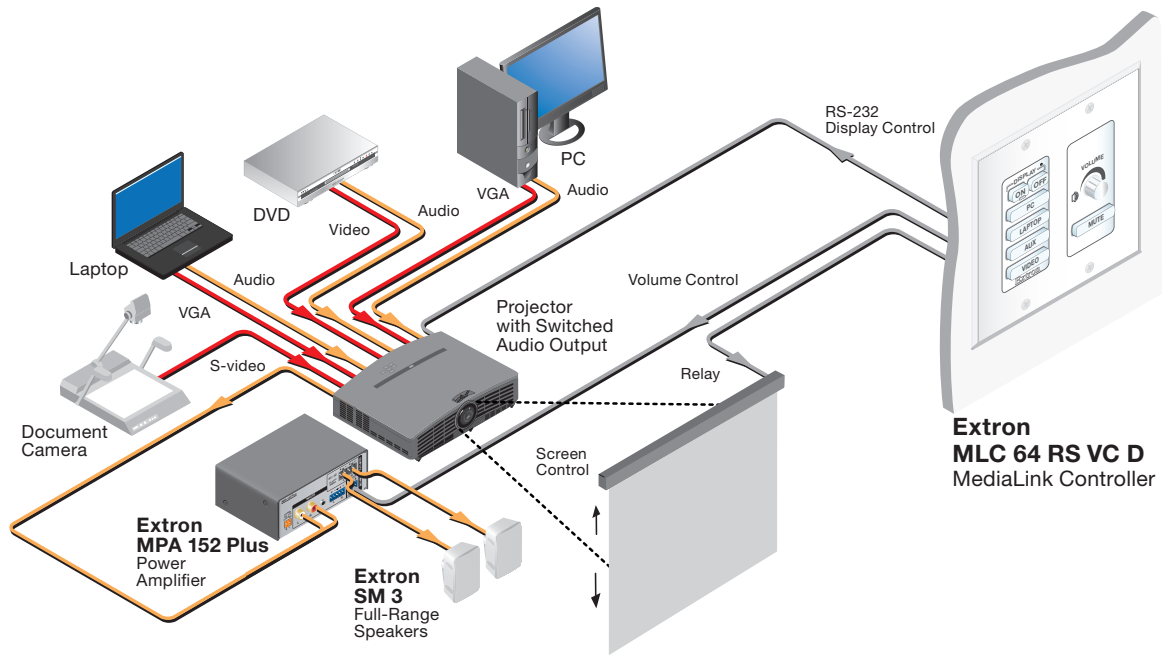
**Figure 2.** MLC 62 RS D Controlling an MLS 304 SA Switcher and a Projector



**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, Windows 7, Windows 8, or Windows 8.1
- 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 Overview](#)
- [Front and Left Side Panels](#)
- [Installation](#)
- [Configuring the MLC via the USB Port](#)
- [Mounting the MLC 60 Series Controllers](#)
- [Accessing Covered Panel Features After Mounting](#)
- [Front Panel Security Lockout](#)
- [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 (see [Mounting the MLC 60 Series Controllers](#), beginning on page 34).
  - 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 desired changes to the buttons installed in the faceplate, substituting any of the provided additional buttons (see [Replacing Buttons](#) on page 23).

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

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 \(RS Models Only\)](#)
  - [Wiring for IR Control](#)
  - [Wiring the Relays Port \(RS Models Only\)](#)
  - [Wiring the Digital Input Port \(RS Models Only\)](#)

4. Wire and connect the MLC power supply (see [Connecting Power to the MLC](#) on page 29. 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](#) on page 30).
  - 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](#) on page 28).
6. Download and install the MLC Configuration Program (see [Downloading and Installing the Configuration Software](#) on page 46).
7. Download or create drivers for the devices you will be connecting (see [Obtaining Device Drivers](#) on page 50 or [IR Learning](#) on page 33).
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 [Downloading and Installing the Configuration Software](#)).

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:
  - For MLC 62 D models, see [Mounting the MLC 62 D](#) on page 34.
  - For MLC 62 RS EU and MK models, see [Mounting the MLC 62 RS EU and the MLC 62 RS MK](#) on page 38.
  - For the MLC 64, see [Mounting the MLC 64 RS VC D](#) on page 36.
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](#) on the next page).

#### 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.

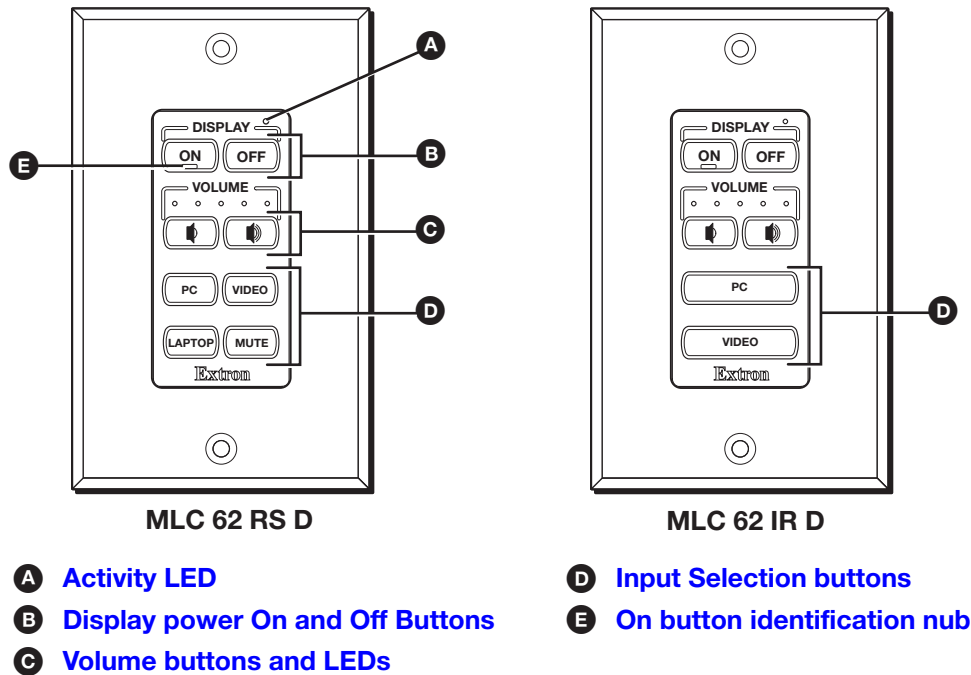
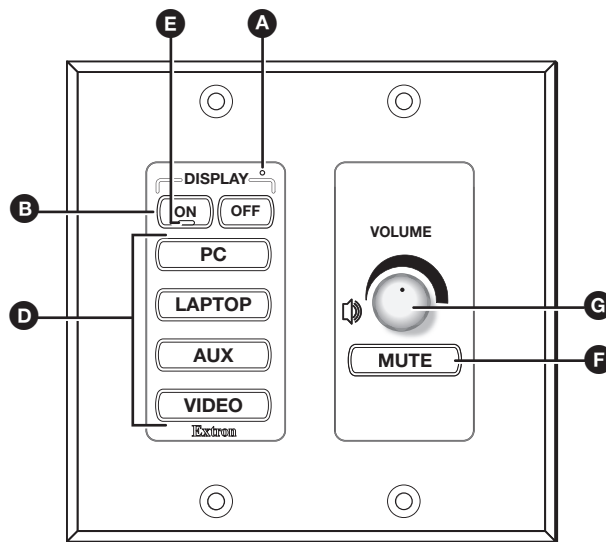


Figure 6. MLC 62 RS D and MLC 62 IR D Front Panels



## 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.

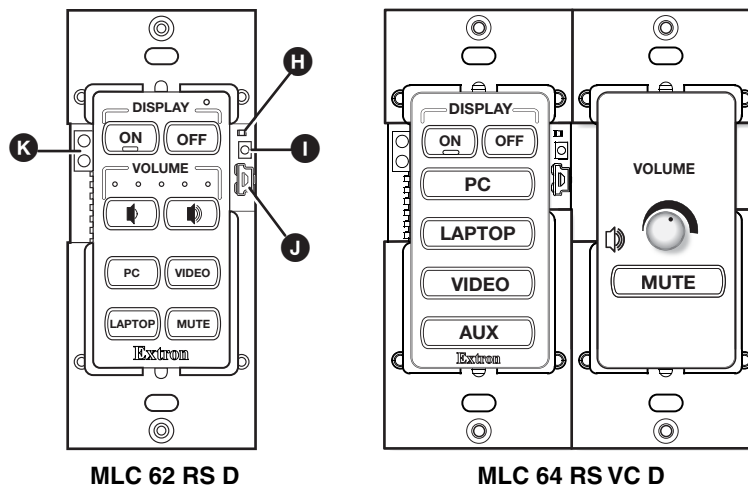


- A** Activity LED
- B** Display power On and Off Buttons
- C** On button identification nub
- D** Input Selection buttons
- E** On button identification nub
- F** Mute button
- G** Volume control knob

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](#) on page 41).

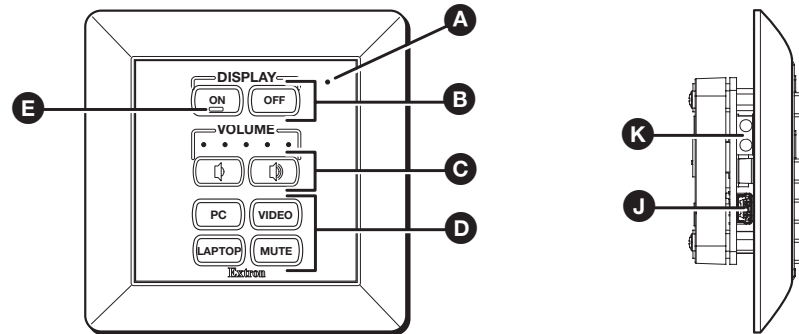


- H** Reset LED
- I** Reset button
- J** USB configuration port
- K** IR Learning sensor

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](#) on page 42 for removal procedures).



- A** Activity LED
- B** Display power On and Off Buttons
- C** Volume buttons and LEDs
- D** Input Selection buttons
- E** On button identification nub
- J** USB configuration port
- K** IR Learning sensor

**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

- A 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).
- B 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 (**E**), 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 a time. Using the MLC configuration software, you can associate other functions and relays with each of these buttons (see the configuration software help).

- C Volume buttons and LEDs (MLC 62 models only)** — Use these buttons to adjust the audio volume. Each **Volume** button blinks when pressed and continues to blink 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.

**D 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 55, 62 and 64 Series Configuration Program help file for more information).

**E 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.

**F 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.

**G 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.

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

**I Reset button** — Press this reset button to initiate factory firmware or configuration resets (see [Resetting the MLC Using the Reset Button](#) on page 43).

**J 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.

**K 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](#) on page 33).

**NOTE:** Before performing IR Learning to create a driver, check to see if an Extron driver exists for your device (see [Obtaining Device Drivers](#) on page 50).

## 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 [Downloading and Installing the Configuration Software](#) on page 46 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 55, 62 and 64 Series Configuration Program* help file for detailed procedures for configuring the buttons).

