MKP 2000
Remote Control Panel
<table>
<thead>
<tr>
<th>Safety Instructions • English</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WARNING:</strong> This symbol, <img src="image" alt="symbol" />, when used on the product, is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.</td>
</tr>
<tr>
<td><strong>ATTENTION:</strong> This symbol, <img src="image" alt="symbol" />, when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.</td>
</tr>
</tbody>
</table>

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the Extron Safety and Regulatory Compliance Guide, part number 68-290-01, on the Extron website, [www.extron.com](http://www.extron.com).
**Notice**

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**Warranty Terms and Conditions**

Extron Electronics Company warrants this product against defects in materials and workmanship for a period of **two years** from the date of purchase. The warranty does not cover damages caused by misuse, abuse, neglect, accident, normal wear and tear, unauthorized repair or modification, or improper installation. The warranty is limited to the repair or replacement of defective parts or labor at Extron’s discretion. In the event of malfunction, the product must be returned to the Authorized Extron Service Center for repair. The user will be responsible for shipping costs and insurance to and from the Authorized Extron Service Center.

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**Safety Instructions**

**Warning:** If this symbol is present on the product, it indicates an uninsulated, dangerous voltage inside the enclosure that can cause electrocution.

**Caution:** If this symbol is present on the product, it indicates that important safety and operating instructions are included in the product documentation provided with the equipment.

For more information on safety guidelines, regulations, and compatibility, please visit the Extron website at [www.extron.com](http://www.extron.com) and refer to the Extron Safety and Regulatory Compliance Guide, P/N 68-290-01.
FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference. This interference must be corrected at the expense of the user.

**NOTE:** For more 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.

Battery Notice

This product contains a battery. **Do not open the unit to replace the battery.** If the battery needs replacing, return the entire unit to Extron (for the correct address, see the Extron Warranty section on the last page of this guide).

**CAUTION:** Risk of explosion. Do not replace the battery with an incorrect type. Dispose of used batteries according to the instructions.

**ATTENTION:** Risque d’explosion. Ne pas remplacer la pile par le mauvais type de pile. Débarrassez-vous des piles usagées selon le mode d’emploi.
Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

