The Extron MLC Plus 84 D MediaLink® Controller with IP Link® Pro integrates Ethernet connection into AV systems to allow users to remotely control, monitor, and troubleshoot AV equipment, including display devices and switchers. The 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 volume control.

The MLC Plus 84 D fits a standard US two-gang electrical junction box or mud ring. It includes a two-gang Decora®-style wallplate and a two-gang mud ring.

This guide provides instructions for an experienced installer to install an MLC Plus 84 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 software — for setting up and configuring the controller. GC includes the Toolbelt feature and a way to upgrade the firmware of the controller. You must have an Extron Insider account and contact an Extron support representative to obtain GC software (see Locating Software, Firmware, and Driver Files on the Extron Website on page 10).
  - IP Link Pro device drivers — for use with GC, 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 10).

- Obtain network information for the unit from the network administrator. You will need the following details for each IP Link Pro device:
  - DHCP setting (on or off)
  - Device (MLC Plus 84) 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 84) to be used.
- Obtain model names and setup information for devices the MLC Plus 84 will control.

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 par le personnel autorisé uniquement.
- Extron recommends installing the MLC Plus 84 into a grounded, UL Listed electrical junction box.
- Extron recommande d’installer le MLC Plus 84 dans un boîtier d’encastrement électrique mis à la terre, listé 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.
NOTE: 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 MLC Plus 84.

Americans with Disabilities Act (ADA) Compliance

When planning where to install the MLC Plus 84, 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

The MLC Plus 84 D fits a standard US two-gang junction box or mud ring and Decora-style wallplate. Optional mud rings, UL Listed junction boxes, external junction boxes, and surface mounting boxes are available for use with the MLC Plus 84. Read any installation instructions and UL guidelines that come with the mounting devices, then install the box or mud ring in the opening at the installation site. To prepare the site:

1. Using the size of the junction box or mud ring for reference, cut the hole in the mounting surface. Protect the surface prior to and during cutting so the surface is not damaged.
2. Run cables to the mounting location, leaving enough slack for device installation.
3. Install the junction box or mud ring into the wall or furniture.
4. Secure the cables with a clamp for strain relief and so they do not slip back down into the wall or furniture.

Figure 3. Installing a Mud Ring
Step 3: Change Buttons or a Faceplate (optional)

If desired, replace one or more buttons or button pairs using available additional buttons. Optional button kits are available in various languages, and replacement faceplates are available, as well.

**NOTE:** A custom button builder tool is available at [http://www.extron.com/product/custombuttonbuilder/index.aspx](http://www.extron.com/product/custombuttonbuilder/index.aspx) where you can order custom-labeled buttons for the MLC Plus 84.

The faceplates must be removed to access buttons. To replace the buttons or faceplates:

1. Remove one or both faceplates as follows:
   a. Insert the tip of a small, flat-bladed screwdriver (such as an Extron Tweeker) through one of the circuit board slots at the top or bottom of an MLC faceplate, as shown at right.
   b. Angle the screwdriver to press gently down on the tab to release and pry the faceplate from the circuit board.
   c. If the faceplate has not fully detached from the circuit board, repeat steps 1a and 1b with the hole and tabs at the opposite end of the faceplate.
   d. Lift the faceplate away from the circuit board.

2. Remove any buttons to be replaced as follows:
   a. Press the button or button pair from the front of the faceplate out through the back of its faceplate opening. If necessary, pull the buttons out gently from the back.
   **NOTE:** The smaller buttons are arranged in pairs connected by a rubbery membrane.
   b. If you are replacing the faceplate, repeat step 2a until all buttons are removed.
   c. Set the removed buttons aside for later use.

3. Insert a button or button pair as follows:
   a. Insert a new button or button pair from the back into the appropriate opening in the faceplate.
   b. Align the two pegs in the upper left and lower right corners of the button or button pair with the corresponding holes in the faceplate. Press the button or buttons into the faceplate so the buttons and pegs are seated into the holes and faceplate opening.
   c. Repeat steps 3a and 3b for any additional buttons that will be replaced or installed.

4. Reattach the original faceplate or attach the replacement faceplate to the controller as follows:
   a. Align the tabs (at top and bottom) and pegs (at upper left and lower right corners) on the back of the faceplate with the slots and holes on front of the circuit board.
   b. Gently but firmly press the faceplate against the circuit board until the tabs and pegs are inserted into the slots and holes, and the tabs click into place.
Step 4: Cable All Devices

1. Cable devices to the controller (see the features sections below and Cabling and Features on page 5).
2. Connect power cords and power on all the devices.