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

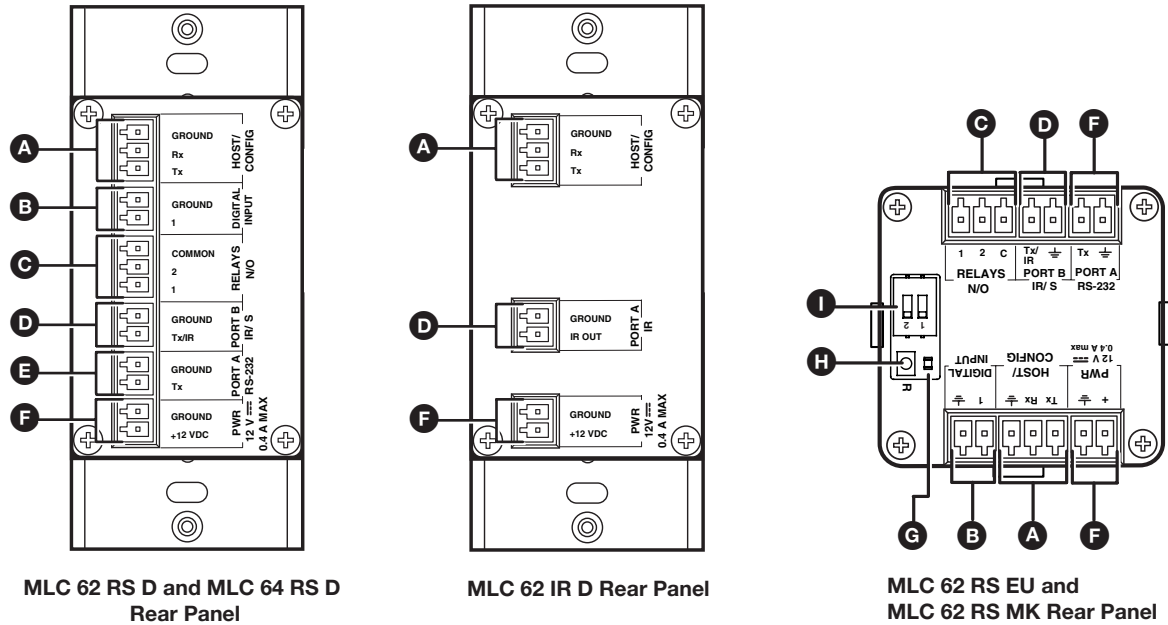
- **A driver operation** — Execute an RS-232 or IR control command that is part of a device driver (for a projector, VCR, DVD player, switcher, and so forth).
- **A relay operation** — Execute a relay command to a room device such as a motorized screen or a projector lift.
- **Setting a time delay**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

**NOTE:** While a button is blinking, 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.



- A Host/Config port**
- B Digital Input port**  
(RS models only)
- C Relay ports**  
(RS models only)
- D IR/S or IR port**
- E RS-232 port**  
(RS models only)
- F Pwr (power) connector**
- G Reset LED**
- H Reset button**
- I DIP switches**

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

- A 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 (see [Front and Left Side Panels](#) on page 10). 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).
- B 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.
- C 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).

- D 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)**.
- E 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)**.
- F PWR (power) connector** — Connect the supplied 12 VDC, 1 A power supply (or any other Extron approved power supply capable of providing 12 VDC) to this 2-pole captive screw connector.

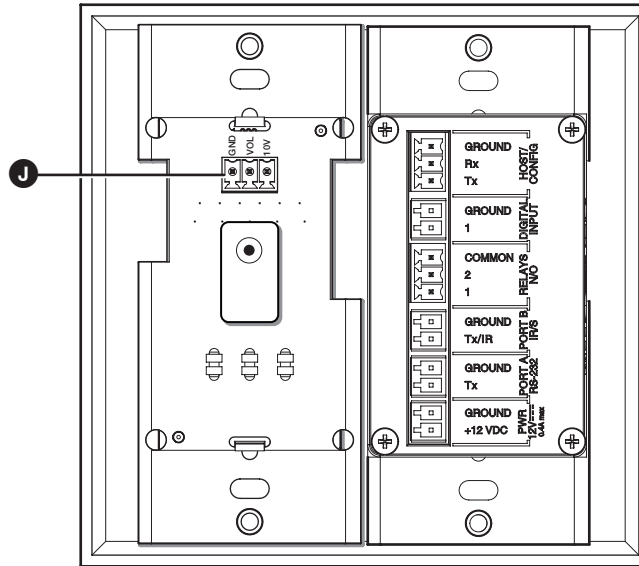
**ATTENTION:**

- The power supply must not be permanently fixed to the building structure or similar structures.
- La source d'alimentation ne devra pas être fixée de façon permanente à une structure de bâtiment ou à une structure similaire.
- Do not place the power supply within environmental air handling spaces or the wall cavity.
- Ne pas placer les sources d'alimentation dans une zone de traitement de l'air ni dans une cavité murale.
- 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*.
- Cette installation doit toujours être en accord avec les mesures qui s'applique au National Electrical Code ANSI/NFPA 70, article 725, et au Canadian Electrical Code, partie 1, section 16.
- 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.
- La source d'alimentation doit être située à proximité de l'équipement audiovisuel Extron dans un emplacement habituel, avec un degré de pollution 2, fixée à une estrade, un bureau, ou dans une baie technique à l'intérieur d'un placard dédié.
- Always use a power supply provided by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.
- Utilisez toujours une source d'alimentation fournie ou recommandée par Extron. L'utilisation d'une source d'alimentation non autorisée annule toute conformité réglementaire et peut endommager la source d'alimentation ainsi que le produit final.

- G Reset LED** — Indicates the status of a reset in progress.
- H Reset button** — Press this button to initiate factory firmware or configuration resets (see [Resetting the MLC Using the Reset Button](#) on page 43).
- I 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 10](#) on page 15).



**Figure 11.** MLC 64 RS VC D Rear Panel VCM Features

- J **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 \(MLC 64 RS VC D Only\)](#) on page 29).

**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 RS D and MLC 62 IR D 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 junction 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.

### ATTENTION:

- Installation and service must be performed by authorized personnel only. UL listed electrical boxes are recommended.
- L'installation et l'entretien doivent être effectués par le personnel autorisé uniquement. Des boîtiers électriques approuvés UL sont recommandés.
- Ensure that the junction box is grounded properly.
- Assurez vous que le boîtier d'encastrement est correctement mis à la terre.
- The length of the exposed wires in the stripping process is critical. The ideal length is 3/16 inches (5 mm). If it is longer, the exposed wires may touch, causing a short circuit between them. If it is shorter, the wires can be easily pulled out even if tightly fastened by the captive screws.
- La longueur des câbles exposés est primordiale lorsque l'on entreprend de les dénuder. La longueur idéale est de 5 mm (3/16 inches). S'ils sont un peu plus longs, les câbles exposés pourraient se toucher et provoquer un court circuit. S'ils sont un peu plus courts, ils pourraient sortir, même s'ils sont attachés par les vis captives.
- Install into a UL listed outlet/junction box with the provided faceplate or a UL listed faceplate.
- Installer dans une prise de courant ou un boîtier de raccordement certifié(e) UL avec le panneau avant fourni ou un panneau avant certifié UL.
- For use only with Extron UL listed Medialink or IP Link products.
- À utiliser uniquement avec des produits MediaLink ou IP Link d'Extron, certifiés UL.



## 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 [www.extron.com](http://www.extron.com) for information on parts that are provided or available to order for each MLC model).

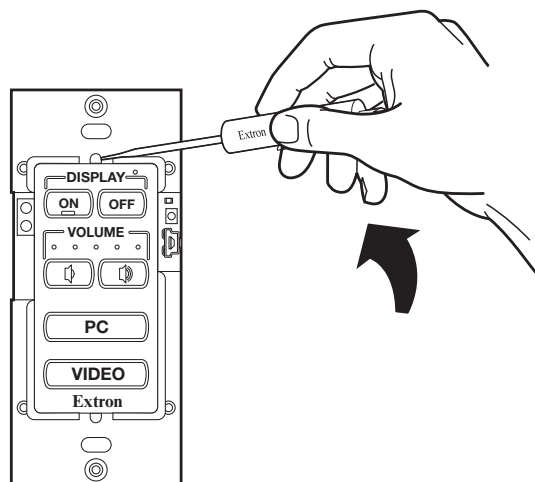
### Removing and replacing an MLC D faceplate

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:

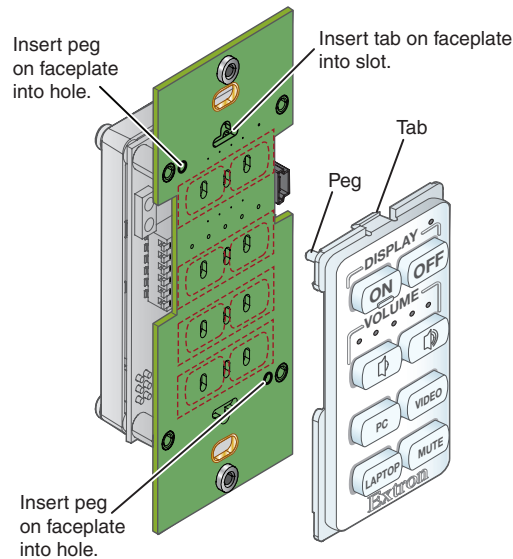
- a. Insert the flat end of the provided Extron Tweezer or other small screwdriver into the hole above or below the tab.
- b. Pressing each tab in and up, pry the top and bottom of the faceplate away from the board (see figure 12).



**Figure 12. 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](#) on page 23).
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 13. Attaching the Faceplate (MLC 60 Series D Models)**

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

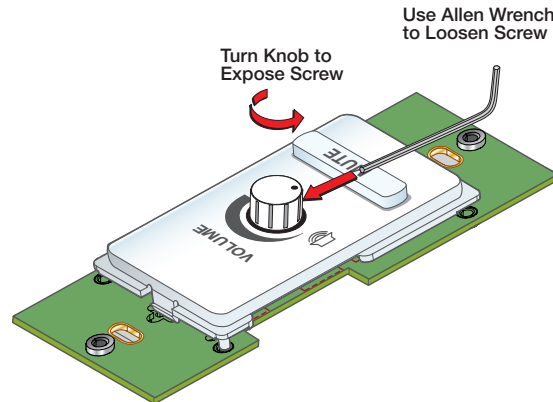
The MLC 64 is provided with one black and one white VCM faceplate and volume control knob. You can change the faceplate, knob, or both on the volume control module as described in the following procedures.

#### 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.



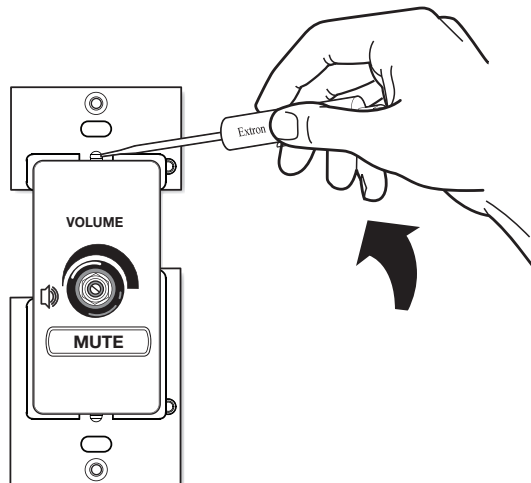
**Figure 14. Removing the Volume Knob**

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).
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 Tweezer or other small screwdriver into the hole above or below the tab (see figure 15).
  - b. Pressing each tab in and up, pry the top and bottom of the faceplate away from the board.



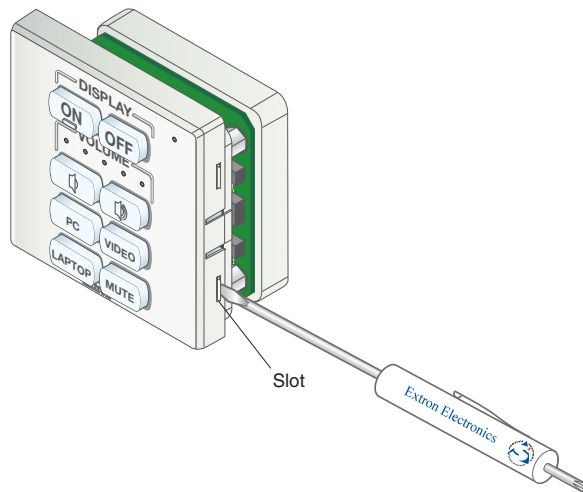
**Figure 15. Removing the MLC 64 Volume Control Module Faceplate**

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.