**CAUTION:** Risk of minor personal injury.

**ATTENTION:** Risque de blessure mineure.

**ATTENTION:**
- Risk of property damage.
- Risque de dommages matériels.

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

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,0p1 scene 1,1 ^B 51 ^W^C.0
[01] R000400300004000080000600 [02] 35 [17] [03]
E
X!
X1&
X2)
X2#
X2!
CE
```

**NOTE:** For commands and examples of computer or device responses used in this guide, the character “0” 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 208.132.180.48: 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

Introduction

- About this Guide
- About the MKP 2000 Remote Control Panels
- Application Diagrams
- Features

About this Guide

This manual provides installation and operation instructions for the Extron MKP 2000.

About the MKP 2000 Remote Control Panels

The MKP 2000 is a network-ready remote control panel that can control any Extron matrix switcher. The MKP RS-232 ports allow it to communicate with other devices (another MKP or a matrix switcher) locally and its Ethernet port allows it to communicate with multiple devices on a LAN network.

An MKP 2000 user can remotely create ties by specifying an input and then an output to be tied to the input. The MKP can also be dedicated to a specific group of inputs and outputs when configured using the built-in web pages.

The MKP 2000 panel is mounted in a two-gang wall plate that can be installed in a wall, conference table, podium, or other convenient location.

Application Diagrams

The matrix switcher system can have up to 128 inputs and 128 outputs. However, for example, a conference room may have three input devices and two output devices; a training room next door may have four input devices and one output device; and so on. Typically, each room will have one or more MKP control panels assigned to it, with each MKP limited to the inputs and outputs that it can control.

In the example in figure 1 on the next page, the “presentation room” (top, center) has:
- One output device
- A projector (C)
- Four input devices:
  - A video camera (13)
  - A laptop computer (12)
  - Two PCs (11 and 14)

The “Media Room” (bottom, right) contains the matrix switcher, as well as other inputs (1-6) and possibly some control devices.
**Figure 1. Typical MKP 2000 Applications**

An overflow crowd in the video conference room and/or the training room may need to see a lecture going on in the presentation room. In this case, the video camera (input 13) must be available to those other rooms. Therefore, the MKPs in the video conference and training rooms will be programmed to allow selection of input 13 for displays in those rooms, in addition to any video sources and/or displays there.

**Control Communications**

**RS-232 connection to the switcher**

Any number of MKP 2000s can be connected to a matrix switcher through its RS-232 port, but one MKP must be designated as the primary control panel. Other MKPs can be daisy-chained through the primary MKP remote control panel.

**Ethernet connection to the switcher**

Any number of MKP 2000s can be connected to a matrix switcher as part of an Ethernet local area network (LAN).

**Application diagram**

On the next page, figure 2 shows an example of how the MKP 2000 may be connected to a matrix switcher and other Extron products.
Features

- **Compatible with most Extron RS-232 and Ethernet-enabled Matrix Switchers** — Remote control can be added to both new and existing Extron matrix switcher installations.
- **10-key numeric keypad** — Enables quick and easy creation of I/O ties.
- **Virtual I/O grouping** — Each MKP 2000 can be configured with its own unique set of inputs and outputs. By limiting user access to specific I/O ties, custom switching zones can be easily created.
- **View last I/O tie** — Allows the user to recall the most recent input or output selected and view it on the MKP 2000 LED display.
- **RS-232 pass-through port** — In addition to the primary RS-232 port for matrix switcher communication, the MKP 2000 also includes a second RS-232 pass-through port. This provides a convenient communication path when a control system is used in conjunction with the MKP 2000.
- **Unlimited control points** — Multiple MKP 2000s can be added to the matrix system, providing convenient points of control from virtually any location.
- **Integrated web server** — The MKP 2000 can be easily configured through its Ethernet port, using a web browser such as Microsoft Internet Explorer.
- **Supports I/O sizes up to 256 x 256 and larger** — The MKP 2000 can switch both physical and virtual I/Os on large switchers such as the Extron Matrix 12800.
- **Versatile mounting options** — The MKP 2000 is mounted to a two-gang wall plate that can be installed on a conference table or podium, or in a wall, using any standard, 2.5-inch deep, two-gang masonry or surface mount box.
- **External Extron Everlast power supply included** — Provides worldwide power compatibility with high-demonstrated reliability and low power consumption.
- **Extron Everlast Power Supply is covered by a 7-year parts and labor warranty.**
Installation

This section describes the installation of the MKP 2000, including:

- Installation Overview
- Installation
- Rear Panel and Side Panel Connections

Installation Overview

**ATTENTION:** Risk of property damage: Installation and service must be performed by authorized personnel only. This product should be used with a UL approved electrical box.

**ATTENTION :** Risque de dommages matériels : L’installation et la maintenance du système doivent être exclusivement effectuées par le personnel autorisé. Ce produit devrait être utilisé avec un boîtier électrique certifié UL.

Install and set up the MKP 2000 as follows:

1. **Turn off all equipment** and disconnect it from the power source.
2. **Install the cables to and from** the control panel in a wall, podium, or desk (see Rear Panel and Side Panel Connections on page 9 for guidelines).
3. **Prepare the wall, podium, desk, or other surface to mount the MKP** (see Preparing the site and installing the mounting bracket (mud ring) or wall box on page 6).
4. **Install the control panel in a wall, podium, desk, or other surface** (see Mounting the MKP to the mounting bracket (mud ring) or wall box on page 9).
5. **Connect the input and output cables** (see Rear Panel and Side Panel Connections for guidelines).
6. **Connect the power supply** (see Power Supply Wiring on page 13).
7. **Connect power cords and turn on the equipment** in the following order:
   - Output devices such as projectors or monitors
   - Connected matrix switcher
   - Input devices such as DSSs or cable boxes
8. **If necessary, set the control panel and matrix switcher** IP parameters (see Viewing and configuring the IP and MKP setup parameters on page 18 or System Settings Page on page 35).
9. **If necessary, set the control panel RS-232 port** for pass-through or no-pass-through mode, and specify whether the MKP is the primary device (connected to the switcher) or the secondary device (connected through another device) (see Viewing and configuring the IP and MKP setup parameters or System Settings Page).
10. **Program the control panel** with the size of the connected switcher (see System Settings Page).
11. Use the control panel to select inputs and outputs (see Front Panel Operations on page 17).

The MKP 2000 remote control panel should be installed in a standard, 2-gang electrical wall box (see figure 3). In figure 3, the MKP is installed in a wall. It could also be installed in a desk, a podium, or any other convenient location.

The procedures provided here assume that the electrical wall boxes and the cables have been installed for the system (see Rear Panel and Side Panel Connections starting on page 9 to terminate the cables).

**Installation**

The MKP 2000 remote control panel should be installed in a standard, 2-gang electrical wall box (see figure 3). The diagram shows the MKP installed in a wall. It could also be installed in a desk, a podium, or any other convenient location.

The procedures provided here assume that the electrical wall boxes and the cables have been installed for the system (see Rear Panel and Side Panel Connections to terminate the cables).

**Figure 3. MKP Mounted in a Wall Box**

**UL Requirements for Wall Box Installation**

The following Underwriters Laboratories (UL) requirements pertain to the installation of the MKP 2000 into a wall or furniture (see figure 3).

1. These units are not to be connected to a centralized DC power source or used beyond their rated voltage range.
2. These units must be installed in UL listed junction boxes.
3. These units must be installed with conduit in accordance with the National Electrical Code.
Installation Procedures

The MKPs are mounted into a wall, furniture, or any other convenient location. Follow the instructions appropriate to the mounting option you have selected.

ATTENTION:

- The control panel must be installed into a UL approved electrical wall box.
- Le panneau de contrôle doit être installé dans un boîtier mural approuvé UL.
- 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.

Preparing the site and installing the mounting bracket (mud ring) or wall box

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

The installation must conform to national and local electrical codes and to the equipment’s size requirements. A cutout template that shows the cutout requirement for the circuitry enclosure on the rear of the control panel is provided in Reference Information (see page 45).

ATTENTION:

- The templates provided in this manual are not to scale. Use these diagrams only for reference.
- Les modèles fournis dans ce manuel ne sont pas à l’échelle. Utilisez ces schémas seulement comme une référence.

Extron recommends installation using a UL listed wall box (available from Extron) for most mounting options, but you can use the included mounting brackets (mud rings) instead.

NOTES:

- Before using the mud rings, verify that the installation conforms to national and local electrical codes.
- The electrical box must be at least 2.5 inches (7 cm) deep to accommodate the MKP rear enclosure.
- To meet the UL listing requirements, the MKP must be installed in a wall box.
Install the mud ring or wall box as follows:

1. **If you are using a mud ring**, use the template that came with the mud ring. Cut out the indicated center portion.
   - If you are using a wall box, refer to the cutout template in Reference Information (see page 45) that corresponds to the faceplate you are using; and cut out the center portion of it as indicated on the template.

