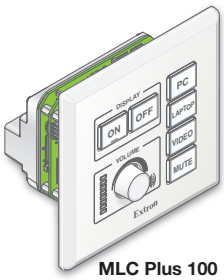
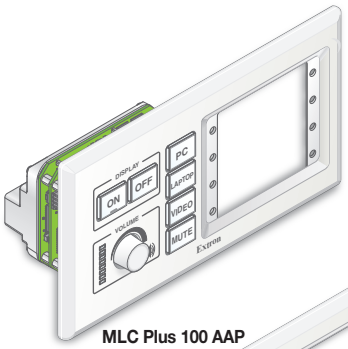
Extron

MLC Plus 50/100/200 Series • Setup Guide

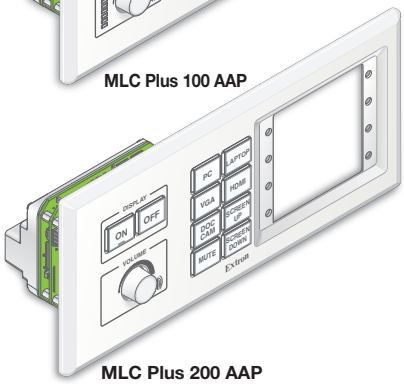
IMPORTANT:
Refer to www.extron.com for the complete user guide and installation instructions before connecting the product to the power source.

MLC Plus 50


MLC Plus 100


MLC Plus 100 AAP

MLC Plus 200


MLC Plus 200 AAP

The Extron MLC Plus 50/100/200 Series MediaLink® Controllers with IP Link® Pro integrate Ethernet connection into AV systems. This allows users to remotely control, monitor, and troubleshoot AV equipment, including display devices and switchers. Each controller includes an embedded web server and support for Power over Ethernet (PoE). It also includes ports for bidirectional serial control, IR output, relays, digital input, and (except for the MLC Plus 50) volume control. Each MLC Plus is shipped with a mud ring.

- All models fit standard US junction boxes or mud rings.
- The MLC Plus 100 AAP and MLC Plus 200 AAP also include space to mount from one to four Extron AAP plates.

This guide provides instructions to install an MLC Plus Series controller and to create a basic configuration. Configure the controller using Extron Global Configurator® (GC) software running in Global Configurator Professional (GC Professional) or Global Configurator Plus (GC Plus) mode. The MLC integrates with Extron GlobalViewer® Enterprise (GVE) software and the GlobalViewer web-based AV resource management for remote control applications. Global Configurator and other useful software applications are available at **www.extron.com**.

Installation

Step 1: Get Ready

Use the following check list to prepare for the installation.

- Download and install the latest version of the following:
  - **Global Configurator Professional or Global Configurator Plus software** — for setting up and configuring the controller. GC includes a link to the **Toolbelt** software and a way to upgrade the firmware of the controller. You must have an Extron Insider account to use GC software. Contact an Extron support representative regarding training to use the full features of GC Professional (see **Locating Software, Firmware, and Driver Files on the Extron Website** on page 11).
  - **Toolbelt software** — for setting up and configuring the controller
  - **IP Link Pro device drivers** — for use with GC (Professional or Plus), to make control of other devices possible.

  All are available from **www.extron.com** (see **Locating Software, Firmware, and Driver Files on the Extron Website** on page 11).
- Obtain network information for the unit from the network administrator. You will need the following details for each MLC Plus device:
  - DHCP setting (on or off)
  - Device (MLC Plus) IP address
  - Subnet mask
  - Gateway IP address
  - User name
  - Passwords
- Write down the MAC address of each IP Link Pro device (such as the MLC Plus 50/100/200) to be used.
- Obtain model names and setup information for devices the MLC Plus 50/100/200 will control.
- Each controller comes with a factory-installed Secure Sockets Layer (SSL) security certificate. If you intend to install a different SSL certificate, contact your IT department to obtain the certificate or for instructions on how to obtain one. See "Secure Sockets Layer (SSL) Certificates" in the *MLC Plus* 50/100/200 *Series User Guide* for requirements and guidelines regarding SSL certificates. IEEE 802.1X authentication is also supported once enabled (see "IEEE 802.1X Certificates" in the *MLC Plus 50/100/200 Series User Guide* for details).

Step 2: Prepare the Installation Site

ATTENTION:

- Installation and service must be performed by authorized personnel only.
- L'installation et l'entretien doivent être effectués uniquement par un technicien qualifié.

- Extron recommends installing the MLC Plus into a grounded, UL Listed electrical junction box.
- Extron recommande d'installer le MLC Plus dans une boîte de dérivation électrique mis à la terre, certifiée UL.

- If the controller will be installed into fine furniture, it is best to hire a licenced, bonded craftsperson to cut the access hole and perform the physical installation so the surface will not be damaged.
- S'il est prévu d'installer le contrôleur dans du beau mobilier, il est préférable de faire appel à un artisan autorisé et qualifié pour couper le trou d'accès et réaliser l'installation de telle façon que la surface ne soit pas endommagée.

- Follow all national and local building and electrical codes that apply to the installation site.
- Respectez tous les codes électriques et du bâtiment, nationaux et locaux, qui s'appliquent au site de l'installation.

- For the installation to meet UL requirements and to comply with National Electrical Code (NEC), the MLC must be installed in a UL Listed junction box. The end user or installer must furnish the junction box. It is not included with the unit.
- Pour que l'installation respecte les exigences UL et soit conforme au National Electrical Code (NEC) américain, le MLC doit être installé dans une boîte de dérivation certifiée UL. Il incombe à l'utilisateur final ou à l'installateur de fournir la boîte de dérivation. Cet équipement n'est pas inclus avec l'unité.

Americans with Disabilities Act (ADA) compliance

When planning where to install the MLC Plus 50/100/200, you may need to consider factors affecting accessibility of the controller such as height from the floor, distance from obstructions, and how far a user must reach to press the buttons. For guidelines, see sections 307 ("Protruding Objects") and 308 ("Reach Ranges") of the *2010 ADA Standards for Accessible Design* available at **http://www.ada.gov/regs2010/2010ADAStandards/2010ADAStandards.pdf**.

Site preparation and mounting box or mud ring installation

Model	US Gang Size
MLC Plus 50	2
MLC Plus 100	2
MLC Plus 100 AAP	4
MLC Plus 200	3
MLC Plus 200 AAP	5

Mud rings, optional UL Listed junction boxes, external junction boxes, and surface mounting boxes are available for use with the MLC Plus. Read any installation instructions and UL guidelines that come with the mounting devices, protect the mounting surface to prevent damage, then install the box or mud ring in the opening at the installation site.

When you run cables to the mounting location, leave enough slack for device installation. Secure the cables with a clamp for strain relief so they do not slip back down into the wall or furniture.