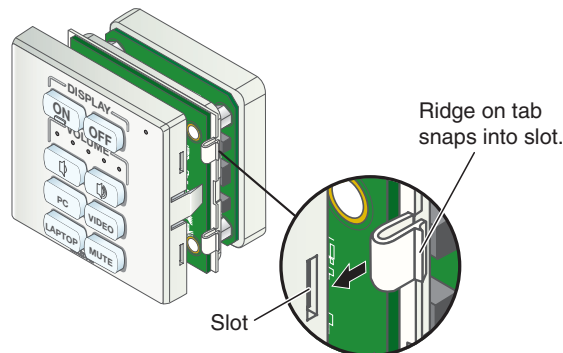
1. Remove the MLC 62 RS EU or MLC 62 RS MK faceplate as follows:
  - a. On the right and left edges of the MLC faceplate are two pairs of slots, into which two small tabs on either side of the MLC fit. Insert the flat end of the provided Extron Tweaker or other small screwdriver into one of the side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



**Figure 16. 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](#) on the next page).

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 17. Replacing the Faceplate (MLC 62 RS EU)**

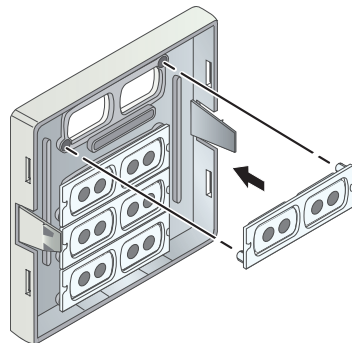
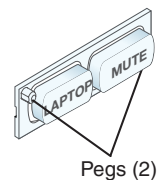
5. Each tab has a ridge that must snap into a slot on the side of the MLC. Press the MLC into the faceplate until the tab ridges snap into their slots. Check to make sure that all four tabs are securely in place.

## Replacing Buttons

Additional labeled buttons are provided with the MLC and are available to order from the Extron website. 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 Faceplates](#) on page 18).
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 18. 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.

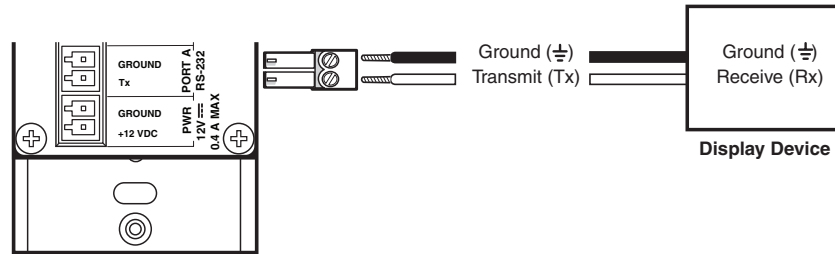
## Wiring for RS-232 Control (RS Models Only)

The MLC 60 Series RS models can send out RS-232 commands through the 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.



MLC RS D Rear Panel

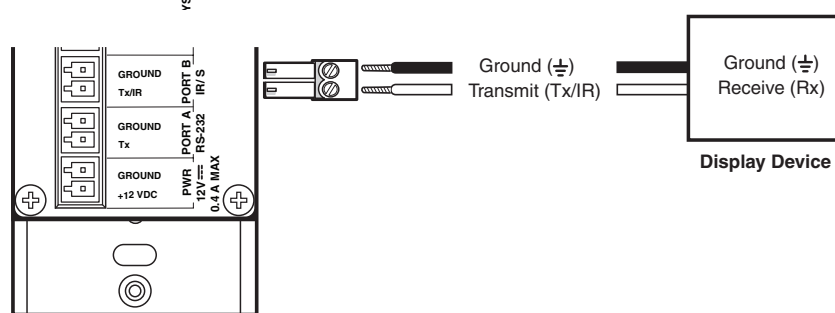
**Figure 19. Connecting a Display Device to Port A RS-232 of an MLC RS D**

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 at [www.extron.com](http://www.extron.com), **Download** tab (see **Obtaining Device Drivers** on page 50 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.



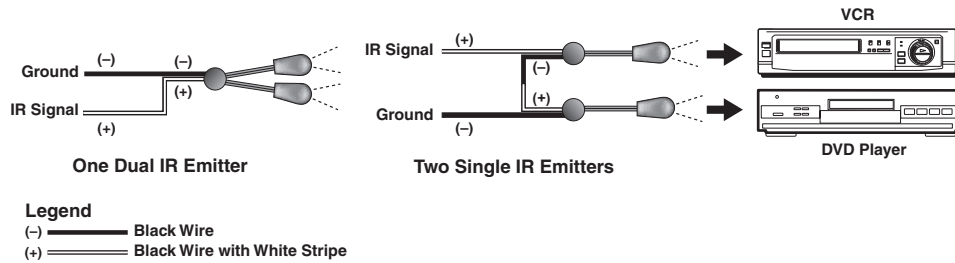
MLC RS D Rear Panel

**Figure 20. 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 DVD player.

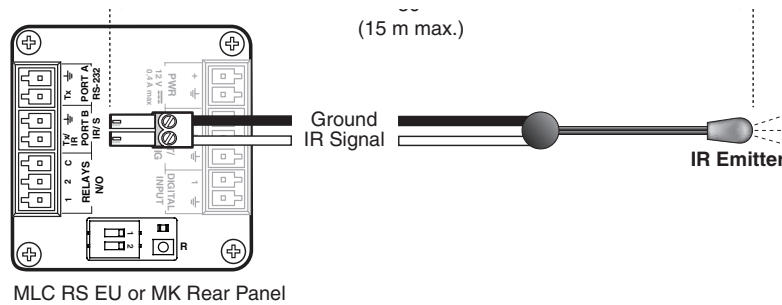
You can connect one or two single IR emitters or one dual IR emitter to the IR or IR/S port to control one or two devices. Because the MLC captive screw plugs have small openings that accept just one wire per pole, to connect two IR emitters to the MLC insert one ground wire (black) and one IR signal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



**Figure 21. 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:** Figure 22 shows a single IR emitter connected to the IR/S port of an MLC 62 RS EU or an MLC 62 RS MK.



**Figure 22. Connecting an IR Emitter to the IR/S Port of an MLC 62 RS EU or RS MK**

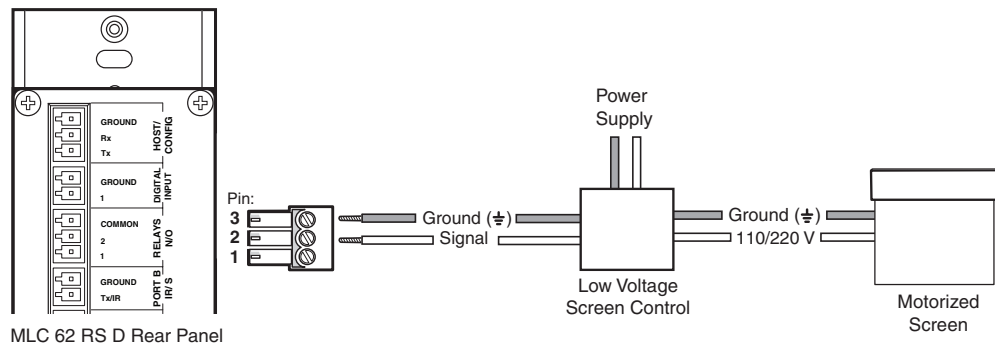
## Wiring the Relays Port (RS Models Only)

Connect one or two devices such as room lights, a projector lift, or a motorized screen (see figure 23) 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 figure 23, 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 23. 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 the “Adding relays to buttons” or “Configuring the Digital Input Port” topics of the program help file 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**.

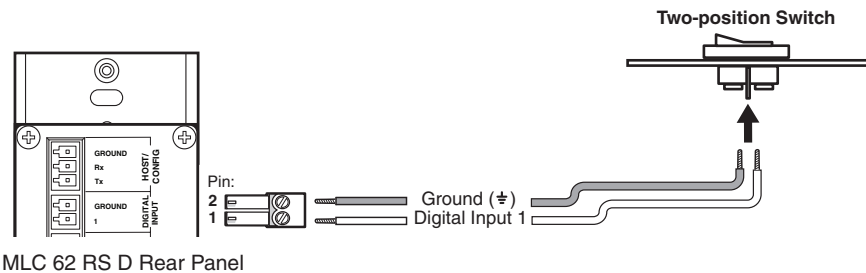
There is also an internal, +5 VDC, selectable, pull-up resistor for this circuit. If a connected device does not have its own power source and will be powered through the controller, configure this port (via the MLC configuration software) with **Input with Pullup** as the digital input mode. If the connected device provides its own power, select **Input** for the digital input mode (see the *MLC 55, 62 and 64 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.



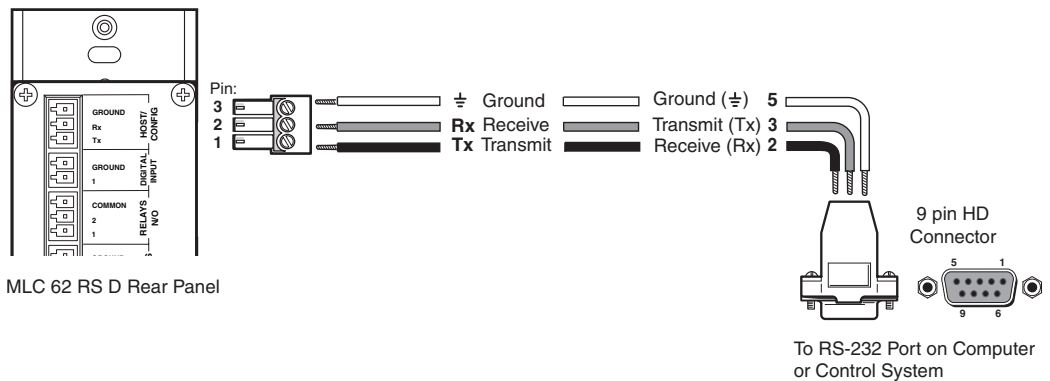
**Figure 24.** Connecting a Two-position Switch to the Digital Input Port

## 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](#) on page 30.) In addition, SIS commands can be issued through this port from the computer to control the MLC (see [SIS Control](#), beginning on page 56).