2. Place the wall box or mud ring against the installation surface or measure the cut according to the template, and mark the guidelines for the opening on the wall or furniture.

3. Cut out the wall or furniture material from the marked area.

4. Check the size of the opening by inserting the wall box, mud ring, or control panel into it. The box or mud ring (if used) and/or control panel should fit easily into the opening. Enlarge or smooth the edges of the opening if needed.

5. If you are using a wall box, feed cables through the wall box punch-out holes, and secure them with cable clamps to provide strain relief.

6. Exposed cable shields (braids or foil) are potential sources of short circuits. Trim back and/or insulate shields with heat shrink (see figure 4).

**ATTENTION:**
- To prevent short circuits, cut back the outer foil shield to the point where the cable exits the cable clamp. Both braided and foil shields should be connected to an equipment ground at the other end of the cable.
- Afin d’éviter les court circuits, réduisez le blindage en aluminium extérieur jusqu’à ce que le câble sorte de la cosse de câble. Le blindage tressé et le blindage en aluminium devraient être connectés à la masse d’un équipement à l’autre bout du câble.

7. If you are using a mud ring, follow the directions, if any, that came with the mud ring to attach the clips that fasten it to the wall or furniture (see figure 5 on the next page).

**NOTE:** To meet the UL listing requirements, the MKP device must be installed in a wall box.
Figure 5. Attaching a Mud Ring to a Wall

- If using a wall box, insert the wall box into the opening; and attach it to the wall stud or furniture with nails or screws, leaving the front edge flush with the outer wall or furniture surface (see figure 6).
- If attaching the wall box to wood, use four #8 or #10 screws or 10-penny nails. A minimum of ½ inch (1.3 cm) of screw threads must penetrate the wood.
- If attaching the wall box to metal studs or furniture, use four #8 or #10 self-tapping sheet metal screws or machine bolts with matching nuts.

Figure 6. Attaching a Wall Box to a Wall Stud

8. Connect the Ethernet cable, RS-232 cable, or both cables (as appropriate) and the power cable, and test the MKP before fastening the control panel into the wall box (see Rear Panel and Side Panel Connections on page 9 for details).

**NOTE:** The rear panel connectors will be inaccessible after installation.
Mounting the MKP to the mounting bracket (mud ring) or wall box

1. Remove power from the control panel by disconnecting the power supply.
2. Place the control panel through the opening in the wall or furniture and through the mud ring or into the wall box. Take care not to damage the cables, which fit behind the MKP at the back of the wall box.
3. Mount the MKP faceplate to the mud ring or wall box with machine screws (see figure 7).

![Figure 7. Mounting the MKP to the Wall Box](image)

4. Reconnect the power supply and restore power.

Rear Panel and Side Panel Connections

All connectors are on the rear or side of the MKP (see figure 8). These connectors will be inaccessible once the MKP is installed.

![Figure 8. MKP Rear and Side Panels](image)

1. **LAN (Ethernet) port** — If desired, connect a Category (CAT) 5e or higher (network) cable between this connector and either the matrix switcher to be controlled or to an Ethernet local area network (LAN).

   See **TP Cable Termination and Recommendations** on page 12, to properly wire the RJ-45 connector for your application.
**Ethernet connection indicators** — The Link and Activity LEDs indicate the status of the Ethernet connection (see figure 8 on the previous page).

- The green Link LED indicates that the MKP is properly connected to an Ethernet LAN. This LED should light steadily.
- The yellow Activity LED indicates transmission of data packets on the RJ-45 connector. This LED should flicker as the MKP communicates.

2 **Host RS-232 port** — If desired, connect a host computer or control system to this 3-pole, 3.5 mm, RS-232 connector (see figure 9).

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>Transmit data</td>
</tr>
<tr>
<td>RX</td>
<td>Receive data</td>
</tr>
<tr>
<td>Gnd</td>
<td>Signal ground</td>
</tr>
</tbody>
</table>

**Figure 9. RS-232 Connector**

3 **Switch RS-232 port** — If desired, connect a cable between this 3-pole, 3.5 mm, RS-232 connector and a matrix switcher (see figure 9).

4 **Power connector** — Plug the included external 12 VDC power supply into this 2-pole captive screw connector (see Power Supply Wiring on page 13, to wire the connector.

### Control Connections

The MKP has two RS-232 ports — a Host port (2) and a Switch port (3) — and an Ethernet (LAN) port (1) (see figure 8 on the previous page).

An MKP control panel can be directly cross-connected to any Extron matrix switcher through the switcher RS-232 port (see figure 14 on page 12 for pin assignments for the RS-232 cable). A control system or host computer can be connected via the MKP host RS-232 port. Additional MKPs can be connected to the matrix switcher through the MKP that is RS-232 connected (the primary MKP). The additional (secondary) MKPs are connected to the primary MKP via the primary MKP Ethernet port. An example of this type of configuration is shown in figure 10.

**Figure 10. MKP Connection Using the RS-232 Port**
An MKP control panel can be directly connected to any Ethernet-enabled matrix switcher via the switcher Ethernet port (see figure 11) using a TP (network) cable that is wired as a crossover cable (see TP Cable Termination and Recommendations on page 12, to properly wire the cable).

![Figure 11. Direct MKP Connection Via the LAN Port](image)

Any number of control panels can be connected, as part of a network, to any Ethernet-enabled matrix switcher via the switcher Ethernet port (see figure 12). All TP cables in this example are wired as patch (straight-through) cables.

![Figure 12. Network MKP Connection Using the LAN Port](image)

**RS-232 Cable Termination**

Each MKP control panel has two RS-232 ports that are connected using 3.5 mm, 3-pole direct insertion connectors. Wire the connectors as follows:

**NOTE:** The total cable length between an MKP control panel and a matrix switcher should not exceed 100 feet (30 m).

1. Choose a cable such as the Extron Comm-Link cable (see figure 13, on the next page, for the wire specifications for Comm-Link cable). Colors may vary from this example.
2. Trim approximately 1.5 inches (3.8 cm) of the cable jacket to expose the four insulated wires and a bare drain wire (silver-colored).
3. Cut off the foil shield and discard it.
4. Strip ¼ inch (0.6 cm) of insulation from any three of the four wires (not including the drain [unshielded] wire).
5. Twist the strands of each wire, insert the strands into the direct insertion connector, and tighten the captive screws.
**Extron Control System Comm-Link cable**

Wire specifications for Extron Comm-Link cable (see figure 13) are as follows:

- A (red) = 18 American Wire Gauge (AWG)
- B (violet or blue) = 22 AWG (grouped and shielded)
- C (white) = 22 AWG
- D (drain) = 24 AWG
- E (black) = 18 AWG

**NOTE:** Comm-Link cable was designed for use with MKP control panels.

![Extron Comm-Link Cable](image)

**Figure 13. Extron Comm-Link Cable**

For RS-232 pin assignments, see figure 14.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Switcher RS-232</th>
<th>MKP RS-232</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2</td>
<td>Tx</td>
<td>Rx</td>
</tr>
<tr>
<td>3</td>
<td>Rx</td>
<td>Tx</td>
</tr>
<tr>
<td>4</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>5</td>
<td>Gnd</td>
<td>Gnd</td>
</tr>
<tr>
<td>6</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>7</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>8</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>9</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

**Figure 14. RS-232 Cross-connection Table**

**TP Cable Termination and Recommendations**

It is vital that you use the correct Ethernet cables, and that they be properly terminated with the correct pinout. Ethernet links use Category (CAT) 5e or CAT 6, unshielded twisted pair (UTP) or shielded twisted pair (STP) cables, terminated with RJ-45 connectors. Ethernet cables are limited to a length of 328 feet (100 m).

**ATTENTION:**

- Do not use standard telephone cables. Telephone cables do not support Ethernet or Fast Ethernet.
- Ne pas utiliser de câbles téléphone standard. Les câbles de téléphone ne sont pas compatibles avec les liaisons Ethernet ou Fast Ethernet.
- Do not stretch or bend cables. This can cause transmission errors.
- Ne pas étirer ou plier les câbles. Cela pourrait provoquer des erreurs de transmission.
The cable that you use depends on your network speed. The MKP supports both 10 Mbps (10Base-T — Ethernet) and 100 Mbps (100Base-T — Fast Ethernet), half-duplex and full-duplex, Ethernet connections.

- 10Base-T Ethernet requires CAT 3 UTP or STP cable as a minimum.
- 100Base-T Fast Ethernet requires CAT 5e UTP or STP cable as a minimum.

The Ethernet cable can be terminated as a straight-through cable or a crossover cable, and must be properly terminated for your application.

- **Patch (straight-through) cable** — Network connection between the MKP and an Ethernet LAN (see figure 12 on page 11)
- **Crossover cable** — Direct connection between the MKP and a host computer or an Ethernet-enabled matrix switcher (see figure 11 on page 11).

![RJ-45 Connector and Pinout Tables](image)

### Figure 15. RJ-45 Connector and Pinout Tables

**Power Supply Wiring**

A 12 VDC, 0.5 A power supply is provided with the MKP 2000 transmitter. Follow these instructions to wire the 2-pole captive screw connector to your power supply:

<table>
<thead>
<tr>
<th>Side 1</th>
<th>Side 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin</td>
<td>Wire color</td>
</tr>
<tr>
<td>1</td>
<td>White-orange</td>
</tr>
<tr>
<td>2</td>
<td>Orange</td>
</tr>
<tr>
<td>3</td>
<td>White-green</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>White-blue</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>White-brown</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
</tr>
</tbody>
</table>

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</tr>
<tr>
<td>3</td>
<td>White-green</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>White-blue</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
</tr>
<tr>
<td>7</td>
<td>White-brown</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
</tr>
</tbody>
</table>

**CAUTION:** Risk of minor personal injury:

**ATTENTION:** Risque de blessure mineure:

- The DC output cables must be kept separate from each other while the power supply is plugged in. Remove power before wiring.