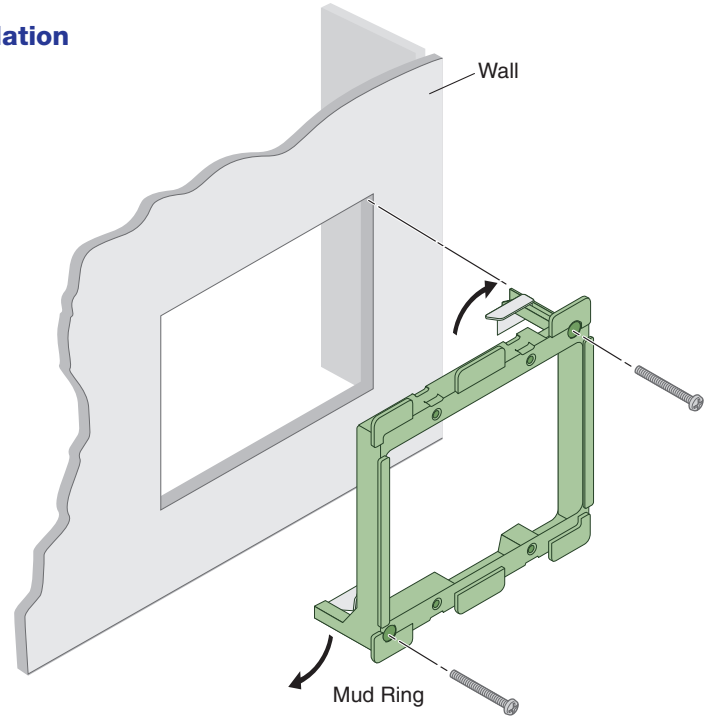


Figure 1. Installing a Mud Ring

Step 3: Change a Faceplate or Button Labels (optional)

Faceplates can easily be changed, if desired, and you can replace one or more of the labels within the buttons. Some button labels ship with the unit. You can create and print your own customized labels using Extron Button Label Generator software.

Replacing a faceplate

To replace a faceplate:

1. Remove the faceplate by holding the body of the unit with one hand, gripping the sides of the faceplate with the other hand, and pulling the faceplate away from the unit.

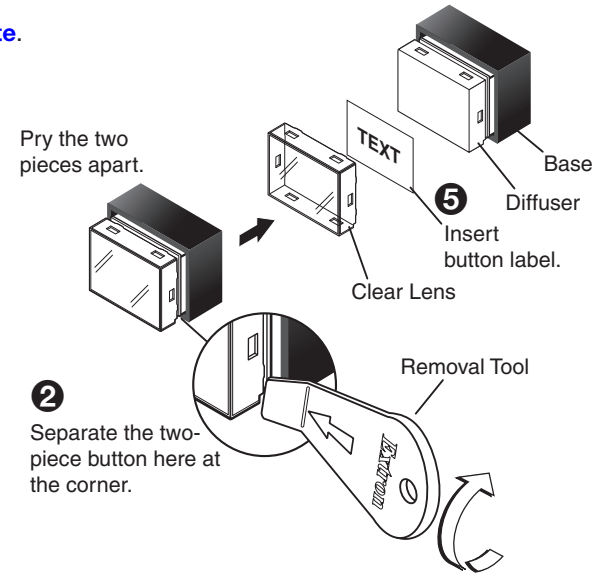
2. Align the openings of the new faceplate with the buttons and knob and with the LEDs and place the faceplate against the unit. The magnetic catches fasten the faceplate onto the unit.

> **TIP:** You can wait until the unit is mounted to the junction box or mud ring before placing the new faceplate on the unit.

Replacing button labels

You may wish to customize the button labels. The labels can be changed at any time. Follow these steps to change the button labels:

1. Remove the faceplate as mentioned in step 1 of **Replacing a faceplate**.
2. For each button label to be replaced, use the provided Extron removal tool to gently separate the clear button cap (lens) from its white diffuser backing as follows: insert the end of the removal tool into the corner notch and gently twist the tool.
3. Remove the label insert from the transparent button cap.
4. Select one of the button labels from the printed label sheets included with the MLC Plus. Remove the label from its backing and remove the clear, protective film from the front of the label.
5. Insert the button label into the button cap. Check for correct label orientation.
6. Align the cap with the white diffuser and the panel opening, and press the clear cap into place on the button.
7. Reattach the faceplate to the controller (see step 2 in "Replacing a faceplate" at the top of this page).



Step 4: Cable All Devices

> **NOTE:** Most examples on the following pages show the MLC Plus 100. However, connector wiring and port functions are identical for all models.

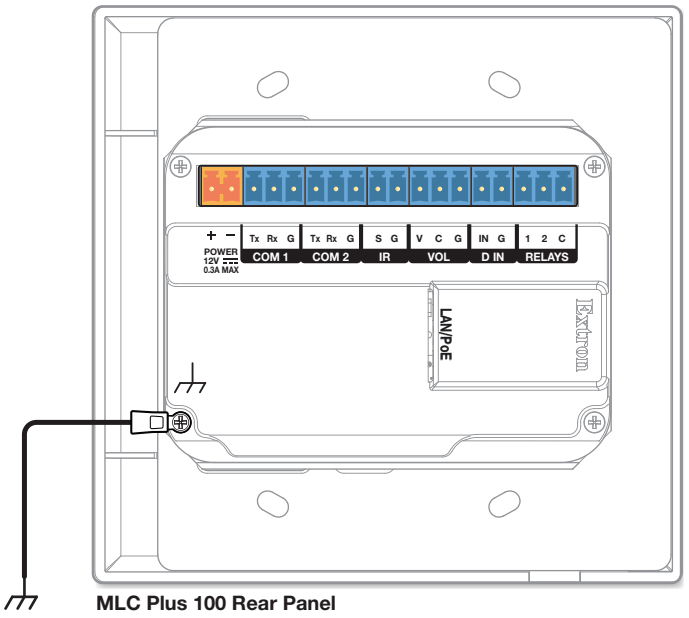
1. If the MLC Plus is not mounted to a grounded metal junction box or a grounded metal equipment rack, Extron recommends connecting the unit to an earth ground to protect the unit from electrostatic discharge.

   To ground the unit:

   a. Securely terminate a grounding cable with a ring terminal.

   b. Remove the grounding screw in the lower left corner of the rear panel, insert the grounding cable, replace and securely fasten the screw. Do not over-tighten the screw. Maximum torque is 2 inch-pounds (0.2 Newton-meter).

   c. Connect the other end of the grounding cable to an earth ground.



MLC Plus 100 Rear Panel

Figure 2. Connecting a Grounding Wire to the MLC Plus

2. Cable devices to the controller (see the following features sections and see **Cabling and features** on page 5).
3. Connect power cords and power on all the devices.