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 UC50', Extron part number 26-518-01, or UC100', 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  $\perp$  (ground) port



**Figure 25. 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.

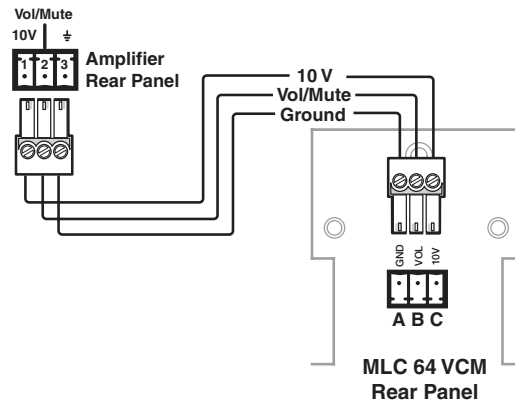
## Wiring the Volume Control Module (MLC 64 RS VC D Only)

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 figure 26. 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 401 or MPA 152 Plus 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 26. Wiring the Volume Control Module**

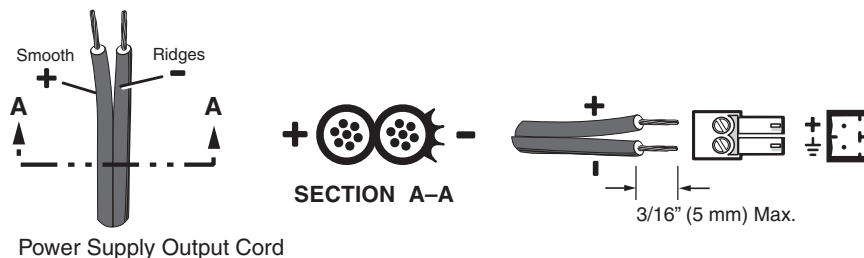
In figure 26:

- **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

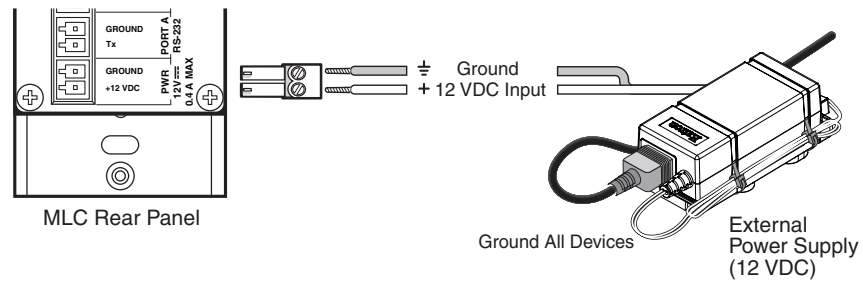
See **F PWR (power) connector** on page 16 for important cautions about power supplies. Connect the provided 12 VDC, 1 A power supply to the MLC as follows:

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



**Figure 27. 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.



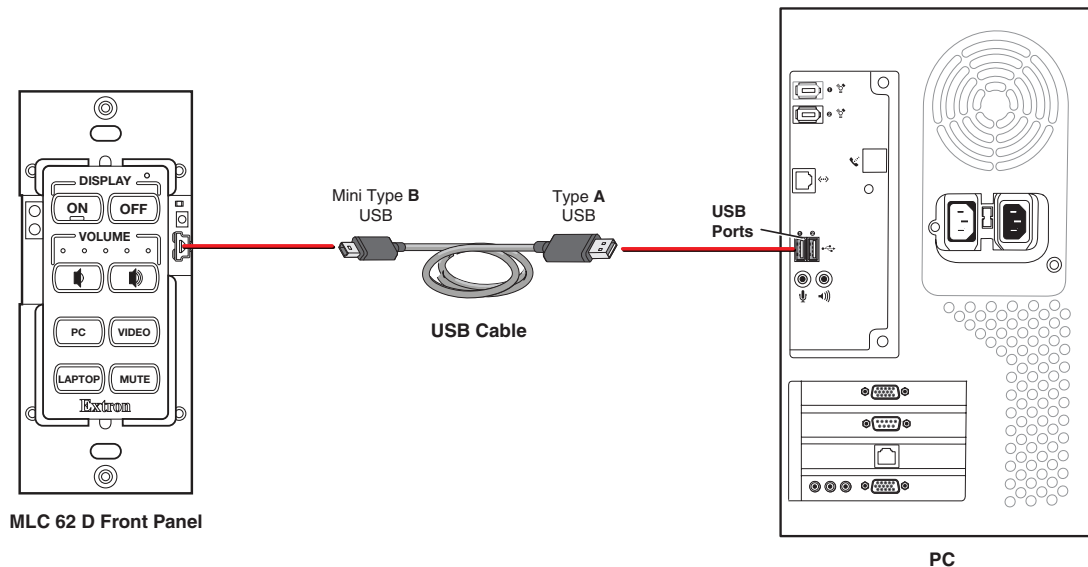
**Figure 28. Connecting a Power Supply to an MLC**

## Configuring the MLC via the USB Port

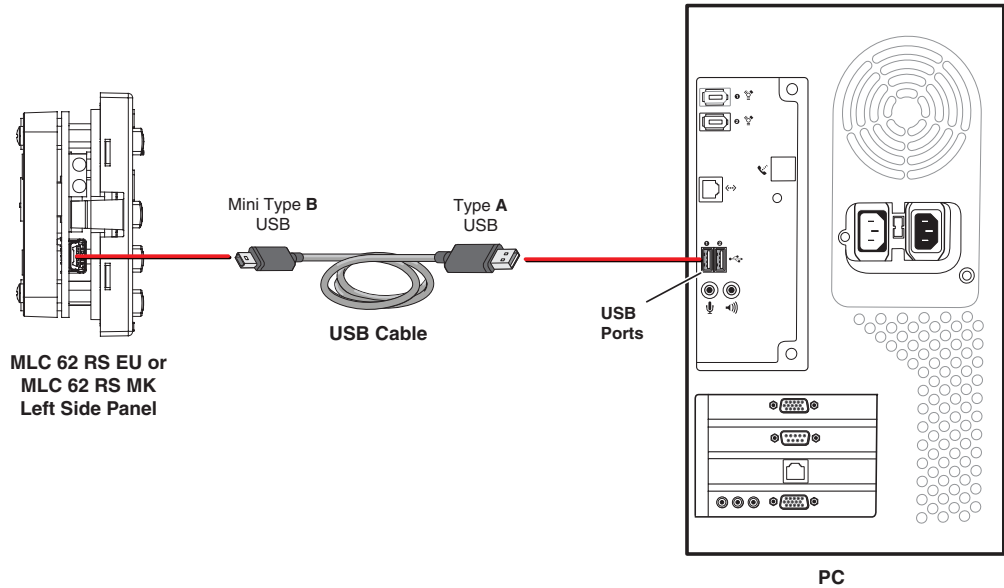
The mini-Type B USB port can be used to configure the MLC via the configuration software and to update the firmware. This USB port also functions as a power source for the MLC during configuration.

**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](#) on page 41).
  - **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](#) on page 42).
2. Connect a USB A to mini B cable between the USB configuration port and the USB port on your computer.

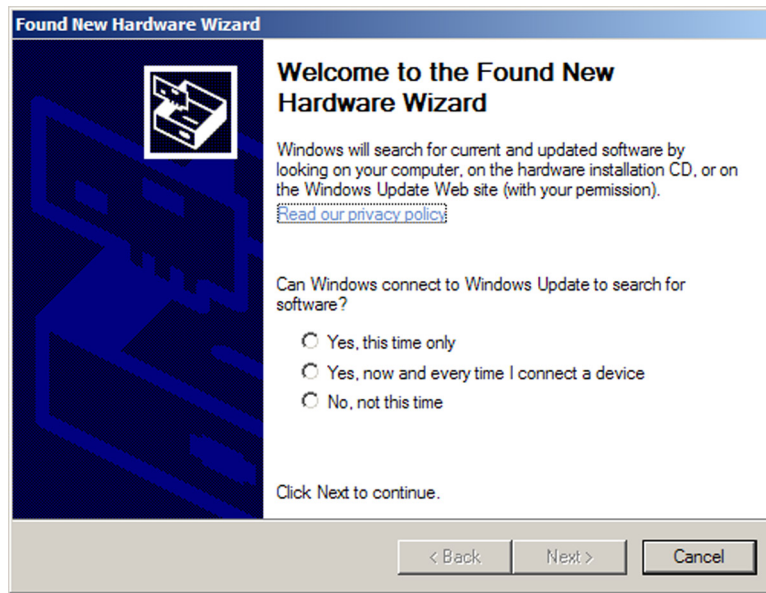


**Figure 29. USB Port Connection for MLC D Models**



**Figure 30. USB Port Connection for MLC 62 RS EU and MLC 62 RS MK**

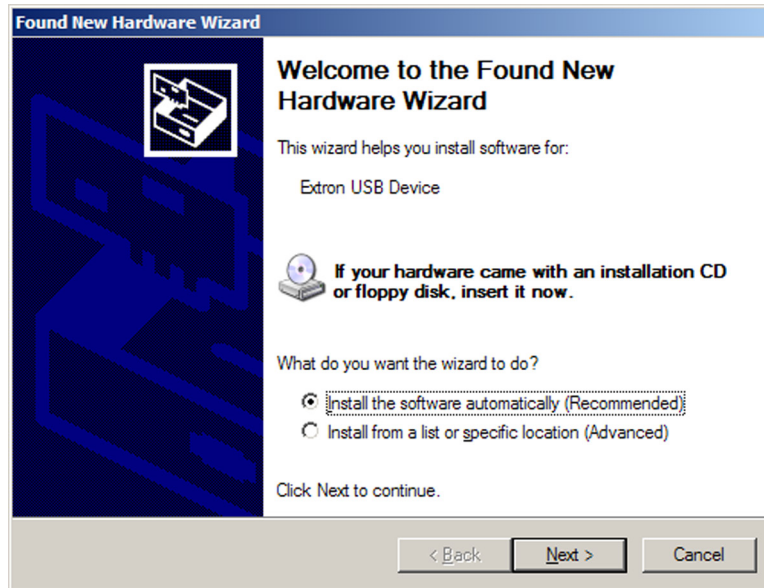
3. If this is the first time you have connected an MLC to this USB port on your computer, the Found New Hardware Wizard opens. On the first screen, you can specify whether you want the computer to connect to Windows Update in order to search the web for the driver that it needs to communicate with the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



**Figure 31. 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 the 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 32. 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 [Downloading and Installing the Configuration Software](#) on page 46.
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.

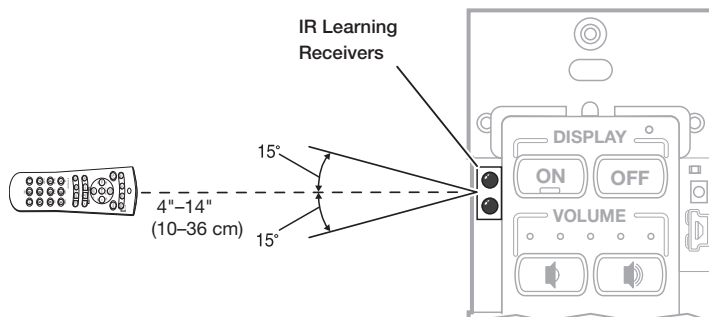
**NOTES:**

- 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](#) on page 41 for the procedures).

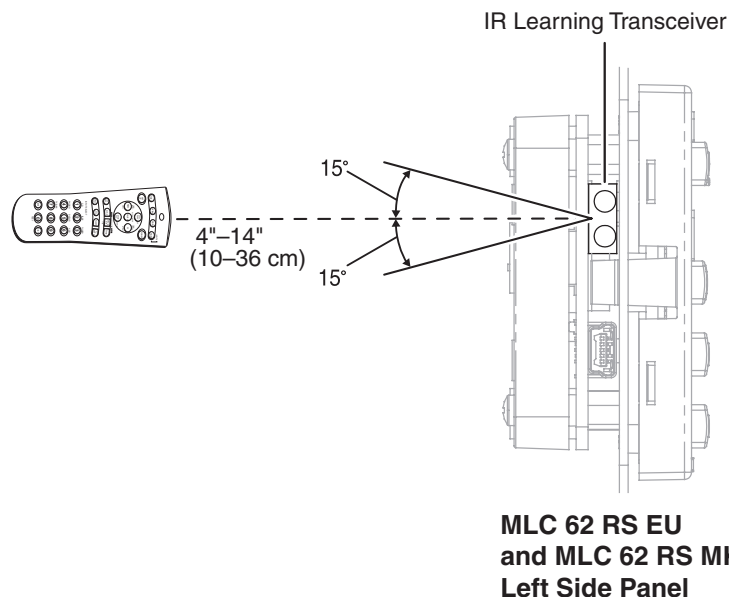
## IR Learning

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 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 33.** IR Learning on an MLC D Model



**MLC 62 RS EU  
and MLC 62 RS MK  
Left Side Panel**

**Figure 34.** 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 the MLC 62 D

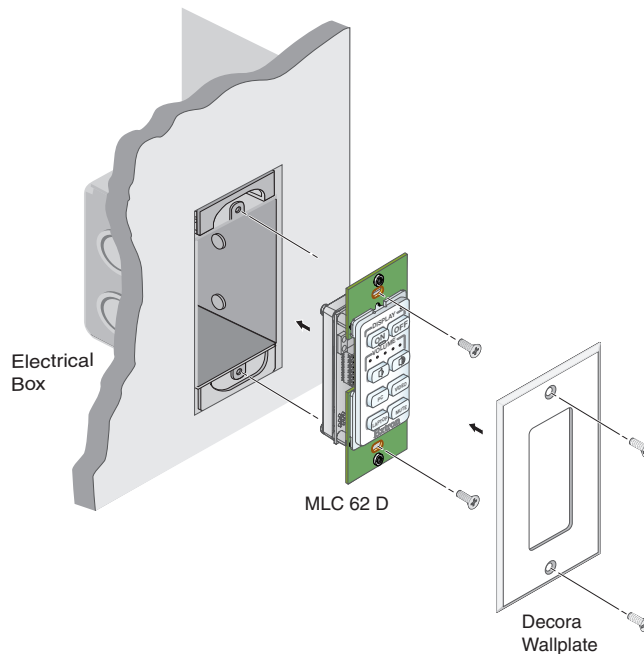
You can mount an MLC 62 RS D or MLC 62 IR D to a UL-approved one-gang sized electrical junction box or Decora mounting bracket (included).