- Les câbles de sortie CC doivent être séparés les uns des autres tant que la source d‘alimentation est branchée. Coupez l‘alimentation avant d‘effectuer les raccordements.
- The length of exposed wires is critical (see the **ATTENTION notifications** on the next page for details).
- La longueur des câbles exposés est primordiale lorsque l‘on entreprend de les dénuder. (voir les deux premières **ATTENTION** en page suivante pour plus d‘informations).
ATTENTION:

- Do not connect any external power supplies until you have read the ATTENTION notifications.
- Ne branchez pas de sources d’alimentation externes avant d’avoir lu les mises.

See figure 16 to wire the captive screw connector and secure the power cord to the extended tail of the connector.

**Figure 16. Power Connector Wiring**

1. Cut the DC output cord to the length needed.
2. Strip the jacket to expose 3/16 inch (5 mm) of the conductors.
3. Slide the leads into the supplied 2-pole captive screw plug and secure them, using a small screwdriver.
4. To verify the power cord polarity before connecting the plug, connect the power supply with no load and check the output with a voltmeter.
5. Use the supplied tie wrap to strap the power cord to the extended tail of the connector.

**ATTENTION:**

- Always use a power supply supplied and 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.

- The length of the exposed (stripped) copper wires is important. The ideal length is 3/16 inch (5 mm). Longer bare wires can short together. Shorter wires are not as secure in the connectors and could be pulled out.
- 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 trop longs, les câbles exposés pourraient se toucher et provoquer un court circuit. S’ils sont trop courts, ils peuvent être tirés facilement, même s’ils sont correctement serrés par les borniers à vis.

- If not provided with a power supply, this product is intended for use with a UL Listed power source marked “Class 2” or “LPS” rated 12 VDC, 0.5 A minimum.
- Si le produit n’est pas fourni avec une source d’alimentation, il doit être utilisé avec une source d’alimentation certifiée UL de classe 2 ou LPS avec une tension nominale de 12 Vcc, 0.5 A minimum.

- The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 725 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to building structure or similar structure.
- Cette installation doit toujours être conforme aux dispositions applicables du Code américain de l’électricité (National Electrical Code) ANSI/NFPA 70, article 725, et du Code canadien de l’électricité, partie 1, section 16. La source d’alimentation ne devra pas être fixée de façon permanente à une structure de bâtiment ou à une structure similaire.
### ATTENTION:

- Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the unit. The ridges on the side of the cord (see figure 16 on the previous page) identify the power cord negative lead.
- La polarité de la source d’alimentation est primordiale. Une polarité incorrecte pourrait endommager la source d’alimentation et l’unité. Les stries sur le côté du cordon (voir figure 16 sur la page 14) permettent de repérer le pôle négatif du cordon d’alimentation.
- To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.
- Pour vérifier la polarité avant la connexion, brancher l’alimentation hors charge et mesurer sa sortie avec un voltmètre.
- Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities.
- Sauf mention contraire, les adaptateurs CA/CC ne conviennent pas à une utilisation dans les espaces d’aération ou dans les cavités murales.
- Remote power is intended for indoors use only. No part of a network that uses remote power can be routed outdoors.
- L’alimentation à distance est exclusivement réservée à un usage en intérieur. Un réseau utilisant une alimentation à distance ne peut pas être routé en extérieur.
This section describes the operation of the MKP 2000, including:

- **Front Panel Controls and Indications**
- **Front Panel Operations**
- **Rear Panel Resets**

### Front Panel Controls and Indications

**Figure 17. MKP 2000 Controls and Indicators**

1. **0, 1 through 9 buttons** — Allow you to enter an input or output when you create a tie.
2. **Back button** — Deletes the least-significant digit (first digit on the right) of an entered input or output number.
3. **Cancel button** — Clears the LED display to 000, erasing any number that you have entered or any error message.
4. **Input button** — Allows you to specify that the next number you enter with the numeric keys (1) is an input.
5. **Output button** — Allows you to specify that the next number you enter with the numeric keys (1) is an output.
6. **Take button** — Confirms the potential tie that you have created with the input and output selection. This button is the equivalent of the Enter button on the matrix switcher’s front panel.
7. **LED display** — Shows the input or output number that was most-recently entered using the MKP’s numeric keys (1). In certain modes, it can also show the various IP addresses programmed into the MKP.

**NOTE:** The LED display shows the most recent input or output number entered on the numeric keys only. Ties created using other devices (other MKPs, a PC or control system, or the matrix switcher front panel) are not shown in the LED display.
Front Panel Operations

Creating a Tie

To tie an input to an output:

1. Press the Input button to specify that the next number entered is an input number.
   - The Input LED lights.
   - The LED display shows the last input selected from this MKP.
   - The last selected output is locked (unable to be changed; assigned as the output to which the entered input is tied unless a different output is assigned [see steps 3 and 4]).

2. Use the numeric keys to select the desired input.
   - The LED display shows the input that you enter.
   - The Take LED blinks.

   **NOTE:** If you press the Take button now, the selected input is tied to the locked output.

3. Press the Output button to specify that the next number entered is an output number.
   - The Output LED lights.
   - The LED display shows the last output selected from this MKP.
   - The last selected input is locked (unable to be changed; assigned as the output to which the entered input is tied unless a different input is assigned [see steps 1 and 2]).

4. Use the numeric keys to select the desired output.
   - The LED display shows the output that you enter.
   - The Take LED blinks.

5. Press the Take button to confirm the change.
   - The Take LED goes out.
   - The LED display shows the last output that was tied from this MKP.

   **NOTE:** When a selected input or output is outside the available range for this MKP or the connected matrix switcher, the LED display shows n-a (not available).

Deselecting a Tie

To deselect (break) a tie:

1. Press Input.
2. On the keypad, press 0 for the input.
3. Press Output.
4. On the keypad, press the number of the output that you want to untie.
5. Press Take.
Viewing the last input or output tied from the MKP

Press either the **Input** button or the **Output** button.

- The **Input** or **Output** LED lights.
- The LED display shows the last tied input or output (depending on which LED, Input or Output, is lit).

**NOTE:** The LED display shows the most recent input or output number entered on the numeric keys only. Ties created using other devices (other MKPs, a PC or control system, or the matrix switcher front panel) are not shown in the LED display.

Viewing and configuring the IP and MKP setup parameters

- To configure the MKP to operate in your network, you may need to change one or more of the following IP addresses and the host control port setting:
  - The MKP IP address (default = 192.168.254.253)
  - The MKP subnet address (default = 255.255.0.0)
  - The MKP gateway address (default = 0.0.0.0)
  - The target matrix switcher IP address (default = 0.0.0.0)
  - Host control port setting (pass-through or no pass-through [default])
  - MKP connection setting
    - **Primary** — Controls the switcher directly.
    - **Secondary** — Controls the switcher through another MKP and the Switch RS-232 port.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields (octets) separated by dots (periods). Each octet can be numbered from 000 through 255. Leading zeroes, up to three digits total per octet, are optional. Values of 256 and above are invalid.

If any of the default addresses conflict with other equipment at your installation, you can change them to any valid value.

**ATTENTION:**

- Editing the Extron IP address and other parameters while connected via the LAN port can immediately disconnect you from the MKP. Extron recommends editing this field using the front panel or the RS-232 link, and protecting the Ethernet access to these parameters by assigning an administrator password to only qualified and knowledgeable personnel.

- Modifier l’adresse IP Extron et d’autres paramètres lorsque vous êtes connecté via le port LAN peut vous déconnecter immédiatement du MKP. Extron vous recommande de modifier ce champ en utilisant le panneau avant ou le lien RS-232, et de protéger l’accès Ethernet à ces paramètres en attribuant un mot de passe administrateur à un membre du personnel qualifié.

Edit these addresses and set the host control as follows:

1. Simultaneously press and hold the **Input**, **Output**, and **Take** buttons until the LED display changes (approximately 2 seconds), then release the buttons (see figure 18 on the next page).
Figura 18. Seleccionar Modo de Configuración

- Presione el botón de entrada para cambiar el valor mostrado en el visor LED, recorriendo los diferentes valores del IP y las configuraciones de control de host (véase figura 19).

Figura 19. Seleccionar Direcciones Diferentes

- Presione el botón de salida para cambiar un octeto de la dirección IP seleccionada que está mostrada en el visor LED, o para alternar entre las configuraciones de control de host y primario o secundario (véase figura 20).

Figura 20. Seleccionarbeeldet Field

**NOTA:** La posición o ausencia de un punto en el visor indica el octeto que está mostrado. En el ejemplo de la figura 20, la dirección IP es la dirección predeterminada de MKP, 192.168.254.253. Cada octeto de una dirección IP puede ser editado cuando lo muestra el visor LED.
2. Use the **Input** and **Output** buttons to select and display the desired address and octet.

3. Press the **Cancel** button to clear the octet to **000**.

4. Use the **0** through **9** buttons to enter the desired octet value.

5. Repeat steps 2 through 4 to select and change other addresses and/or octets.

6. Use the **Input** button to select the host control setting display (see figure 21).