Front panel features

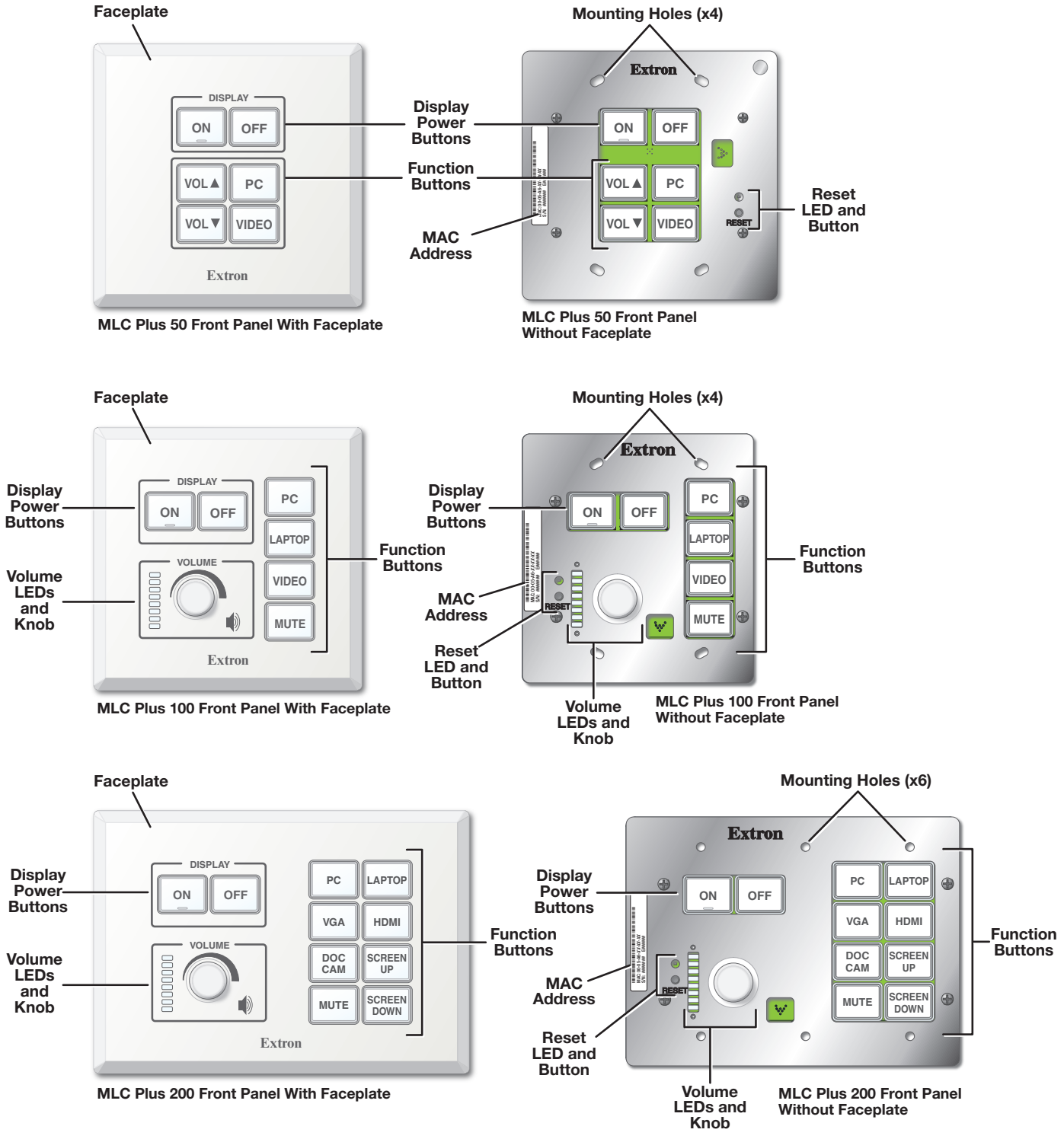


Figure 3. MLC Plus 50/100/200 Series Front Panels With (Left) and Without (Right) Faceplates

NOTE: The AAP models are identical to the corresponding non-AAP models except that they also have room to mount from one to four AAP devices within the faceplate to the right of the controller.

Rear and side panel features

NOTE: For rear panel features and cabling, the MLC Plus 100, MLC Plus 100 AAP, MLC Plus 200, and MLC Plus 200 AAP are identical, so in this section the MLC Plus 100 represents all of those models. The rear panel of the MLC Plus 50 has one COM port instead of two, and does not have a volume control port, but it is otherwise the same as the other models.

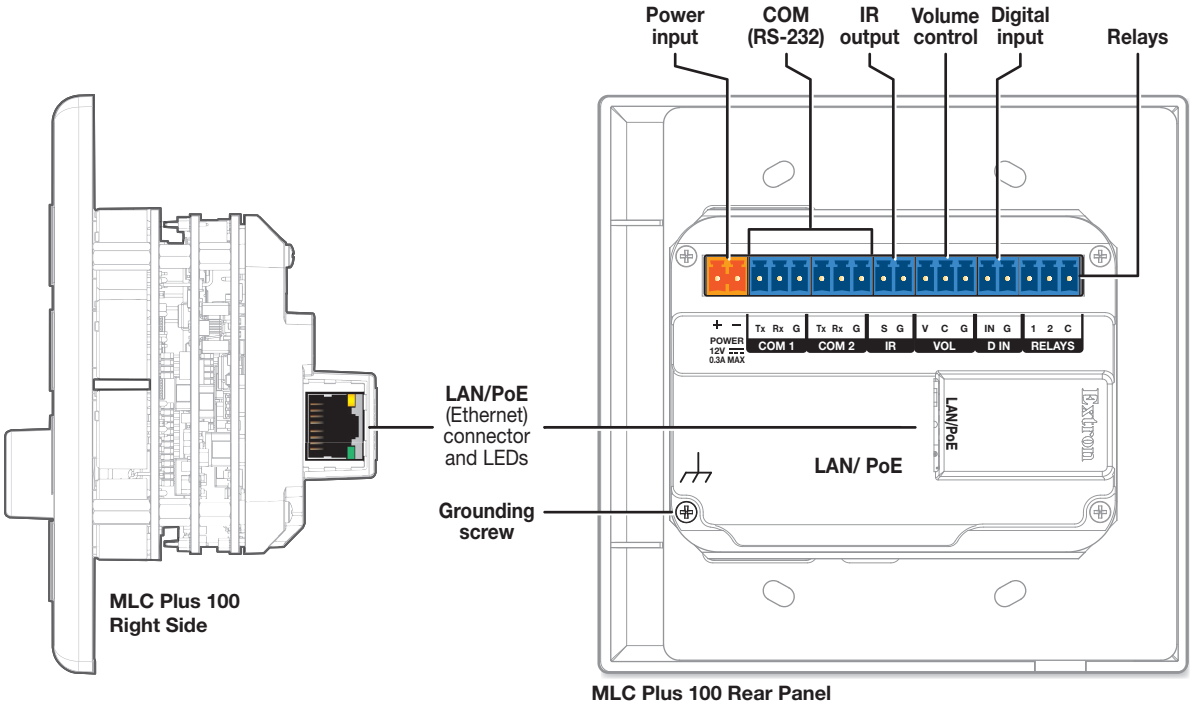


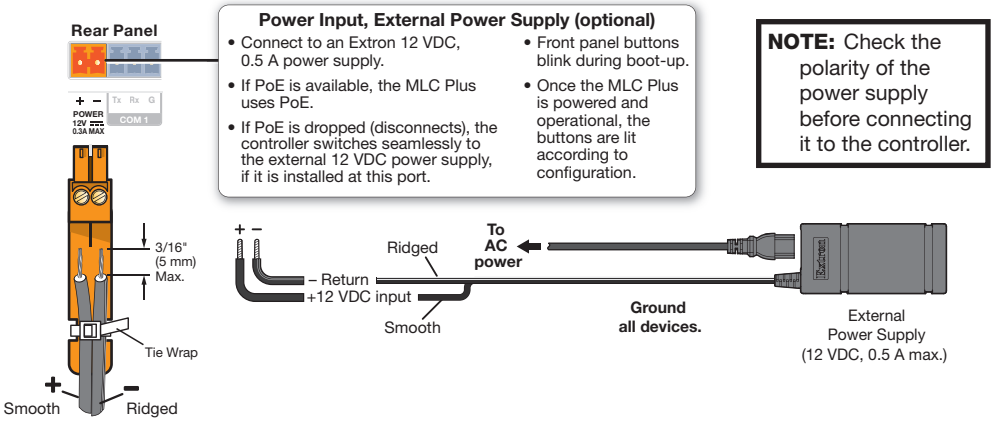
Figure 4. MLC Plus 50/100/200 Series Side (Left) and Rear Panel (Right) Features

Cabling and features

Attach cables using the following wiring diagrams as a guide. Full details are available in the *MLC Plus 50/100/200 Series User Guide*.