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

**ATTENTION:**

- Ensure that the junction box is grounded properly.
- Assurez vous que le boîtier d'encastrement est correctement mis à la terre.

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.



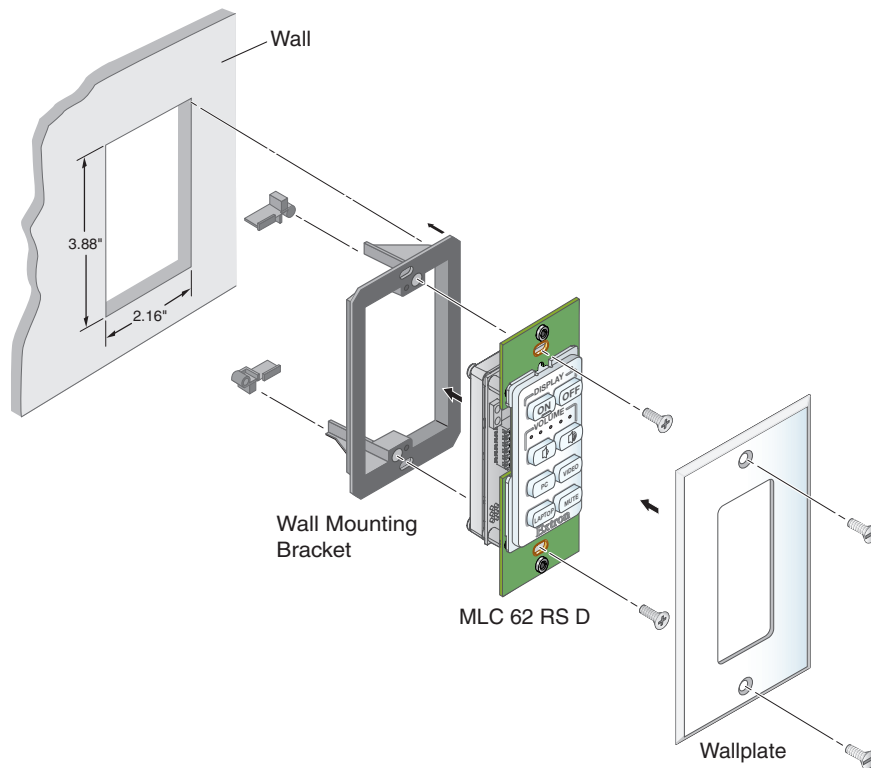
**Figure 35.** Mounting an MLC 62 D in an Electrical Junction Box



## 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 (see figure 36 for the dimensions).
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 36.** Mounting an MLC 62 D to a Decora Mounting Bracket

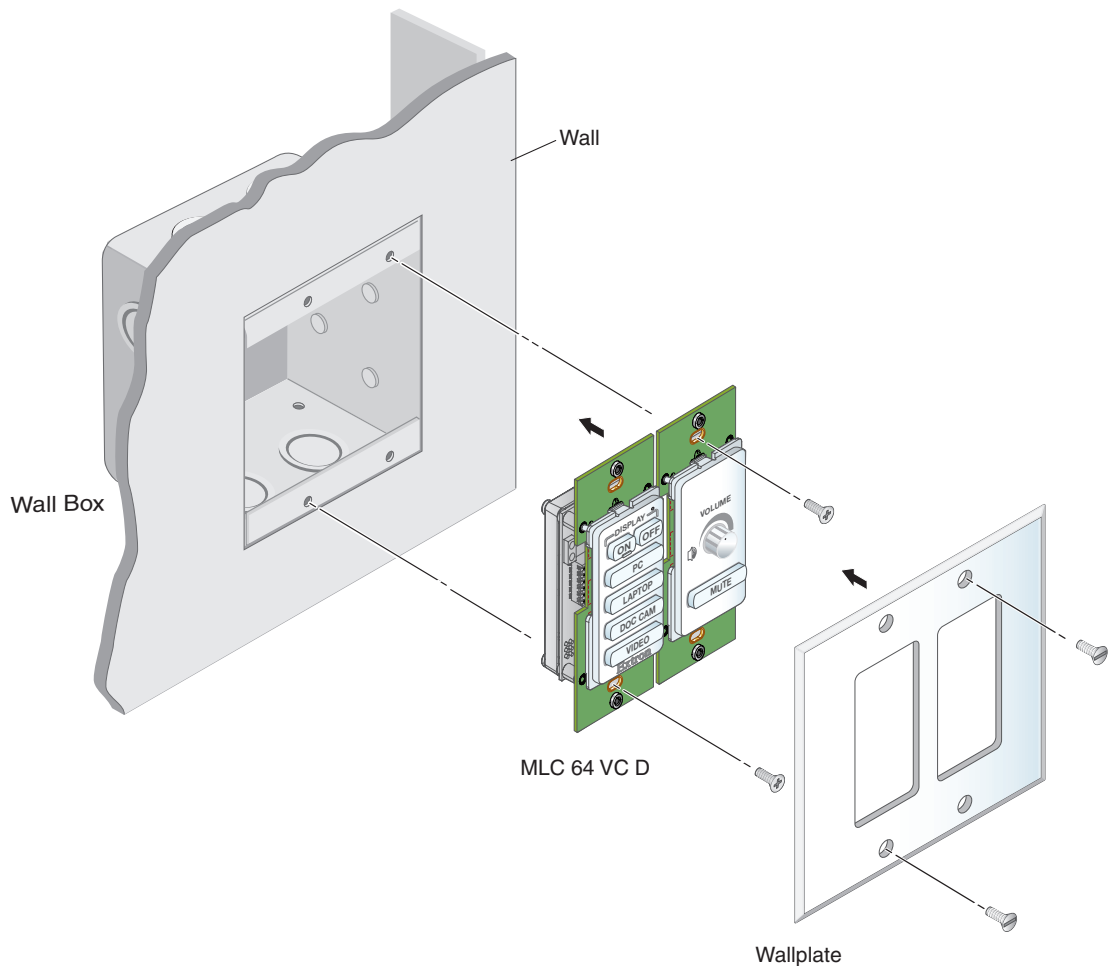
## Mounting the MLC 64 RS VC D

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

**ATTENTION:**

- Ensure that the junction box is grounded properly.
- Assurez vous que le boîtier d'encastrement est correctement mis à la terre.

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.

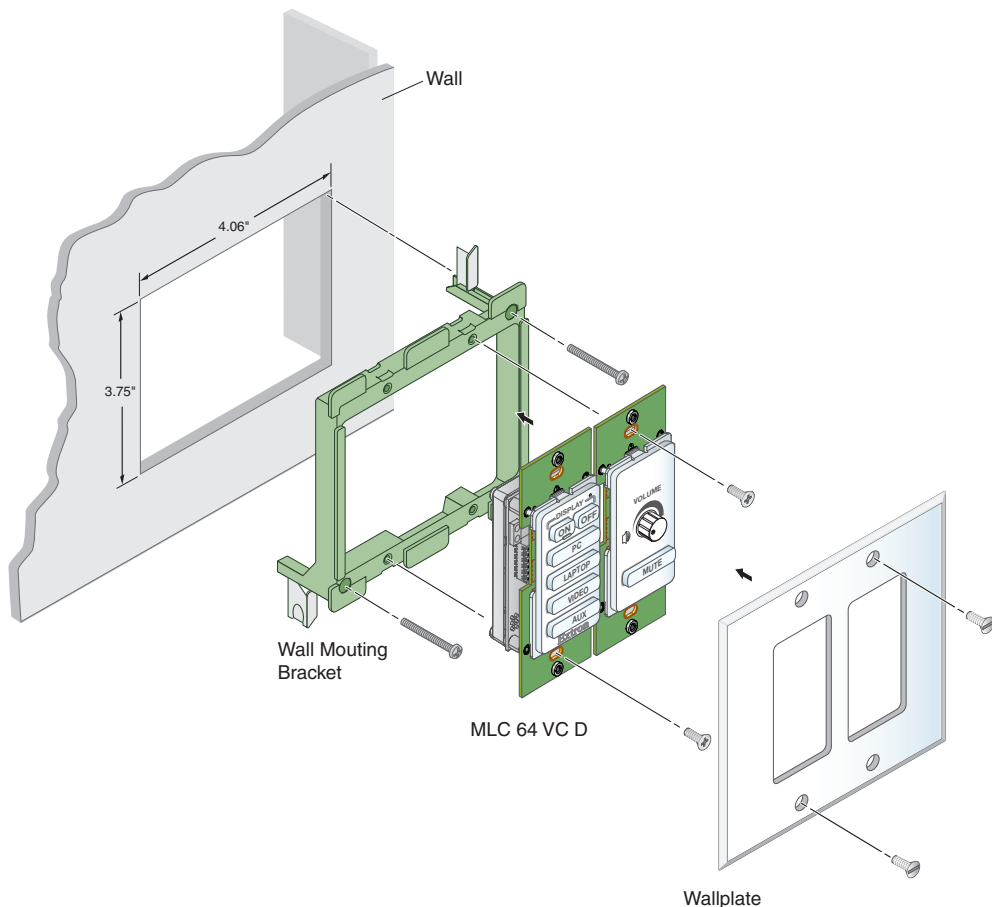


**Figure 37.** Mounting an MLC 64 D to an Electrical Box

## 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 38.** Mounting an MLC 64 D to a Two-gang Decora Mounting Bracket

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

### ATTENTION:

- Ensure that the junction box is grounded properly.
- Assurez vous que le boîtier d'encastement est correctement mis à la terre.

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.