Front Panel Features

- Transmit/Activity LED
- Source Control Buttons
- Display Power Buttons
- Volume LEDs
- Volume Buttons
- Function Buttons
- Wallplate

Rear and Side Panel Features

- LAN/PoE (Ethernet) connector and LEDs
- Power input connector
- COM (RS-232) ports
- IR output port
- Volume control port
- Digital input port
- Relay ports

Figure 6. MLC Plus 84 D Front Panel With Wallplate

Figure 7. MLC Plus 84 D Front Panel Without Wallplate

Figure 8. MLC Plus 84 D Rear Panel Features

Figure 9. MLC Plus 84 D Right Side Panel Features
Cabling and Features

Attach cables using the following wiring diagrams as a guide. Full details are available in the MLC Plus 84 Series User Guide.

**ATTENTION:**
- Installation and service must be performed by authorized personnel only.
- L'installation et l’entretien doivent être effectués par le personnel autorisé uniquement.

### Power

The MLC Plus 84 supports Power over Ethernet (PoE) (see Control and Power — LAN (Ethernet) and PoE below). Alternatively, you can power the controller using an optional Extron 12 VDC, 1 A desktop power supply, as shown below.

**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 and Power — LAN (Ethernet) and PoE

Connect to an Ethernet network with a straight through cable. This port must be configured.

**Default protocol:**
- MLC Plus 84 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

For best results, use this port to upload configuration files and firmware. All configuration can be performed via this port.

**Power over Ethernet (PoE):**
- If PoE is available, the MLC Plus 84 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
- Password: extron

### Diagrams

**Straight-through Cable**

<table>
<thead>
<tr>
<th>Pin</th>
<th>End 1 Wire Color</th>
<th>End 2 Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>white-orange</td>
<td>white-orange</td>
</tr>
<tr>
<td>2</td>
<td>orange</td>
<td>orange</td>
</tr>
<tr>
<td>3</td>
<td>green</td>
<td>green</td>
</tr>
<tr>
<td>4</td>
<td>blue</td>
<td>blue</td>
</tr>
<tr>
<td>5</td>
<td>white-blue</td>
<td>white-blue</td>
</tr>
<tr>
<td>6</td>
<td>green</td>
<td>green</td>
</tr>
<tr>
<td>7</td>
<td>white-brown</td>
<td>white-brown</td>
</tr>
<tr>
<td>8</td>
<td>brown</td>
<td>brown</td>
</tr>
</tbody>
</table>

**Crossover Cable**

<table>
<thead>
<tr>
<th>Pin</th>
<th>End 1 Wire Color</th>
<th>End 2 Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>white-orange</td>
<td>white-green</td>
</tr>
<tr>
<td>2</td>
<td>orange</td>
<td>green</td>
</tr>
<tr>
<td>3</td>
<td>green</td>
<td>white-orange</td>
</tr>
<tr>
<td>4</td>
<td>blue</td>
<td>blue</td>
</tr>
<tr>
<td>5</td>
<td>white-blue</td>
<td>white-blue</td>
</tr>
<tr>
<td>6</td>
<td>green</td>
<td>orange</td>
</tr>
<tr>
<td>7</td>
<td>white-brown</td>
<td>white-brown</td>
</tr>
<tr>
<td>8</td>
<td>brown</td>
<td>brown</td>
</tr>
</tbody>
</table>

**LAN/PoE (Ethernet and Power Over Ethernet)**

Connect to an Ethernet network with a straight through cable. This port must be configured.

**NOTE:**
- MAC address information (00-05-A6-XX-XX-XX) is located on the rear of the enclosure.
- Power over Ethernet (PoE): If PoE is available, the MLC Plus 84 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
- Password: extron

**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.

**ATTENTION:** 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.
Control, Bidirectional — Serial (COM)

Serial (COM) Ports

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.

Control, Unidirectional — IR Output

IR Output Port

Output options:
- IR (30 kHz to 300 kHz, with or without carrier signals)

Ground (−)
IR Signal (+)

Two Single IR Emitters

To the IR Receiver of a Projector, Display, or Source Device

One Single IR Emitter

Dual IR Emitter

To Projector, Panel Display, or the Wired IR Remote of a Source Device

Ground (−)
IR Signal (+)

3/16” (5 mm) max.
Control — Volume Control

This port can be used to control the volume and mute or unmute the audio for some Extron audio amplifiers with remote volume capability.

- Connect to an Extron audio amplifier to permit volume control via the MLC Plus 84.
- Do not exceed 25 VDC input voltage.

Settings to configure via software:
- Maximum and minimum voltage limits
- Soft Start mode: off or on (default) – to allow volume to gradually increase from mute to the previous level after muting or power-on to prevent loud audio bursts

Example:

Connecting to Extron Amplifiers

- XPA 1002
- MPA 401 Series
- MPA 152 Plus
- MPA 181T, MP 101 Series

Digital Input

Configure the port with or without +5 VDC pull-up.

Use this port to:
- Monitor or trigger events and functions (toggle relays, issue commands, send e-mail), once configured.
- Power an LED, incandescent light, or other device that accepts a TTL signal.