Power

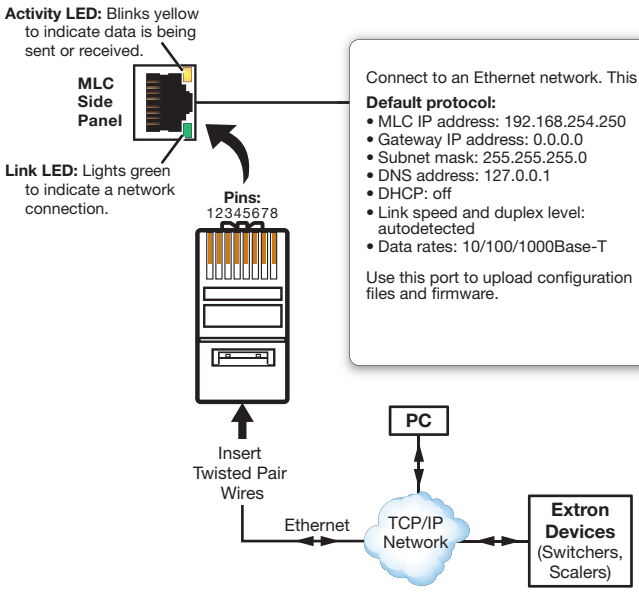
The MLC Plus supports Power over Ethernet (PoE) (see **Control and power — LAN (Ethernet) and PoE** on the next page). Alternatively, you can power the controller using an optional Extron 12 VDC, 0.5 A desktop power supply, as shown below.



ATTENTION:

- 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 certification de conformité réglementaire, et peut endommager la source d'alimentation que l'unité.

Control and power — LAN (Ethernet) and PoE



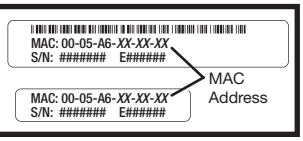
LAN/PoE (Ethernet and Power Over Ethernet)

Connect to an Ethernet network. This port must be configured.

Default protocol:
- MLC IP address: 192.168.254.250
- Gateway IP address: 0.0.0.0
- Subnet mask: 255.255.255.0
- DNS address: 127.0.0.1
- DHCP: off
- Link speed and duplex level: autodetected
- Data rates: 10/100/1000Base-T

Use this port to upload configuration files and firmware.

NOTE: MAC address information (00-05-A6-##-##-##) is located on the front panel (behind the faceplate).



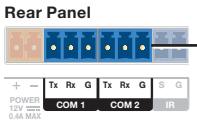
Power over Ethernet (PoE):
- If PoE is available, the MLC Plus uses PoE.
- If PoE is dropped (disconnects), the controller switches seamlessly to the external 12 VDC power supply, if it is installed.

Default login credentials:
- Username: **admin** or **user**
- Initial password: *unit serial number*
- Password after a "Reset to Factory Defaults": **extron**

IMPORTANT NOTES:
- The factory configured passwords for this device have been set to the device serial number. Passwords are case sensitive. Performing a "Reset to Factory Defaults" reset (see **Reset Modes: a Brief Summary** on page 11) sets the passwords to extron.
- DHCP is off by default

ATTENTION:
- Power over Ethernet (PoE) is intended for indoor use only. It is to be connected only to networks or circuits that are not routed to the outside plant or building.
- L'alimentation via Ethernet (PoE) est destinée à une utilisation en intérieur uniquement. Elle doit être connectée seulement à des réseaux ou des circuits qui ne sont pas routés au réseau ou au bâtiment extérieur.

Control, bidirectional — serial (COM)

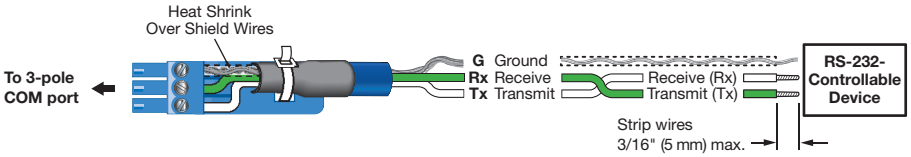


Serial (COM) Ports

3-pole COM (RS-232)

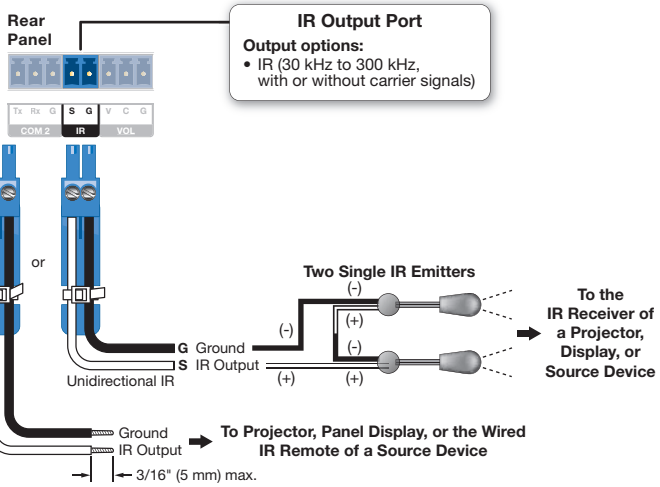
Select protocol via software. **COM port default protocol:**
- 9600 baud
- 8 data bits
- 1 stop bit
- no parity
- no flow control

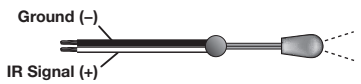
NOTE: These COM ports support software flow control only.



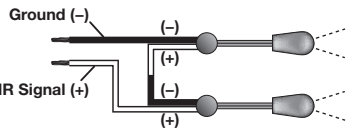
NOTE: If you use cable that has a drain wire, tie the drain wire to ground at both ends.