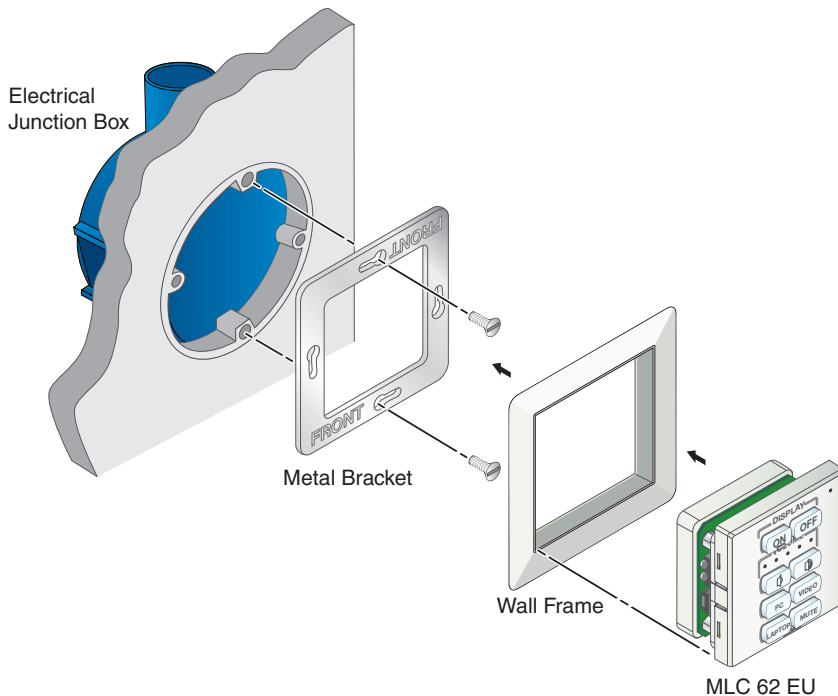
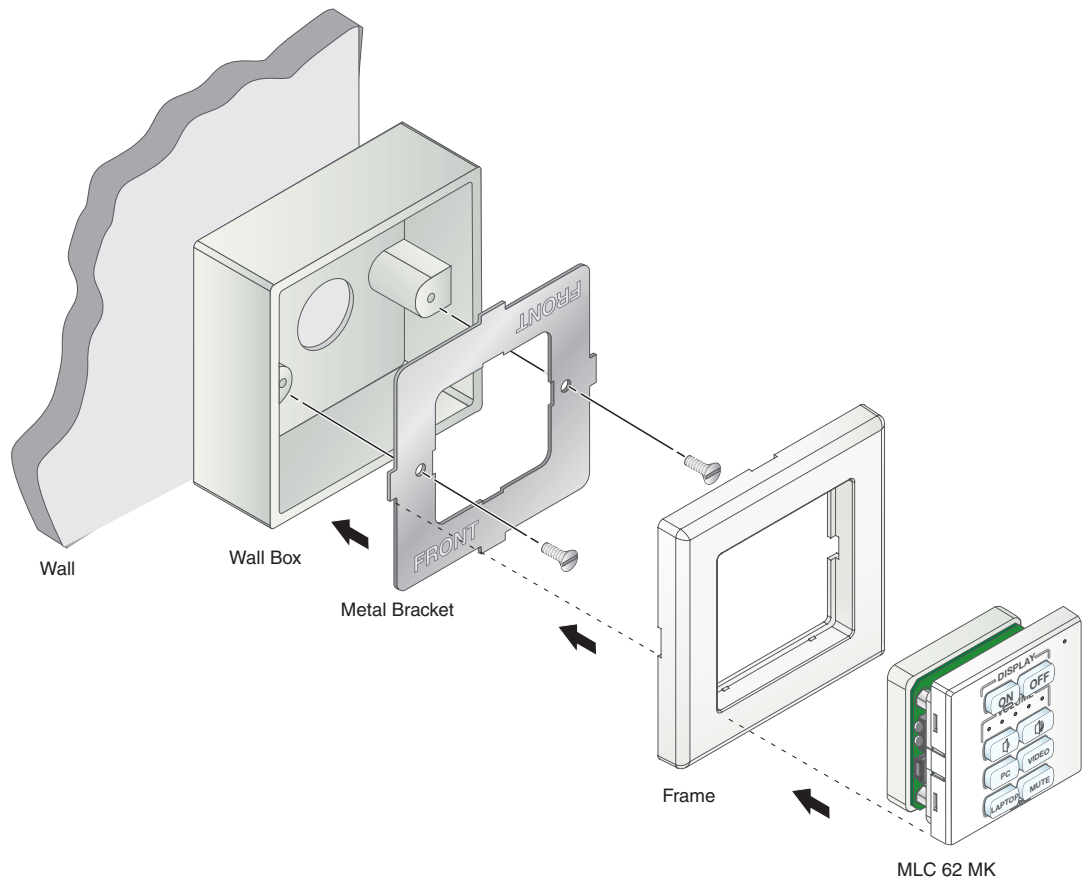


Figure 39. Mounting the MLC 62 RS EU to an Electrical Box



**Figure 40. 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.

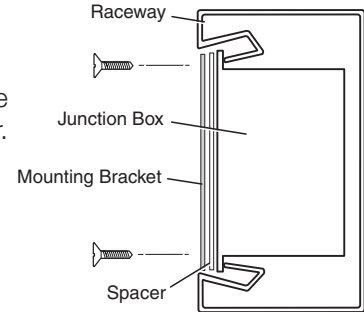
When this gap exists, the tabs on the sides of the MLC do not reach the metal mounting bracket and the MLC does not snap completely into the wall frame.

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 is engraved with the words “Optional Spacer” and “Place behind bracket” and has a slightly larger center opening than the mounting bracket.

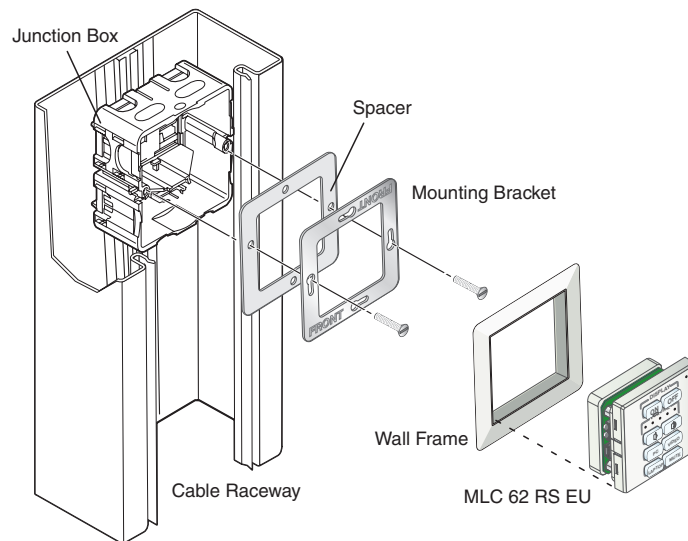
**NOTE:** Do not attempt to use the spacer in place of the metal mounting bracket. Because of its larger opening, the spacer will not hold the MLC EU in place in the wall frame.

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 41. Mounting the MLC 62 RS EU Using a Spacer**

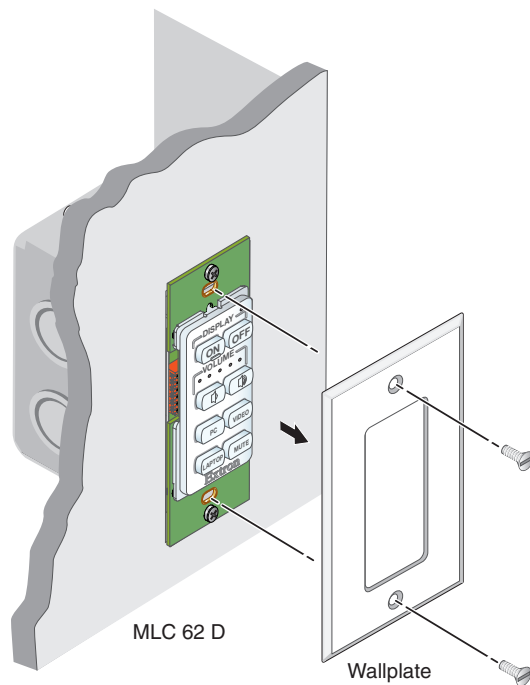
4. Rotate the mounting bracket as necessary to ensure that the MLC will be positioned straight on the mounting surface and not skewed to either side.
5. Tighten the screws to secure the bracket to the spacer.
6. Pull the cables through the electrical box and the wall frame.
7. Disconnect power from all 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 42. Removing the MLC D Wallplate**

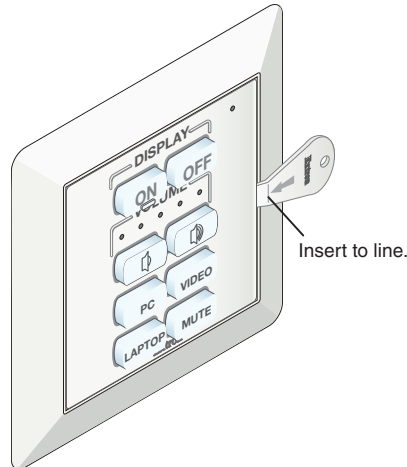
## Accessing MLC 62 RS EU and MLC 62 RS MK Side and Rear Panel Features

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 43. 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.

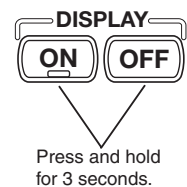
You can lock and unlock the front panel by the following methods:

- Front panel buttons
- The MLC configuration software (see the *MLC 55, 62 and 64 Series Configuration Program Help File*).
- SIS commands (see the **Front panel lockout** commands on page 61).

### 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.



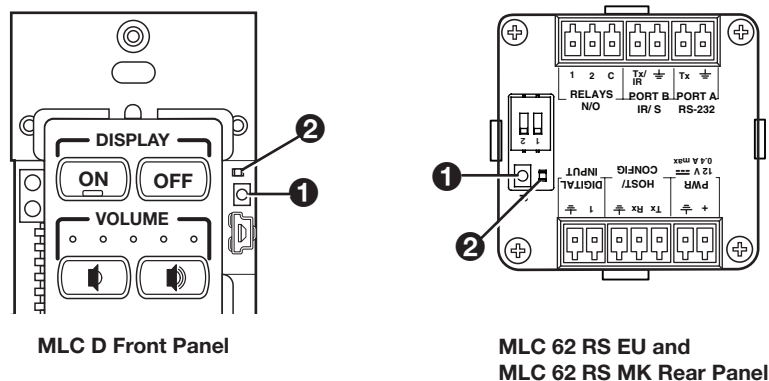
## Resetting the MLC Using the Reset Button

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** on page 41), **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** on page 42).

Use the provided Extron Tweezer or other small screwdriver to press the **Reset** button (see figure 44, **1**).



**Figure 44. 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 (②) 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 Extron MLC 55, 62 and 64 Series Windows-based Configuration Program. The following topics are covered:

- [About the MLC 55, 62 and 64 Series Configuration Program](#)
- [Downloading and 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 55, 62 and 64 Series Configuration Program

An MLC controller must be configured in order for it to be able to control other devices. The MLC 55, 62 and 64 Series Configuration Program enables you 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, beginning on page 8, 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, 8.0, or 8.1 (64 bit)
- Microsoft.NET Framework 2.0
- 512 MB of RAM
- 50 MB of available hard disk space

## Downloading and Installing the Configuration Software

The MLC 55, 62 and 64 Series Configuration Program is available to be downloaded free of charge from the Extron website.

To download the configuration software:

1. Visit [www.extron.com](http://www.extron.com) and select the **Download** tab (see figure 45, ①).
2. On the Download screen, click the **Software** icon (②).

The screenshot shows the Extron Electronics website's 'Download' page. The header includes the Extron logo and 'INTERFACING, SWITCHING AND CONTROL'. The navigation menu has 'Download' selected. The main content area features three software product cards: 'XTP System Configuration Software', 'Global Configurator Professional', and 'Streaming Content Manager'. A sidebar on the left lists various software categories. At the bottom, there are four icons representing different software types: Software, Control System Drivers, Firmware, and HID Modules. A circled '1' is placed over the 'Download' menu item, and a circled '2' is placed over the 'Software' icon.

**Figure 45. Download Screen on the Extron Web Page**

The Download Center screen is displayed, containing a list of control software products.

3. Click **M** on the linked alphabet in the middle or at the bottom of the screen.
4. On the M software products page, scroll to locate MLC 55, 62 and 64 Series, and click the **Download** link at the far right (see figure 46, ①).