NOTE: Use shielded cable and place the MLC Plus 84 as close as possible to the amplifier to avoid picking up background noise via the cable.

NOTE: When audio mute is active, the MLC Plus 84 sets output voltage 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.

Control — Relay

All relays are normally open.

- Connect devices for relay control.
- Do not exceed a total of 24 V, 1 A for each port.

Relays

- Normally Open
- Closed

To Room Control Equipment

Switch, Sensor, LED, Relay, or Similar Item)
Step 5: Set up the MLC Plus 84 for Network Communication

1. Connect the PC that you will use for setup and the MLC Plus 84 to the same Ethernet subnetwork. For LAN connections for the MLC, see Control and Power — LAN (Ethernet) and PoE on page 5.

2. Start Global Configurator and use the Toolbelt feature of the software (or stand-alone Toolbelt software) to set the IP address, subnet, gateway IP address, DHCP status, 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.

   **NOTE:** When setting up DHCP during network configuration or if using a host name instead of an IP address during project recovery, the user must enter a qualified host name (`HostName . Domain`). For example: somename.somedomain.com.

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**Figure 10. Network Setup, Online Method**

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Step 6: Configure the MLC Plus 84 Controller

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 schedules 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. See the MLC Plus 84 Series User Guide for an outline of the system testing and troubleshooting procedure.

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

Mount the unit to a wall or furniture (see Mounting on page 9).
Mounting

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

Mount the MLC Plus 84 as follows:

1. Insert the cabled MLC Plus 84 into the mud ring or junction box within the wall or furniture, aligning the mounting holes in the MLC Plus 84 with those in box or mud ring.

2. Secure the MLC Plus 84 to the junction box, wall or surface mounting box, or mud ring as follows:
   a. Insert the included screws through the oval slots at the top and bottom of the MLC Plus 84 and into the corresponding threaded holes in the box or mud ring.
   b. Using a Phillips screwdriver, lightly tighten the screws until snug.

   ATTENTION:
   • Do NOT over tighten the screws or you may damage the circuit board.
   • Veillez à ne pas trop serrer les vis car vous pourriez endommager la carte de circuit.

3. Attach the wallplate to the MLC Plus 84; insert the included screws through the circular holes in the wallplate and the tabs on the MLC Plus 84. Tighten the screws using a flat bladed screwdriver until snug.
Reset Modes: a Brief Summary

The MLC Plus 84 Series controllers offer the following reset modes:

• **Use Factory Firmware**: Press and hold the rear panel **Reset** button while applying power to the unit. Use this mode to revert to factory firmware in the event of a firmware failure.

• **Project Recovery**: See the *MLC Plus 84 Series User Guide* for instructions. Use this mode to recover the project in the event of a lost user name and password.

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

• **Reset to Factory Defaults**: Press and hold the rear panel **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.

For detailed information on each mode and its use, see the *MLC Plus 84 Series User Guide* at [www.extron.com](http://www.extron.com).

About Global Configurator (with GC Professional and GC Plus Modes)

What the Software Does

Global Configurator is the software tool for network setup and configuration of a MediaLink Plus controller.

Global Configurator:

• Loads device drivers for controlling and monitoring the status of devices within the AV system.

• Creates the configuration containing all the settings for the controller and the products with which it interacts in the AV system.

• Generates a graphical user interface called GlobalViewer that is uploaded to the MLC (a GlobalViewer host device) along with the completed configuration and can be accessed as a Web page.

Using GlobalViewer, users can monitor and control Extron and third-party equipment such as projectors, displays, computer monitors, VCRs, and DVD players.

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) 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 84 IP Series User Guide*, available at [www.extron.com](http://www.extron.com).

If you have questions during installation and setup, call the Extron S3 Sales & Technical 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](http://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](http://www.extron.com).)

• Via links from search results

**NOTE:** To obtain Global Configurator (available to run in GC Plus mode) software, you must have an Extron Insider account and contact an Extron support representative. Extron provides training to our customers on how to use the software. Access to Global Configurator Professional is available to users who successfully complete Extron Control Professional Certification.

**NOTE:** 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

Get ready.

Prepare the installation site.

Change buttons or faceplates, if desired.

Cable the MLC Plus 84, then apply power.

Within Global Configurator (GC Professional or GC Plus mode):

- **Configure the IP settings** of the MLC Plus 84.

  - Create a new GC Professional or GC Plus project and add the MLC Plus 84 to it.
  
  - Configure controller ports.
  
  - Create monitors, schedules, macros, timers, and local variables.
  
  - Configure controller buttons.
  
  - Save the project.
  
  - Build and upload the configuration to the controller.

  - Cable all devices.

  - Test the system, make adjustments, finalize configuration.

  - Mount the MLC Plus 84.

Figure 13. 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).