Control — IR output



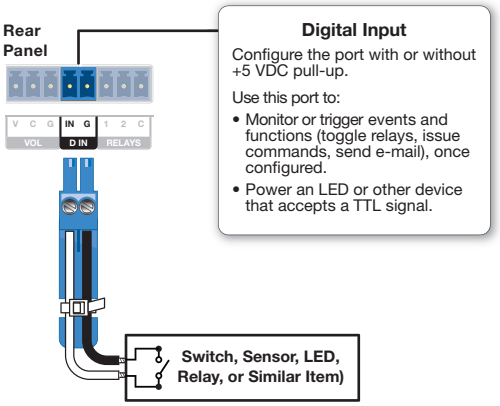


One Single IR Emitter

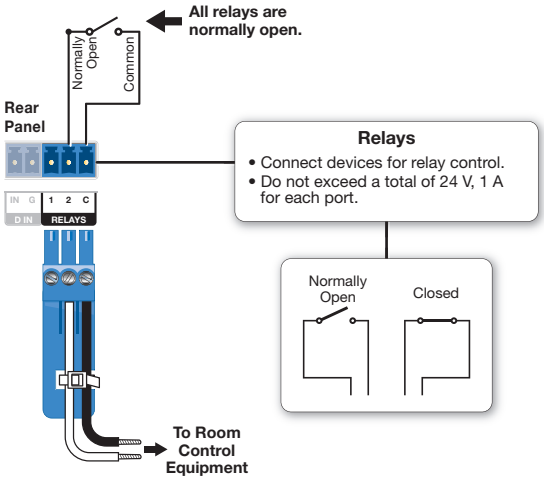


Two Single IR Emitters

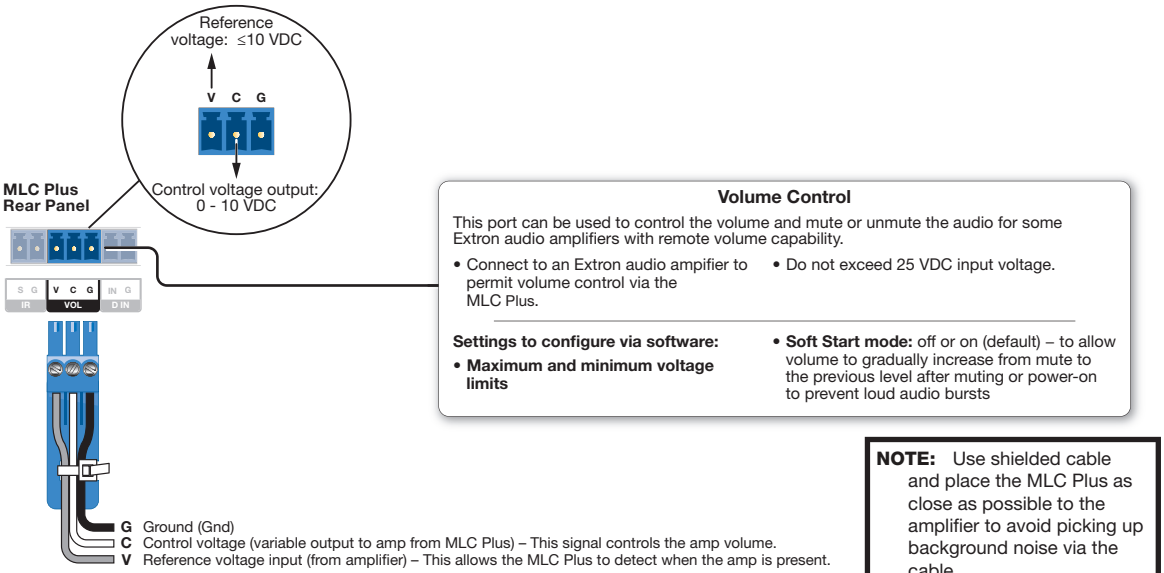
Control — digital input



Control — relay



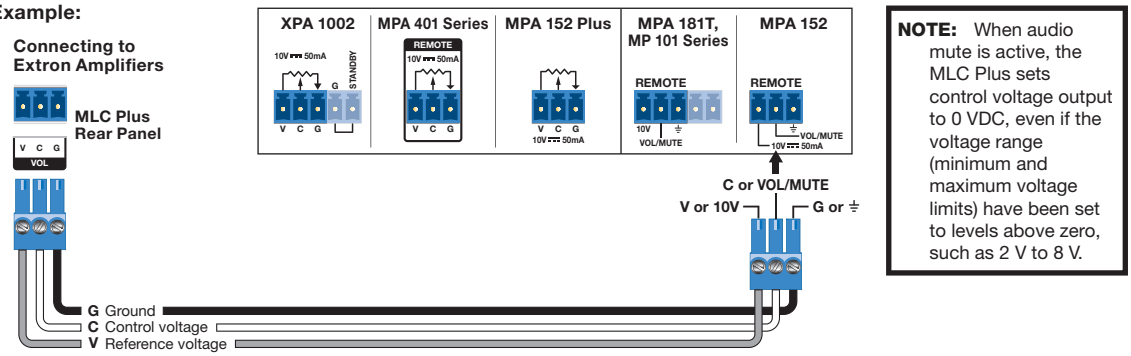
Control — volume control



NOTE: Use shielded cable and place the MLC Plus as close as possible to the amplifier to avoid picking up background noise via the cable.

Example:

Connecting to Extron Amplifiers



NOTE: When audio mute is active, the MLC Plus sets control voltage output to 0 VDC, even if the voltage range (minimum and maximum voltage limits) have been set to levels above zero, such as 2 V to 8 V.

Step 5: Set up the MLC Plus for Network Communication

1. Connect the PC that you will use for setup and the MLC Plus to the same Ethernet subnetwork. For LAN connections for the MLC, see **Control and power — LAN (Ethernet) and PoE** on page 6.
2. Start Global Configurator and use the Toolbelt feature of the software (or use the stand-alone Toolbelt program) to set the DHCP status or to set the IP address, subnet, gateway IP address, and related settings. Network setup is essential prior to configuration. Use the flowchart at right as a guide to setting up the controller for network use.

NOTES:

- If using a host name instead of an IP address, the user must enter a qualified host name (*`Username.HostName.Domain`*).
  For example: `somename.somedomain.com`.
- If using 802.1X security, see the *Extron 802.1X Technology Reference Guide* and the *Toolbelt Help* file for additional details on system setup.

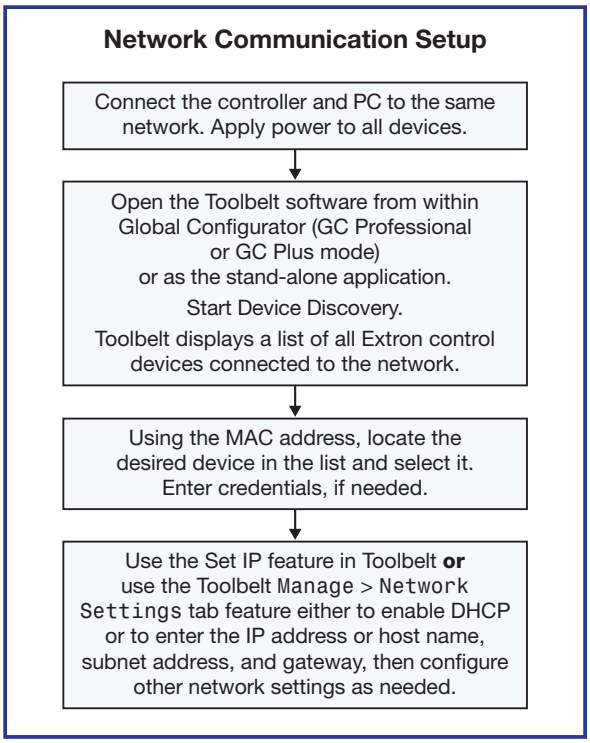


Figure 5. Network Setup

Step 6: Configure the MLC Plus

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

NOTE: See the *Global Configurator Help File* as needed for step-by-step instructions and detailed information. The help file for GC includes an introduction to the software, and how to start a project and configuration.