The screenshot shows a table of software products. The first row is highlighted and contains the following information: 'MLC 55, 62 and 64 Series', '79-540-01', '2.2', 'Sep. 22, 2014', '46.9 MB', and a 'Download' link with a circled '1' next to it. Below the table, there is a 'Release Notes' link with a PDF icon.

<b>MLC 55, 62 and 64 Series</b>	79-540-01	2.2	Sep. 22, 2014	46.9 MB	<a href="#">Download</a> ①
Control software for the MLC 55 RS, MLC 55 RS VC, MLC 55 RS EU, MLC 55 RS MK, MLC 62 RS D, MLC 62 RS EU, MLC 62 RS MK, MLC 62 IR D and MLC 64 RS VC D					
<a href="#">Release Notes</a>					

**Figure 46. MLC 55, 62 and 64 Series Configuration Software Link**

5. On the next screen, fill in the required information.
6. Click the **Download MLC\_55\_62\_64\_SetupVnxx.exe** button.
7. Follow the instructions on the download and installation screens to download the software and install it on the 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.

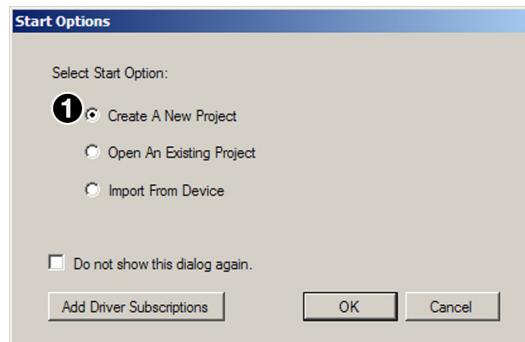
**NOTE:** Configurations can be created away from the job site and without the MLC being connected to the computer.

After you have downloaded and installed the software (see [Downloading and Installing the Configuration Software](#) on page 46) and device drivers if necessary (see [Obtaining Device Drivers](#) on page 50), 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:

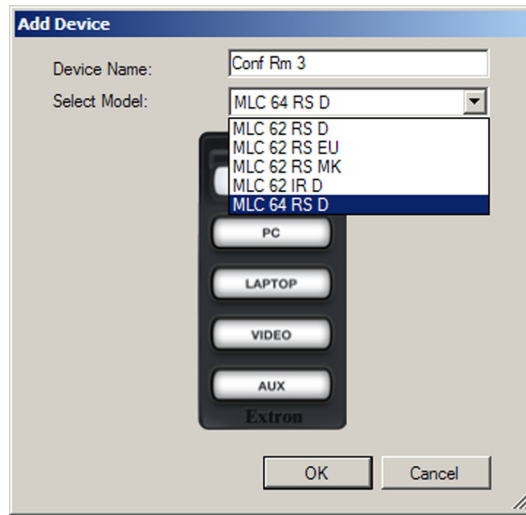
1. Open the MLC 55, 62 and 64 Series Configuration Program by selecting **All Programs > Extron Electronics > MLC 55, 62 and 64 > MLC60** from the computer **Start** menu. The **Start Options** window opens in front of the configuration program main window.
2. On the **Start Options** window, select the **Create a New Project** radio button (see figure 47, ❶).



**Figure 47. Start Options Window**

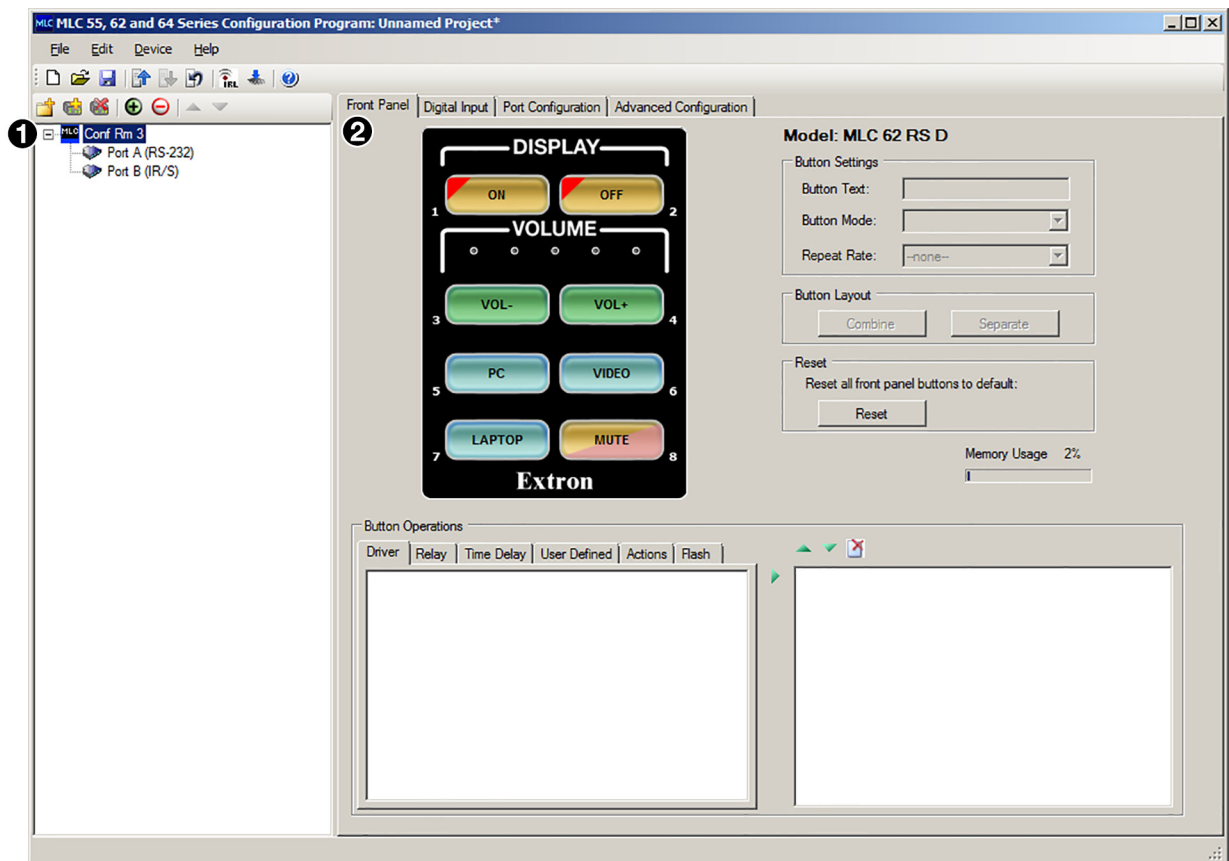
3. Click **OK**. The **Add Device** dialog box opens, displaying a diagram of your MLC front panel.
4. On the **Add Device** window, enter a name for your MLC in the **Device Name** field. This becomes the name of the first configuration in the new project (see [figure 48](#) on the next page).

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



**Figure 48. Add Device Window with Select Model Menu Displayed**

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



**Figure 49. The MLC Main Window**

- 1 **Device Configuration panel**
- 2 **Front Panel screen**

The main window is divided into the following major sections (see [figure 49](#) on the previous page):

- 1 **Device Configuration panel** — 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.
- 2 **Front Panel 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 panel of the window and contains a diagram representing the front panel of the 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 . . .**
    8. On the **Save As** window, give your project file a name and save it to the desired location on your computer.

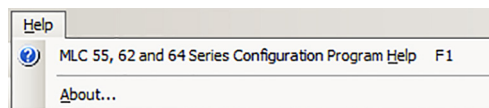
**NOTE:** Your project is saved as a file with the extension **.mlp**.

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).

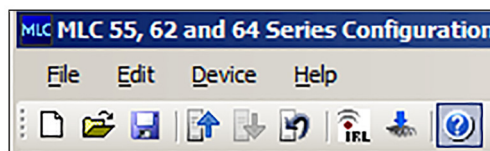
## Accessing the Help File

For instructions on creating configurations using the software, see the *MLC 55, 62 and 64 Series Configuration Program Help File*. You can access the help file the following methods:

- From the **Help** menu, select **MLC 55, 62 and 64 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 at [www.extron.com](http://www.extron.com). You can download them directly from the web or through the configuration software.

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

- c:\Documents and Settings\All Users\Shared Documents\Extron\Driver2
- 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 > All Programs > Extron Electronics > MLC 55, 62 and 64** 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 (see figure 50, ①).

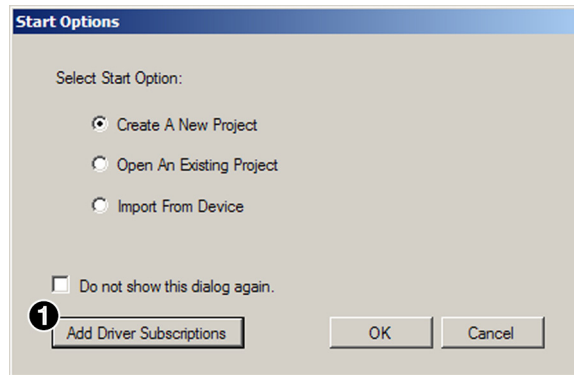
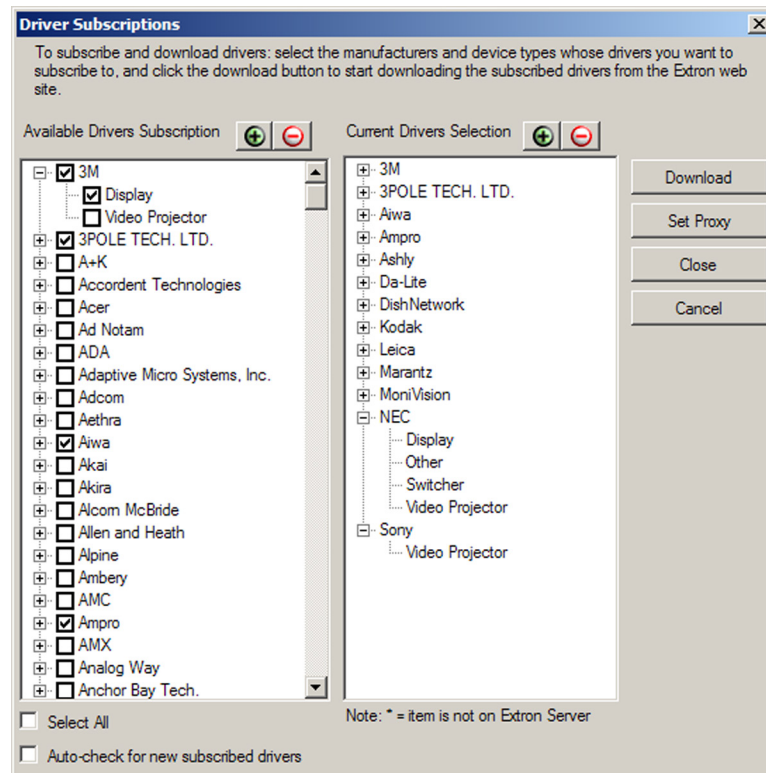


Figure 50. Start Options Window



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



**Figure 51. 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** button (shown at right) at the top of either column.