```
Press the Output button until Input and Output LEDs both light steadily.
```

7. If necessary, use the **Output** button to toggle the host control setting between pass-through and no pass-through.

8. Use the **Input** button to select the connection priority display (see figure 22).

```
Press the Output button until Input and Output LEDs both blink.
```

9. If necessary, use the **Output** button to toggle the connection priority setting between primary and secondary.

10. When all addresses, octets, the host control setting, and the priority settings are correct, press the **Take** button.

**Host control port setting and pass-through communications**

- **When the MKP is** connected to a computer or control system via its Host RS-232 port and in pass-through mode, the MKP redirects valid matrix switcher SIS commands that it receives on its Host RS-232 port to its Switch RS-232 port.

- **When the MKP is** connected to a computer or control system via its Host RS-232 port and in no pass-through mode, the MKP acts on all valid MKP commands received. It does not pass the command to its Switch RS-232 port.

- **When the MKP is** selected as primary, the MKP directly controls the matrix switcher via its Switch RS-232 port or LAN port. Selected as secondary, the MKP controls the matrix switcher through connection to the primary MKP IP address.
Control Panel Security Lockout (Executive Mode)

The MKP 2000 provides the following three levels of front panel security lockout (executive modes):

- **Panel Locked mode** — All front panel controls are locked. Selections and setup cannot be performed from the front panel.
- **User mode** — Front panel operation is limited to input and output selection. The panel configuration, IP, and switcher addressing functions are locked.
- **Administrator mode** (default) — All front panel controls are available.

To step through the selections for the three executive modes:

1. Press and hold the 1, 3, Back, and Cancel buttons until the LED window displays one of the following messages, indicating the executive mode that has been set (approximately 3 seconds).
   - **Administrator mode** — The LED display flashes LOC, then Ad; then displays “...”.
   - **User mode** — The LED display flashes LOC, then Us; then displays “...”.
   - **Panel Locked mode** — The LED display shows LOC.

2. Repeat step 1 until the LED indicates the mode you want.

![Figure 23. Control Panel Lockout: Switching to Administrator Mode](image)

Rear Panel Resets

Performing Soft Resets

The remote control panel has three soft resets available that restore various tiers of MKP settings to their defaults.

- **Events (mode 3) reset** — Restarts the communications and control events.
- **IP system (mode 4) reset** — Resets most IP protocols to their default settings.

**NOTE:** IP system reset clears the Internet protocol (IP) settings, but does not reset the target address, the host control setting, the priority setting, or any user-loaded files.

- **Absolute (mode 5) reset** — Performs all of the system reset functions and clears the MKP IP address to 192.168.254.253 and subnet mask to 255.255.0.0. This function is identical to the `ESC Z0QQ` SIS command (see **Reset** on page 28).

To perform a soft reset of the MKP 2000:

1. Press and hold the Reset (R) button until the Reset LED blinks off once (for events reset), twice (for IP system reset), or three times (for absolute reset) (see figure 24 on the next page).
Performing Soft Resets

2. Release the Reset button and then immediately press and release the Reset button again. Nothing happens if the second momentary press does not occur within 1 second.

Performing a Hard Reset

The hard reset function restores the MKP to its original factory default firmware configuration and erases all user-installed software or firmware.

Follow these steps to perform a hard reset:

**ATTENTION:** Ensure that you have backed up any locally-created HTML, JavaScript, or other files that have been uploaded to the MKP user file space before you perform the hard reset. A hard reset will erase all locally-created files from the MKP.

**NOTE:** The hard reset does not change the IP address, the subnet mask, the gateway address, or the matrix switcher IP address.

1. Turn off power to the switcher.

2. Press and **Hold** the Reset button on the rear panel while you apply AC power to the MKP (see figure 25).
Use Simple Instruction Set (SIS) commands to configure the MKP 2000. This section provides information about using those commands. The following topics are discussed:

- Connections Options
- Host-to-device Communication
- Using the Command and Response Tables
- Command and Response Table for SIS Commands

**Connections Options**

**RS-232 Links**

The MKP rear panel 3-pole, 3.5 mm, Host RS-232 connector (see figure 26) can be connected to the RS-232 serial port output of a host device such as a computer running the HyperTerminal utility, an RS-232 capable PDA, or a control system. This connection makes software control of the control panel possible. The rear panel Switch port can be connected to the Remote or RS-232 port of a matrix switcher.

The default protocol for both ports is as follows:

- 9600 baud*
- No parity
- No flow control
- 8-bit
- 1 stop bit

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>Transmit data</td>
</tr>
<tr>
<td>RX</td>
<td>Receive data</td>
</tr>
<tr>
<td>Gnd</td>
<td>Signal ground</td>
</tr>
</tbody>
</table>

**Figure 26. RS-232 Connector Pin Assignments**

**NOTE:** * The default baud rate is 9600, but this can be changed, using the MKP web pages, to 19200, 38400, or 115200 baud to match the switcher baud rate (see RS-232 port configuration on page 29 or Port (RS-232) Settings Page on page 39.)

**Routing matrix switcher commands**

When the MKP is connected to the matrix switcher via its Switch RS-232 port, the MKP can redirect SIS matrix switcher commands received on the Host RS-232 port to the matrix switcher.

If the MKP receives a valid matrix switcher SIS command on its Host RS-232 port, it redirects the command to its Switch RS-232 port only if the MKP is set to pass-through mode (see Pass-through (RS-232 port redirect) on page 28 to set the pass-through mode).
Ethernet Link

The rear panel LAN connector on the MKP can be connected directly to a host computer (for setup) or a matrix switcher (for switcher control), or to an Ethernet LAN or WAN (to which a host computer, other MKPs, and a matrix switcher can also be connected).

- Connection directly to a host computer requires a crossover cable.
- Connection via an Ethernet LAN requires a patch (straight-through) cable.

See TP Cable Termination and Recommendations on page 12 to create crossover and patch cables.

Default IP address

To access the MKP via the Ethernet port, you need the Extron IP address. If the address has been changed to an address comprised of words and characters, you can determine the actual numeric IP address using the ping (ICMP) utility. If the address has not been changed, the factory-specified default is 192.168.254.253.

Host-to-device Communication

The MKP 2000 accepts SIS commands from a host device such as a computer running the Extron DataViewer utility or other control system. SIS commands consist of strings (one or more characters per command field).

Unless otherwise stated, upper and lower case characters can be used interchangeably. Commands do not require any special characters to begin or end the command string. Each response from the MKP 2000 ends with a carriage return and a line feed (CR/LF = ␩), which signals the end of the response character string.

MKP-Initiated (Unsolicited) Messages

When a local event such as a front panel operation occurs, the MKP responds by sending a message to the host. The MKP-initiated messages are listed below:

(c) Copyright 2006, Extron Electronics, MKP 2000, Vx.xx, 60-682-00
(for RS-232 connection)

(c) Copyright 2006, Extron Electronics, MKP 2000, Vx.xx, 60-682-00 =
WWW, DD Mmm YYYY hh:mm:ss
(for IP connection)

The MKP initiates the copyright message when it is first powered on or when connection via Internet protocol (IP) is established. Vx.xx is the firmware version number; WWW indicates the day of the week (IP).

Password:

The MKP initiates the password message immediately after the copyright message when the controlling system is connected using TCP/IP or Telnet, and the MKP is password protected. This message means that the MKP requires an administrator or user level password in order for it to perform the commands entered via this link. The MKP repeats the password message response for every entry other than a valid password until a valid password is entered.

Login Administrator

Login User

The MKP initiates the login message when a correct administrator or user password has been entered. If the user and administrator passwords are the same, the MKP defaults to administrator privileges.
Error Messages

When the MKP receives an SIS command and determines that it is valid, it performs the command and sends a response to the host device. If the MKP is unable to perform the command because the command is invalid or contains invalid parameters, the MKP returns an error response to the host. The error response codes are:

- **E01** — Invalid input channel number (too large)
- **E10** — Invalid command
- **E12** — Invalid output number (too large)
- **E13** — Invalid value (out of range)
- **E14** — Illegal command for this configuration
- **E24** — Privilege violation (Ethernet, Extron software only)
- **E99** — Invalid or no response from target switcher

Using the Command and Response Tables

When programming in the field, certain characters are most conveniently represented by their hexadecimal rather than their ASCII values. Lowercase letters are acceptable in the command field except where indicated for the gain and attenuation commands. The table below shows the hexadecimal equivalent of each ASCII character:

<table>
<thead>
<tr>
<th>ASCII to Hex Conversion Table</th>
<th>Esc</th>
<th>1B</th>
<th>CR</th>
<th>0D</th>
<th>LF</th>
<th>0A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>#</td>
<td>$</td>
<td>%</td>
</tr>
<tr>
<td>(   )</td>
<td>28</td>
<td>29</td>
<td>2A</td>
<td>2B</td>
<td>2C</td>
<td>-</td>
</tr>
<tr>
<td>Ø 30</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>34</td>
<td>35</td>
</tr>
<tr>
<td>Ø 38</td>
<td>38</td>
<td>39</td>
<td>3A</td>
<td>3B</td>
<td>&lt;</td>
<td>3C</td>
</tr>
<tr>
<td>Ø 40</td>
<td>40</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td>44</td>
<td>45</td>
</tr>
<tr>
<td>@ 45</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>48</td>
<td>49</td>
<td>4A</td>
</tr>
<tr>
<td>P 50</td>
<td>50</td>
<td>51</td>
<td>52</td>
<td>53</td>
<td>54</td>
<td>55</td>
</tr>
<tr>
<td>X 58</td>
<td>58</td>
<td>59</td>
<td>Z</td>
<td>5A</td>
<td>5B</td>
<td>5C</td>
</tr>
<tr>
<td>' 60</td>
<td>60</td>
<td>61</td>
<td>62</td>
<td>63</td>
<td>64</td>
<td>65</td>
</tr>
<tr>
<td>h 68</td>
<td>68</td>
<td>69</td>
<td>j</td>
<td>k</td>
<td>6A</td>
<td>l</td>
</tr>
<tr>
<td>p 70</td>
<td>70</td>
<td>71</td>
<td>72</td>
<td>73</td>
<td>74</td>
<td>75</td>
</tr>
<tr>
<td>x 78</td>
<td>78</td>
<td>79</td>
<td>z</td>
<td>7A</td>
<td>7B</td>
<td>7C</td>
</tr>
</tbody>
</table>

**Figure 27. ASCII to Hex Conversion Table**

The MKP always redirects a subset of valid matrix switcher-specific SIS commands on its Ethernet port and, if configured in pass-through mode, on its Switch RS-232 port.

**NOTE:** It is not the purpose of this manual to define in detail the passed-through matrix switcher-specific SIS commands. Refer to the applicable matrix switcher’s manual.

Symbols are used throughout the tables to represent variables in the command/response fields. Command and response examples are shown throughout the MKP SIS commands table.
Symbol Definitions

- Carriage return with line feed
- Pipe character or carriage return (no line feed) can be used interchangeably.
- Space character
- W or Esc = W or Escape key can be used interchangeably.

\[ X1 \] = On/off status
  0 = off/disable
  1 = on/enable

\[ X2 \] = RS-232 port number
  1 = host
  2 = switcher

\[ X3 = n \] = redirect serial port data from the specified port to allow for a transparent pass through mode. The response is returned with leading zeroes. \( n \) = the maximum number of serial ports that the IP link supports. \[ X3 \] is verified at this port.

\[ X4 \] = Time (in 10 ms increments) to wait for receive data before releasing the port to another source
  (min = 1 [10 ms], maximum = 32767 [32.767 seconds], default = 10 [100 ms]).

\[ X5 \] = Numerical value (nnnn) to set \( L \) (length of message to receive) or assign as a \( D \) (delimiter).
  \( L \) = number of byte count (min = 0, max = 32767, default = 0).
  \( D \) = decimal number for ASCII character (min = 0, maximum = 00255, default = 00000L).

**NOTE:** The numeric value directly precedes the identifier; for example: \[ X5 = \text{“3L”} \] to specify a 3-byte length or \[ X5 = \text{“10D”} \] to specify an ASCII delimiter of 0A. The identifier, “L” or “D” is case sensitive and must be uppercase.

\[ X6 \] = Firmware version = Bootstrap version (x.xx)
\[ X7 \] = Verbose firmware version-description-upload date/time.
\[ X8 \] = Voltage = 1 (3.3 V), Voltage 2 (12.0 V), Temperature (degrees Fahrenheit) (xxx.xx)
\[ X9 \] = Verbose/response mode
  0 = clear/none assigned (default)
  1 = verbose mode
  2 = tagged responses for queries
  3 = 1 and 2 (verbose and tagged)

**NOTE:** The default \[ X9 \] value is 0 for Telnet and 0 for RS-232.
If tagged responses are enabled, all read commands return the constant string plus the data, the same as setting the value. For example, the MKP responds \text{Ipn•X10} to the \text{Esc•CN} command.

\[ X10 \] = Security level
  0 = clear/none
  11 = user password assigned
  12 = administrator password assigned

\[ X11 \] = Baud rate
  300, 600, 1200, 1800, 2400, 3600, 4800, 9600 (default), 14400, 19200, 28800,
  38400, 57600, or 115200

\[ X12 \] = Parity (1st character only) = Odd, Even, None (default), Mark, Space

\[ X13 \] = # of data bits = 7 or 8 (default)
X14 = # of stop bits = 1 (default) or 2
X15 = Name = 24 characters maximum. Upper and lower case alphanumeric characters and “ ” + – : = / and spaces are valid.

NOTE: The following characters are invalid: {space}  -  ‘  [ ]  { }  ,  ;  | and \.

X16 = Default unit name = Factory default name (combination of the model name plus last three pairs of MAC address)
X17 = Time and date (set) = MM/DD/YY-HH:MM:SS
   MM = month: 01 (Jan.) — 12 (Dec.)
   DD = day: 01 through 31
   YY = year: 00 through 99
   HH = hour: 00 through 24
   MM = minutes: 00 through 59
   SS = seconds: 00 through 59
X18 = Time and date (read) = Day•DD•Mmm•YYYY•HH:MM:SS where:
   Day = weekday: Mon through Sun
   DD = day: 01 through 31
   Mmm = month: Jan through Dec
   YYYY = year: 2000 through 2099
   HH = hour: 00 through 24
   MM = minutes: 00 through 59
   SS = seconds: 00 through 59
X19 = GMT offset = –12.0 through +14.0. Hours and minutes removed from GMT
X20 = Daylight Savings Time
   0 = Daylight Savings Time off/ignore
   1 = Daylight Savings Time on (northern hemisphere)
   2 = Daylight Savings Time on (Europe)
   3 = Daylight Savings Time on (Brazil)
X21 = IP address = ###.###.###.###
X22 = Hardware (MAC) address = ##-##-##-##-##-##
X23 = Connection priority
   0 = Primary
   1 = Secondary
X24 = Password = 12 digits, alphanumeric

NOTE: The following characters are invalid: {space}  -  ‘  [ ]  { }  ,  ;  | and \.

X25 = Web page priority
   0 = Internal (default on power up)
   1 = User
X26 = Executive mode
   0 = Administrator mode (panel unlocked)
   1 = User mode
   2 = Panel locked

Timeout

Pauses of 10 seconds or longer between command ASCII characters result in a timeout. The command operation is aborted with no other indication.
## Command and Response Table for SIS Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>ASCII Command (host to unit)</th>
<th>Response (unit to host)</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Front panel security lockout (executive mode)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel locked mode</td>
<td>2x</td>
<td>Exe2←</td>
<td>Lock front panel.</td>
</tr>
<tr>
<td>User mode</td>
<td>1x</td>
<td>Exe1←</td>
<td>Enable only input and output selection from the front panel.</td>
</tr>
<tr>
<td>Administrator mode</td>
<td>Øx</td>
<td>ExeØ←</td>
<td>Unlock front panel.</td>
</tr>
<tr>
<td>View front panel lock status</td>
<td>x</td>
<td>X2^</td>
<td></td>
</tr>
<tr>
<td><strong>KEY:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X2^ = Executive mode</td>
<td>Ø = Administrator mode (panel unlocked), 1 = User mode, 2 = Panel locked</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Pass-through (RS-232 port redirect)

| Configure redirect mode | Esc[X2]*X3*X4*X5CD ← | Cpn[X2]•Ccd[X3], X4, X5← | Turn redirect mode on and specify port parameters. Redirect port 1 to port 2. Wait 500 ms for response. |
| Example: | Esc1*2*50*10DCD ← | Cpn01•Ccd00002, 00050, 000000D← |
| **NOTE:** | | | |
| The “L” or “D” delimiter in value X% is case sensitive and must be uppercase. |

- **Disable redirect**
  - Esc[X2]ØCD ←
  - Cpn[X2]•Ccd
  - 00000, 00000, 00000L←

- **View redirect**
  - Esc[X2]CD ←
  - X2, X3, X4, X5←

| **KEY:** | | | |
| X2 = RS-232 port number | 1 = host, 2 = switcher. |
| X3 = n = -1 = redirect serial port data from the specified port to allow for a transparent pass through mode. The response is returned with leading zeros. n = the maximum number of serial ports that the IP link supports. X3 is verified at this port. |
| X4 = Time (in 10 ms increments) to wait for receive data before releasing the port to another source (min = 1 [10 ms], maximum = 32767 [32.767 seconds], default = 10 [100 ms]). |
| X5 = Numerical value (nnnn) to set L (length of message to receive) or assign as a D (delimiter). L = number of byte count (min = Ø, max = 32767, default = Ø). D = decimal number for ASCII character (min = Ø, maximum = 00255, default = 00000L). |

### Information requests

| Request part number | N/n | 60 - 682 - 00← | Report model name. |
| Request information | I/i | MKP•2000← |
| Query firmware version | Q/q | X6← | Firmware build with 2 decimals (x.xx). |
| Query verbose firmware version | ØQ/q | X7← |
| **Response description:** | Ethernet protocol firmware version - controller firmware version - updated firmware version← |

| **KEY:** | | | |