1. Using GC, create a new GC Plus or GC Professional project and configure the controller and any installed IP Link Pro devices. The configuration tells the controller how its ports function; how to control other products; what to monitor; when to do things; and whom to notify, how, and under what circumstances.
   a. Configure ports on the controller.
      - Select device drivers and link them to each assigned serial, IR, or Ethernet port.
      - Configure settings (serial protocol, relay behavior, digital input, volume control settings) as needed.
   b. Set up monitors, schedules, macros, and local variables.
   c. Set up the front panel buttons: assign appropriate commands and actions, macros, timers, local variables monitors, or feedback to the buttons.
2. Save the project.
3. Build and upload the system configuration to the controller.

Step 7: Test and Troubleshoot

1. Test the system.
   - Press buttons and ensure the buttons light as desired and that the appropriate control commands or functions are triggered.
   - Ensure that the audio output responds correctly to the **`volume`** knob or button. Also ensure that the volume LEDs light correctly as you increase or decrease the audio gain.
   - If the controller is connected to a network, ensure that the yellow Activity LED and green Link LED on the LAN/PoE port light.
2. Make adjustments to wiring or configuration as needed. Remember that the rear and side panel ports will not be accessible after the controller is mounted.

Step 8: Complete the Physical Installation

1. **For AAP models**, attach any optional AAP devices or blank AAP plates to the metal AAP bracket as shown in figure 5 at right. Fasten the built-in screws to the bracket with the provided nuts (hand tighten).

NOTE: You must purchase AAP devices and plates separately. They are not provided with the MLC.

   - Place the AAP devices as close together as possible. Do not leave gaps between devices.

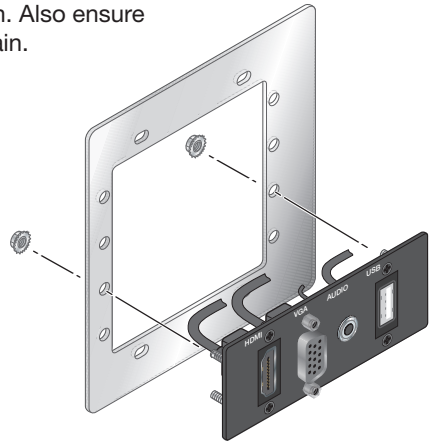


Figure 6. Attaching AAP Devices or Blank AAP Plates to the AAP Bracket

- Place the AAP opening of the MLC Plus faceplate over the cluster of AAPs to check for correct fit. Make sure that the edges of the AAPs all fit within the faceplate AAP opening so that no edges or corners catch or prevent the faceplate from laying flat against the AAP mounting bracket. If needed, loosen the nuts, adjust the position of one or more AAPs, and retighten the nuts.

2. For all models, follow instructions in “Mounting”, below.

Mounting

NOTE: Extron recommends taking safety precautions to avoid electrostatic discharge issues during installation.

Prior to mounting:

1. If it has not already been done, feed all device cables through the wall or furniture and, if applicable, through the plastic spacer.

   NOTE: If the unit is not installed in a mud ring, you must install the plastic spacer. The spacer positions the unit to allow the magnetic faceplate to attach properly and securely.

2. Ensure that cables are connected to the MLC Plus rear panel and to any AAP devices or plates.
3. Disconnect power at the source from all devices in the system.

Mount the MLC Plus as follows:

1. **For AAP models**, first attach AAP devices or blank AAP plates to the metal AAP bracket (see **Step 8: Complete the Physical Installation** on page 8.
2. For all models, insert the cabled MLC Plus into the mud ring or junction box within the wall or furniture, aligning the mounting holes in the MLC Plus with those in box or mud ring.
3. **For AAP models**, fasten the MLC to the junction box, wall box or surface mounting box, or mud ring as follows (see figure 7):

   a. Insert screws through the mounting holes in the unit or AAP bracket, then into the mud ring, or insert them through the plastic spacer and into the wall box, and loosely tighten the screws.

   b. Align the faceplate with the MLC Plus and place it against the front of the unit, allowing the magnetic catches to fasten the faceplate onto the unit. Check the alignment and fit. The faceplate must sit flush against the front of the MLC Plus and against the AAP bracket without catching on any LEDs, buttons, or AAP edges, or on the edges of the MLC Plus metal plate. **If the faceplate seats in place correctly**, remove the faceplate, tighten the screws, and reattach the faceplate. The installation is complete. **If not**, proceed to step 3c.

   c. If necessary, remove the faceplate, loosen the mounting screws, and adjust the position of the MLC Plus, AAP mounting bracket, or individual AAP devices. Place the faceplate over the unit to check the fit, remove the faceplate, and tighten the mounting screws once all the elements are positioned to allow correct alignment with the faceplate.

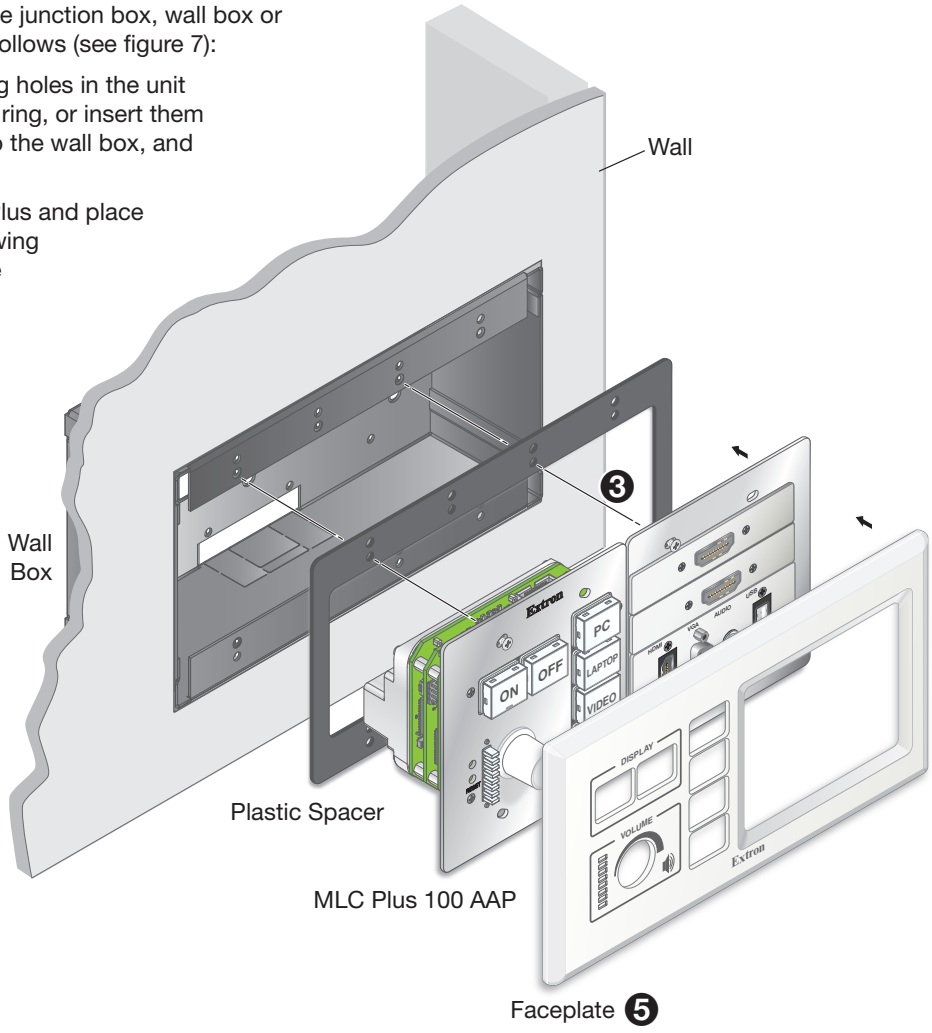


Figure 7. Assembling the Spacer, Unit, AAP Bracket, and Faceplate for an AAP Model