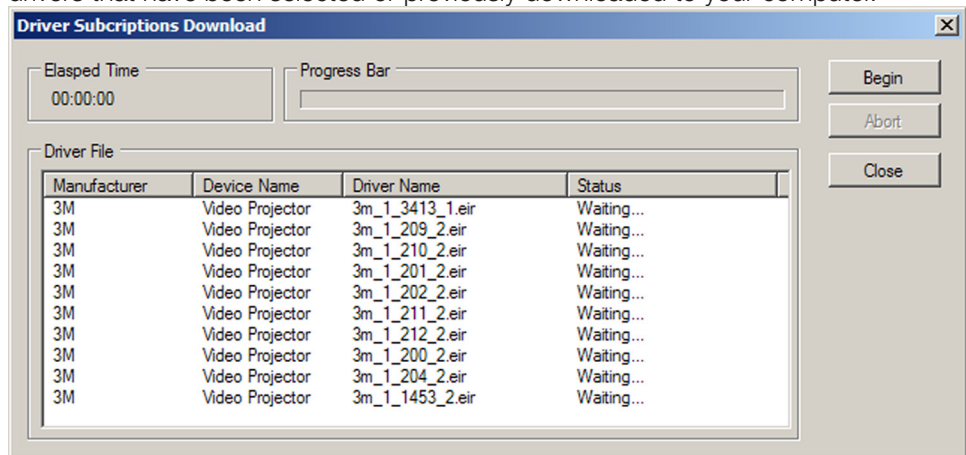


**NOTE:** When you select a device, both the IR and serial drivers for it are downloaded.

3. Make any desired optional selections:
  - Select the **Auto-check for new subscribed drivers** checkbox 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** 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.

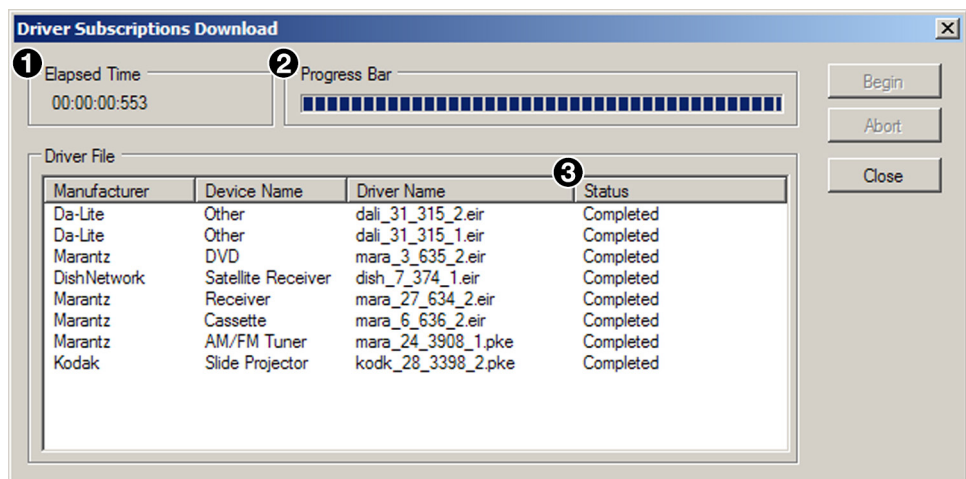


**Figure 52. Driver Subscription Download Screen**

- 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 panel. While the download is in progress:
  - The **Elapsed Time** panel shows the amount of time that has passed since the download process started (see figure 53, ①).
  - The **Progress Bar** (②) indicates the progress of the download.
  - As each new driver is downloaded, its designation in the **Status** column (③) 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 53. Driver Subscriptions Download Screen after a Driver Download**

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

## Downloading Drivers from the Web

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

1. Go to the Extron website at [www.extron.com](http://www.extron.com) and click the **Download** tab.
2. Click the **Control System Drivers** link on the left panel of the Download Center screen (see figure 54, ①).
3. From the Extron Product drop-down menu on the Control System Drivers screen, select **MLC 60 Series** (②).

The screenshot shows the Extron Electronics website interface. At the top, there is a navigation bar with 'Products', 'Training', 'Markets', 'Tech Library', 'Company', and 'Download' tabs. A search bar is located on the right. The main content area is titled 'Control System Drivers'. On the left, a sidebar menu has 'Control System Drivers' highlighted with a circled '1'. The main content area has a 'Featured Pro Series Downloads' section with links to various drivers. Below this is a 'Control System Driver Search' section with several dropdown menus: 'Extron Product' (marked with a circled '2'), 'Protocol Type', 'Manufacturer', 'Product Category', and 'Model'. The 'Extron Product' dropdown is open, showing a list of product series including 'MLC 60 Series'.

**Figure 54. Selecting MLC 60 Series from the Device Drivers Drop-down Menu**

4. From the four additional search criteria menus that become enabled, make the following selections for the drivers you want to download:
  - From the Protocol Type menu, select **IR, Serial, or All**.

The screenshot shows the 'Control System Driver Search' form. The 'Extron Product' dropdown is set to 'MLC 60 Series'. The 'Protocol Type' dropdown is open, showing options: 'Serial', 'All', 'Serial', and 'IR'. The 'Manufacturer', 'Product Category', and 'Model' dropdowns are all set to 'All'. There is a checkbox at the bottom labeled 'Check to view only drivers not included in the current package'.

**Figure 55. Searching Criteria Menus for MLC 60 Series Drivers**

- 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.

The screenshot shows a web interface for searching control system drivers. On the left is a navigation menu with categories like Software, Control System Drivers, and Resources. The main area is titled 'Control System Driver Search' and contains several dropdown menus for 'Extron Product' (MLC 60 Series), 'Protocol Type' (Serial), 'Manufacturer' (Mitsubishi), 'Product Category' (Display), and 'Model' (All). Below the search criteria are links for downloading the current driver package (Version 8.3, 158.1 MB), release notes, and archived drivers. A note states that shaded items were recently added and are not in the current package. A table lists 29 files, with the first four rows visible, each showing model numbers, product categories, interfaces, versions, dates, and file sizes, along with an 'Extron Certified' status.

Model Number	Product Category	Interface	Version	Date Posted	Driver	Communication Sheet	Extron Certified
Mitsubishi - LDT321V Also compatible with : LDT322V, LDT371V, LDT421V, LDT421V2, MD- T321S <a href="#">Click here for complete list</a>	Display	Serial	12	Oct. 13, 2010	48 KB	42 KB	✓
Mitsubishi - LDT322V Also compatible with : LDT321V, LDT371V, LDT421V, LDT421V2, MD- T321S <a href="#">Click here for complete list</a>	Display	Serial	12	Oct. 13, 2010	48 KB	42 KB	✓
Mitsubishi - LDT371V Also compatible with : LDT321V, LDT322V, LDT421V, LDT421V2, MD- T321S <a href="#">Click here for complete list</a>	Display	Serial	12	Oct. 13, 2010	48 KB	42 KB	✓
Mitsubishi - LDT421V Also compatible with : LDT321V, LDT322V, LDT371V, LDT421V2, MD- T321S	Display	Serial	12	Oct. 13, 2010	48 KB	42 KB	✓

**Figure 56. 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.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](#) on page 50).

6. On the **Download Center** screen, enter the requested information, and click the **Download drivervname** 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:
  - C:\Documents and Settings\All Users\Shared Documents\Extron\Driver2
  - 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) ( | or hex 0D)
- = Space
- Esc = Escape key (W or hex 1B)
- 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 **x50** 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 <b>PC</b> 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 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	$\boxed{x2} * 3 * \boxed{x3} 0$	Rly $\boxed{x2} * \boxed{x23}$ ↵	Set the length $\boxed{x3}$ of the pulse specified for relay port $\boxed{x2}$ . Values for $\boxed{x3}$ represent increments of 0.5 seconds and can range from 1 (0.5 seconds) to 255 (approximately 130 seconds). The MLC response includes status $\boxed{x23}$ for the specified relay port. For $\boxed{x2}$ : 1 = Relay 1; 2 = Relay 2. For $\boxed{x23}$ : 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	$\boxed{x2} * 2 0$	Rly $\boxed{x2} * \boxed{x23}$ ↵	Close or open relay port $\boxed{x2}$ . Each time the command is issued, the MLC toggles between the On and Off states. The MLC response includes status $\boxed{x23}$ for the specified relay port.
Force relay on	$\boxed{x2} * 1 0$	Rly $\boxed{x2} * 1$ ↵	Set relay port $\boxed{x2}$ to remain closed (on).
Force relay off	$\boxed{x2} * 0 0$	Rly $\boxed{x2} * 0$ ↵	Set relay port $\boxed{x2}$ to remain open (Off).
View relay state	$\boxed{x2} 0$	$\boxed{x23}$ ↵	Show state $\boxed{x23}$ of relay port $\boxed{x2}$ . For $\boxed{x23}$ : 0 = open; 1 = closed.
<b>Digital Input Data Port (RS models only)</b>			
View digital input state	]	$\boxed{x6}$ ↵	View status $\boxed{x6}$ of the Digital Input port. For $\boxed{x6}$ : 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	$\boxed{x11}$ ↵	View lockout status $\boxed{x11}$ . For $\boxed{x11}$ , 0 = off; 1 = on.
<b>Device Naming</b>			
Set unit name	$\boxed{Esc} \boxed{x12} CN$ ↵	Ipn• $\boxed{x12}$ ↵	Set name $\boxed{x12}$ for the MLC. $\boxed{x12}$ 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	$\boxed{Esc} • CN$ ↵	Ipn• $\boxed{x49}$ ↵	Set the name of the MLC to its factory default name $\boxed{x49}$ . $\boxed{x49}$ 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	$\boxed{Esc} CN$ ↵	$\boxed{x12}$ ↵	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> .
<div style="border: 1px solid black; padding: 10px;"> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>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.”</li> <li>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.)</li> </ul> </div>			
<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

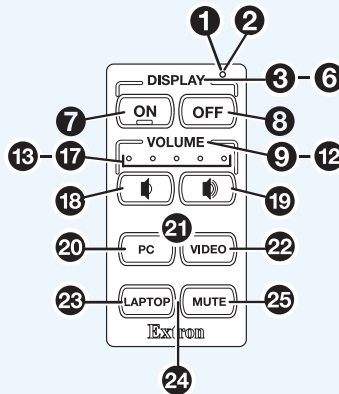
**Esc** LC ←

**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.

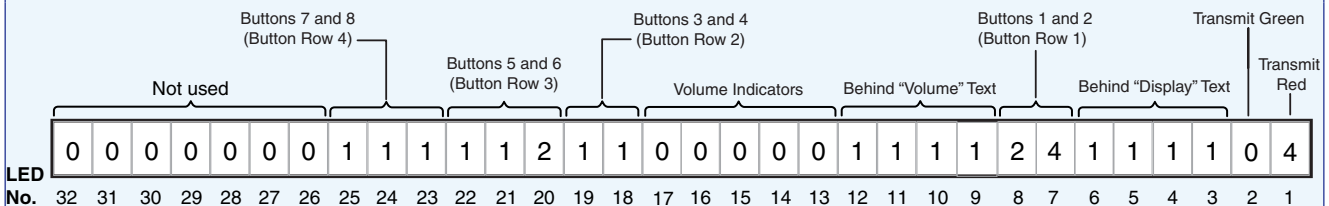
Example (MLC 62)

**Esc** LC ←

000000001111121100000111124111104 ←

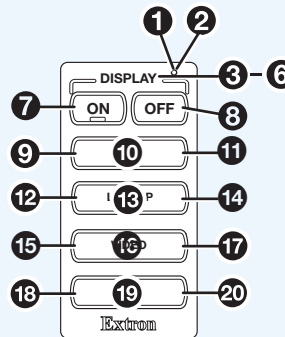
(This example is illustrated in the diagram below.)

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.

# Extron Warranty

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

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

Extron Electronics  
1230 South Lewis Street  
Anaheim, CA 92805  
U.S.A.

**Japan:**

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

**Europe and Africa:**

Extron Europe  
Hanzeboulevard 10  
3825 PH Amersfoort  
The Netherlands

**China:**

Extron China  
686 Ronghua Road  
Songjiang District  
Shanghai 201611  
China

**Asia:**

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

**Middle East:**

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

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

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

**USA:** 714.491.1500 or 800.633.9876  
**Asia:** 65.6383.4400

**Europe:** 31.33.453.4040  
**Japan:** 81.3.3511.7655

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

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