| X6 = Firmware version | Bootstrap version (x.xx) |
| X7 = Verbose firmware version-description-upload date/time. |

### Reset

| Names reset | EscZZXX← | Zpx← | Erase all presets, preset names, input names, and output names. |
| Absolute reset | EscZQQQ← | Zpq← | Perform a Names reset plus restoring all IP settings. |

---

28  MKP 2000 • Remote Control
<table>
<thead>
<tr>
<th>Command</th>
<th>ASCII Command (host to unit)</th>
<th>Response (unit to host)</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Verbose Mode</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set verbose mode</td>
<td>Esc CV</td>
<td>Vrb</td>
<td>Report all status changes to the device that sent the command.</td>
</tr>
<tr>
<td>View verbose mode</td>
<td>Esc CV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read connection security level</td>
<td>Esc CK</td>
<td></td>
<td>Password level protection assigned.</td>
</tr>
</tbody>
</table>

**KEY:**

- X0 = Verbose/response mode
- X1 = Security level
  - 0 = clear/none assigned
  - 1 = verbose mode
  - 2 = tagged responses for queries
  - 3 = 1 and 2 (verbose and tagged)

**RS-232 port configuration**

Configure serial port

<table>
<thead>
<tr>
<th>Command</th>
<th>ASCII Command (host to unit)</th>
<th>Response (unit to host)</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example:</td>
<td></td>
<td></td>
<td>9600 baud, no parity, 8 data bits, 1 stop bit</td>
</tr>
</tbody>
</table>

**KEY:**

- X0 = RS-232 port number
- X1 = Baud rate
  - 300, 600, 1200, 1800, 2400, 3600, 4800, 9600 (default), 14400, 19200, 28800, 38400, 57600, or 115200
- X12 = Parity (1st character only)
  - Odd, Even, None (default), Mark, Space
- X13 = # of data bits
  - 7 or 8 (default)
- X14 = # of stop bits
  - 1 (default) or 2

**Disable and enable inputs and outputs**

Enable all inputs | Esc +7BM | Up1 | |
| Disable all inputs | Esc +6BM | Up1 | |
| Enable all outputs | Esc +9BM | Up1 | |
| Disable all outputs | Esc +8BM | Up1 | |

**NOTE:** Input and output enables can be read using SIS commands, but the returned data is hard to interpret. Reading the enabled outputs is far simpler using the HTML pages (see the System Settings Page on page 35).

Read output enables

<table>
<thead>
<tr>
<th>Command</th>
<th>ASCII Command (host to unit)</th>
<th>Response (unit to host)</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example:</td>
<td></td>
<td></td>
<td>Displays a list that identifies which outputs are enabled or disabled. The response data is shown as a series of 125 bytes that correspond to groups of outputs. Each bit in a byte shows if the associated output is enabled (set to 1) or disabled (reset to 0). Each byte is separated by a delimiter (%). In this example, all valid outputs are enabled (with the exception of output 0, which cannot be enabled. See the Data description, on the next page, for a detailed explanation.</td>
</tr>
</tbody>
</table>

**NOTE:** Outputs 33 through 999 are invalid selections for a 32-output matrix switcher.
### Command

<table>
<thead>
<tr>
<th>ASCII Command (host to unit)</th>
<th>Response (unit to host)</th>
<th>Additional Description</th>
</tr>
</thead>
</table>

- **Data description:**
  \%{byte 0 (outputs 0 – 7)}\%{byte 1 (8 – 15)}\%{byte 2 (16 – 23)}\% ... \{byte 124 (992 – 999).

### Table

<table>
<thead>
<tr>
<th>Byte 0</th>
<th>Byte 1</th>
<th>Byte 2</th>
<th>Byte 124</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1 1 1 1 1 1 1</td>
<td>1 1 1 1 1 1</td>
<td>0 0 0 0 0 0 0 0</td>
<td>0 0 0 0 0 0 0 0</td>
</tr>
</tbody>
</table>

#### Output 7 enabled. Enable (1) or disable (0) Byte delimiter

<table>
<thead>
<tr>
<th>Hex:</th>
<th>ASCII:</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>E</td>
</tr>
<tr>
<td>46</td>
<td>25</td>
</tr>
</tbody>
</table>

#### Output 0 is always 0 (disabled).

<table>
<thead>
<tr>
<th>Hex:</th>
<th>ASCII:</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>E</td>
</tr>
<tr>
<td>46</td>
<td>25</td>
</tr>
</tbody>
</table>

#### Output 9 enabled. Byte delimiter

<table>
<thead>
<tr>
<th>Hex:</th>
<th>ASCII:</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>46</td>
<td>25</td>
</tr>
</tbody>
</table>

#### Output 0 is always 1 (enabled).

<table>
<thead>
<tr>
<th>Hex:</th>
<th>ASCII:</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>E</td>
</tr>
<tr>
<td>46</td>
<td>25</td>
</tr>
</tbody>
</table>

#### Input number: 7 6 5 4 3 2 1 0 15 14 13 12 11 10 9 8 23 22 21 20 19 18 17 16 999 998 997 996 995 994 993 992 |

#### Input 7 enabled. Enable (1) or disable (0) Byte delimiter Input 9 disabled.

<table>
<thead>
<tr>
<th>Hex:</th>
<th>ASCII:</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>46</td>
<td>25</td>
</tr>
</tbody>
</table>

### NOTE:
Each byte is returned most-significant bit first (such as output 7 in byte 0), least-significant bit last (such as output 0 in byte 0). Bytes are returned in sequential order (byte 0, byte 1, byte 2,...,byte 124).

### Example (for 16-input switcher):

<table>
<thead>
<tr>
<th>Esc+1BM</th>
<th>data</th>
<th>%FE%FF%FF%FF%01%00%00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>00%00%...%0%0%0%0%0%</td>
</tr>
</tbody>
</table>

In this example, inputs 9 and 10 are disabled. All other valid inputs are enabled (including 0, which cannot be disabled). See the Data description, below, for a detailed explanation.

### Data description:

\%{byte 0 (inputs 0 – 7)}\%{byte 1 (8 – 15)}\%{byte 2 (16 – 23)}\% ... \{byte 124 (992 – 999).

### NOTE:
Each byte is returned most-significant bit first (such as input 7 in byte 0), least-significant bit last (such as input 0 in byte 0). Bytes are returned in sequential order (byte 0, byte 1, byte 2,...,byte 124).
<table>
<thead>
<tr>
<th>Command</th>
<th>ASCII Command (host to unit)</th>
<th>Response (unit to host)</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IP setup</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set MKP name</td>
<td>Esc[X15]CN</td>
<td>Ipn[X15]</td>
<td></td>
</tr>
<tr>
<td>Set MKP name to factory default</td>
<td>Esc*CN</td>
<td>Ip*[X16]</td>
<td></td>
</tr>
<tr>
<td>Query MKP name</td>
<td>EscCN</td>
<td>X19</td>
<td>X19 may be X18</td>
</tr>
<tr>
<td>Set date and time</td>
<td>Esc[X17]CT</td>
<td>Ipt[X18]</td>
<td>MM/DD/YY-HH:MM:SS</td>
</tr>
<tr>
<td>Query date and time</td>
<td>EscCT</td>
<td>X19</td>
<td>MM/DD/YY-HH:MM:SS</td>
</tr>
</tbody>
</table>

**KEY:**
- **X15** = Name is 24 characters maximum. Upper and lower case alphanumeric characters and “”, “,” + : = / and spaces are valid.
- **X16** = Default name = Factory default name (combination of the model name plus last three pairs of MAC address)
- **X17** = Time and date (set) = MM/DD/YY-HH:MM:SS = MM = month: 01 (Jan.) — 12 (Dec.), DD = day: 01 through 31, YY = year: 00 through 99, HH = hour: 00 through 24, MM = minutes: 00 through 59, SS = seconds: 00 through 59
- **X18** = Time and date (read) = Day,•DD•Mmm•YYYY•HH:MM:SS where: Day = weekday: Mon through Sun, DD = day: 01 through 31, Mmm = month: Jan through Dec, YYYY = year: 2000 through 2099, HH = hour: 00 through 24, MM = minutes: 00 through 59, SS = seconds: 00 through 59

**NOTE:** The set target IP parameters command can be issued with either the target IP address (X21) or the connection priority variable, but not both. The response is as shown regardless of which variable is entered.

- **E** = On/off status
- **X1** = GMT offset
- **X2** = Daylight Savings Time
- **X3** = IP Address
- **X4** = Hardware (MAC) address
- **X5** = Connection priority
- **X6** = Password

**Set GMT offset** | Esc[X19]CZ | Ipz[X19] | The divider between hours and minutes is a period.

**Query GMT offset** | EscCZ | X19 |

**Set Daylight Savings Time** | Esc[X20]CX | IpX[X20] | Set the switcher to display the local time as Daylight Savings Time (+1 hour) in summer months.

**Query Daylight Savings Time** | EscCX | X20 |

**Set DHCP mode** | Esc[X1]DH | Idh[X1] |

**Query DHCP mode** | EscDH | X1 |

**Set MKP IP address** | Esc[X21]CI | Ipi[X21] |

**Query MKP IP address** | EscCI | X21 |

**Query hardware MAC address** | EscCH | X22 |

**Set subnet mask** | Esc[X21]CS | Ips[X21] |

**Query subnet mask** | EscCS | X21 |

**Set gateway IP address** | Esc[X21]CG | Ipg[X21] |

**Query gateway IP address** | EscCG | X21 |

**NOTE:** For the set target password command (Esc[X23]PI), the password variable X23 can be either the administrator or the user password.

**KEY:**
- **X1** = On/off status
- **0** = off/disable, **1** = on/enable
- **X19** = GMT offset
- **X20** = Daylight Savings Time
- **X21** = IP Address
- **X22** = Hardware (MAC) address
- **X23** = Connection priority
- **X24** = Password
- **12 digits, alphanumeric**
<table>
<thead>
<tr>
<th>Command</th>
<th>ASCII Command</th>
<th>Response</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear target password</td>
<td>EscPI</td>
<td>Spw*</td>
<td></td>
</tr>
<tr>
<td>Query target password</td>
<td>EscPI</td>
<td>**</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** The returned value for the read target password command (Esc PI) is masked; the value is either empty (no return other than the *) if no switcher password is assigned, or four asterisks (****) if a password is assigned.

<table>
<thead>
<tr>
<th>Command</th>
<th>ASCII Command</th>