4. **For non-AAP models**, secure the MLC Plus to the junction box, wall or surface mounting box, or mud ring as follows (see figures 8 and 9):

   a. Insert the included screws through the oval slots at the top and bottom of the MLC Plus, through the plastic spacer (if not using a mud ring), and into the corresponding threaded holes in the box or mud ring.

   NOTE: If the unit is not installed in a mud ring, you must install the plastic spacer. The spacer positions the unit to allow the magnetic faceplate to attach properly and securely.

   b. Using a Phillips screwdriver, lightly tighten the screws until snug.

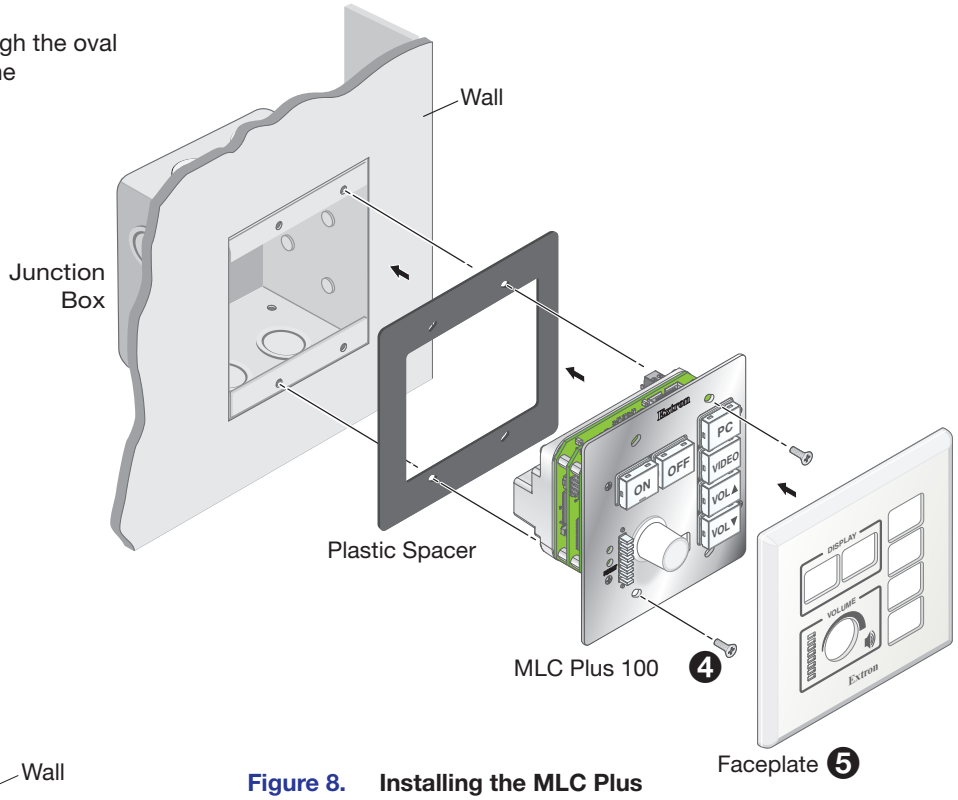


Figure 8. Installing the MLC Plus in a Junction Box

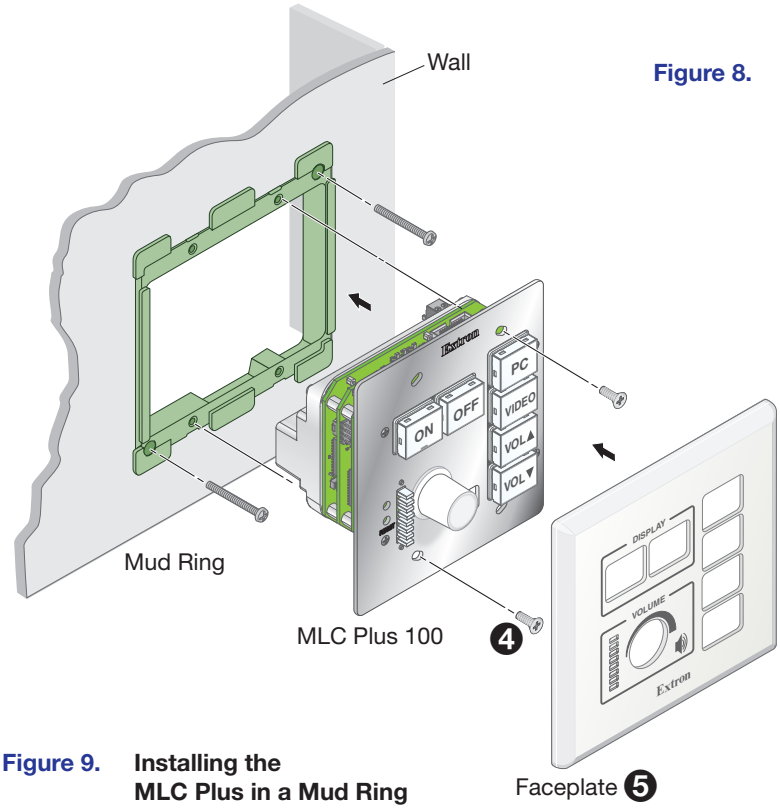


Figure 9. Installing the MLC Plus in a Mud Ring

5. Attach the faceplate to the MLC Plus: align the faceplate openings with the buttons, knob, and LEDs and place the faceplate against the unit (see ❺ in figures 7, 8, and 9). The magnetic catches fasten the faceplate onto the front of the unit.

Reset Modes: a Brief Summary

The MLC Plus controllers offer the following reset modes:

- **Use Factory Firmware**: Press and hold the **Reset** button (located behind the faceplate) while applying power to the unit. Keep holding the button down until the Reset LED blinks twice, or for 6 seconds, then release the button. The control processor enters factory firmware mode. Use this mode to temporarily revert to factory firmware in the event of a firmware failure.

  Do not continue to operate the controller using the factory firmware version. If you want to use the factory default firmware version, you must upload that version again.

- **Project Recovery**: See the *MLC Plus 50/100/200 Series User Guide* for instructions. Use this mode to recover the project in the event of a lost user name and password.

- **Run/Stop Program**: Hold down the **Reset** button for about 3 seconds, until the Reset LED blinks once. Release and press the **Reset** button momentarily (for <1 second) within 1 second. (Nothing happens if the momentary press does not occur within 1 second.) The LED blinks 2 times if the program is starting. The LED blinks 3 times if the program is stopping. This mode allows you to restart any scripts or events stopped by an IP settings reset.

- **Toggle DHCP Client**: Press the **Reset** button five times (consecutively). Release the button. Do not press the button within 3 seconds following the fifth press. Use this mode to enable or disable the DHCP client for the LAN port.
  - The Reset LED blinks 6 times if the DHCP client is enabled.
  - The Reset LED blinks 3 times if the DHCP client is disabled.

  NOTES:
  - DHCP toggle mode is supported on firmware version 3.00.0000 or higher.
  - By default DHCP is off and the unit uses a static IP address.
  - When you disable DHCP, the unit uses the previously-set static IP address.

- **Reset All IP Settings**: Press and hold the **Reset** button for 6 seconds. After the **Reset** LED blinks twice, release and momentarily press and release the **Reset** button within 1 second. Use this mode to reset all network settings to factory default values without affecting user-loaded files.

- **Reset All IP Settings**: Press and hold the **Reset** button for 6 seconds. After the Reset LED blinks twice, release and momentarily press and release the **Reset** button within 1 second. Use this mode to reset all network settings to factory default values without affecting user-loaded files. This reset mode also stops any running scripts and events and disables 802.1X authentication. Lastly, this mode resets the settings for the LAN port, including turning DHCP off.

- **Reset to Factory Defaults**: Press and hold the **Reset** button for 9 seconds. After the Reset LED blinks three times, release and momentarily press the **Reset** button within 1 second. Use this mode to return the controller to factory default settings. This mode deletes all user-loaded files and configurations and it clears messages in the event logs table. User-loaded digital certificates are deleted.

For detailed information on each mode and its use, see the *MLC Plus 50/100/200 Series User Guide* at **www.extron.com**.

Resources

Obtaining Control Drivers

Extron provides an extensive selection of device drivers available on the Extron website. If the system requires a control driver that is not already available, you can request a new serial (RS-232), IR, or Ethernet driver from Extron.

Obtaining Instructions, Information, and Assistance

A checklist of basic setup steps is provided in this guide. For additional information see the help files and the *MLC Plus 50/100/200 Series User Guide*, available at **www.extron.com**.

If you have questions during installation and setup, call the **Extron S3 Sales & Technical Support Hotline** or the Extron S3 Control Systems Support Hotline (1.800.633.9877).

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

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

- Via links from the Web page for the specific product
- Via the **Download** page (Click on the **Download** tab at the top of any page within **www.extron.com**.)
- Via links from search results

NOTES:

- For some software you have the option to click the **`Download Now`** button to begin downloading the software file. For other software there is a link for contacting an Extron support representative who can provide you access to the latest version.

  To obtain Extron control product software, you must have an Extron Insider account. Extron provides training to our customers on how to use the software. Access to the full features of Global Configurator Professional is available to those who successfully complete Extron Control Professional Certification.
- **New RS-232 and Ethernet drivers are required**. You must use serial and Ethernet drivers developed specifically for the IP Link Pro platform. With the exception of IR device drivers, drivers used for the previous generation IP Link (non-Pro) controllers are not compatible.

Overall Configuration Procedure for the Controller

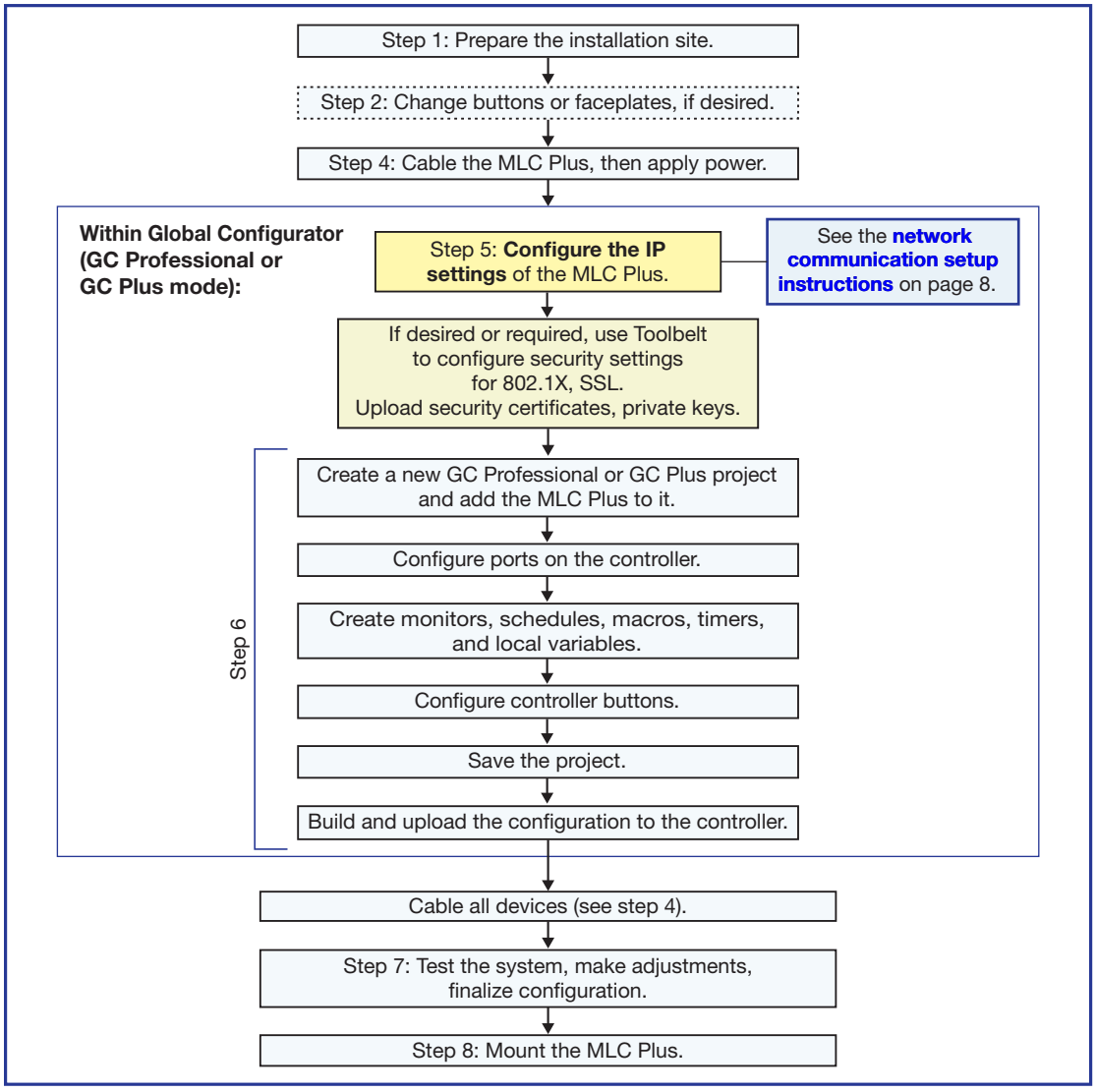


Figure 10. Overall Configuration Steps

If you have questions during installation and setup, you can call the **Extron S3 Sales & Technical Support Hotline** or the Extron S3 Control Systems Support Hotline (1.800.633.9877).

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the **Extron Safety and Regulatory Compliance Guide** on the Extron website.

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