<th>Response</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set DNS server IP address</td>
<td>[Esc][X21]DI</td>
<td>Ipd[X21]</td>
<td></td>
</tr>
<tr>
<td>Query DNS server IP address</td>
<td>EscDI</td>
<td>[X21]</td>
<td></td>
</tr>
<tr>
<td>Query connection listing</td>
<td>EscCC</td>
<td>{number of connections}</td>
<td></td>
</tr>
<tr>
<td>Set administrator password</td>
<td>EscX24CA</td>
<td>Ipa[X24]</td>
<td></td>
</tr>
<tr>
<td>Clear administrator password</td>
<td>EscCA</td>
<td>Ipa*</td>
<td></td>
</tr>
<tr>
<td>Query administrator password</td>
<td>EscCA</td>
<td>[X24]</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** You must have an administrator password assigned before you can assign a user password.

<table>
<thead>
<tr>
<th>Command</th>
<th>ASCII Command</th>
<th>Response</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set user password</td>
<td>Esc[X24]CU</td>
<td>Ipu[X24]</td>
<td></td>
</tr>
<tr>
<td>Clear user password</td>
<td>EscCU</td>
<td>Ipu*</td>
<td></td>
</tr>
<tr>
<td>Query user password</td>
<td>EscCU</td>
<td>[X24]</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** When you have connected multiple MKPs to control a switcher through a primary MKP control panel, do not set a user password on the primary MKP.

<table>
<thead>
<tr>
<th>Command</th>
<th>ASCII Command</th>
<th>Response</th>
<th>Additional Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch web page priority</td>
<td>Esc[X23]Cpag</td>
<td>Iwp[X28]</td>
<td></td>
</tr>
<tr>
<td>Query web page priority</td>
<td>EscCpag</td>
<td>[X28]</td>
<td></td>
</tr>
<tr>
<td>Set verbose mode</td>
<td>EscX9CV</td>
<td>Vrb[X9]</td>
<td>Set MKP to report changes from other sources.</td>
</tr>
<tr>
<td>Query verbose mode</td>
<td>EscCV</td>
<td>[X1]</td>
<td></td>
</tr>
<tr>
<td>Query connection security level</td>
<td>EscCK</td>
<td>[X10]</td>
<td></td>
</tr>
</tbody>
</table>

**KEY:**
- **X1** = On/off status
- **0** = off/disable, **1** = on/enable
- **X9** = Verbose/response mode
- **0** = clear/none assigned (default), **1** = verbose mode, **2** = tagged responses for queries, **3** = 1 and 2 (verbose and tagged)
- **X10** = Security level
- **0** = clear/none, **11** = user password assigned, **12** = administrator password assigned
- **X20** = Daylight Savings Time
- **0** = Daylight Savings Time off/ignore, **1** = Daylight Savings Time on (northern hemisphere), **2** = Daylight Savings Time on (Europe), **3** = Daylight Savings Time on (Brazil)
- **X21** = IP Address
- **(xxx.xxx.xxx.xxx)**
- **X24** = Password
- **12 digits, alphanumeric**
- **X25** = Web page priority
- **0** = Internal (default on power up), **1** = User
This section describes the factory-installed HTML pages, which are always available and cannot be erased or overwritten, including:

- Downloading and Startup Page
- Viewing System Status
- Using the Configuration Pages
- Using the File Management Page
- Special Characters

You can use a web browser, such as Microsoft Internet Explorer, to configure the MKP through its Ethernet port, when it is connected via a LAN or WAN. The browser display of the MKP configuration has the appearance of web pages.

**NOTE:** If your Ethernet connection to the matrix switcher is unstable, try turning off the proxy server in your web browser as follows:

1. In Microsoft’s Internet Explorer, select Tools > Internet Options > Connections > LAN Settings.
2. Clear the Use a proxy server... check box.
3. Click Ok.

### Downloading and Startup Page

Access the MKP using HTML pages as follows:

1. Start the web browser program.
2. Enter the MKP IP address in the browser Address field.

**NOTE:** If the local system administrators have not changed the value, the factory-specified default, 192.168.254.253, is the correct value for this field.

3. If you want the browser to display a page other than the default MKP 2000 web page (such as a custom page that you have created and uploaded), enter a slash (/) after the address, and the name of the web page file you want to display.

**NOTES:**

- The browser Address field should display the address in the following format: `xxx.xxx.xxx.xxx/optional_file_name.html`.
- The following characters are invalid: {space} - ' ] } , ; | and \.

4. Press Enter on your keyboard. The MKP checks to see if it is password protected.
   - If the MKP is not password protected, proceed to step 6.
   - If the MKP has a password, the network password prompt window appears (see figure 28 on the next page). A User name entry is not required.
5. In the Password field, enter the appropriate administrator or user password. Click OK.

The MKP checks several possibilities, in the following order, and then responds accordingly:

- If the address includes a specific file name, such as `10.13.156.10/file_name.html`, the MKP downloads that HTML page.
- If there is a file in the MKP memory that is named `index.html`, the MKP downloads `index.html` as the default startup page.
- If neither file is found, the MKP downloads the System Status page (see figure 29), which is the factory-installed default startup page with the file name `nortxe_index.html`.

You can now select the tabs at the top of the screen to display additional pages that enable you to configure and control the MKP 2000.

**Viewing System Status**

The System Status page on the Status tab (see figure 29) provides an overall view of the MKP current settings, including the IP and gateway addresses, the RS-232 port settings, the voltage, and the connections. Changes to these settings can be made via the Configuration web pages, SIS programming, and the MKP front panel.

![Figure 29. System Status Page](image)
The System Status page is the default page that the MKP downloads when you connect to it. To access the System Status page from other MKP HTML web pages, click the Status tab.

This page shows only the current status of the MKP 2000. To change any of this information, select the Configuration tab to display the System Settings page.

**NOTE:** Personnel who have user access can view this page, but cannot access the Configuration pages. They see only the Status tab.

---

**Using the Configuration Pages**

There are four configuration web pages, which only administrators can access. Links to them are listed in the sidebar menu at the left of the configuration screen. The following pages describe the changes you can make from these pages.

**System Settings Page**

The System Settings page (see figure 30) is divided into three sections: IP Settings, Switcher Control Settings, and Date/Time Settings. In each section, click Submit to enter your changes. Clicking the Cancel button in any section restores the previous settings, if the new values have not been submitted.

---

![Figure 30. System Settings Page](image-url)
IP Settings Section

In this section, you enter all IP-related information for your MKP 2000. After making all desired changes to the fields in this section, click the Submit button at the bottom of the section to implement your changes. Click Cancel if you want to reject all your changes and restore the previous settings.

Unit Name field

The Unit Name field contains the locally-assigned name of the MKP. This name field can be changed to any valid name, up to 24 alphanumeric characters.

NOTE: The following characters are invalid: {space} - ’ [ ] { } , ; | and \.

DHCP radio buttons

The DHCP On radio button directs the MKP to ignore any entered IP addresses and to obtain its IP address from a Dynamic Host Configuration Protocol (DHCP) server (if the network is DHCP capable).

The DHCP Off radio button turns DHCP off. Contact the local system administrator to determine if DHCP is appropriate.

IP Address field

The IP Address field contains the IP address of the MKP. This value is encoded in the MKP flash memory.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields (octets) separated by dots (periods). Each octet can be numbered from 000 through 255. Leading zeroes, up to three digits per field, are optional. Values of 256 and above are invalid.

The factory-installed default address is 192.168.254.253, but if this conflicts with other equipment at your installation, you can change the IP address to any valid value.

ATTENTION:

• IP address changes can cause conflicts with other equipment. Only local system administrators should change IP addresses.

Gateway IP Address field

The Gateway IP Address field identifies the address of the gateway to the switcher that will be used if the MKP and the switcher are not on the same subnet.

The gateway IP address has the same validity rules as the MKP IP address. The default gateway address is 000.000.000.000.

Subnet Mask field

A subnet is a subset of a network — a set of IP devices that have portions of their IP addresses in common. The Subnet Mask field is used to determine whether the MKP is on the same subnet as the switcher server when you are subnetting. The default is 255.255.000.000.
**MAC Address field**
The Media Access Control (MAC) address is hardcoded in the MKP and cannot be changed.

**Firmware field**
The Firmware field displays the currently version of firmware that is currently loaded on your MKP.

**Model field**
The Model field shows the name of your MKP model: MKP 2000.

**Part Number field**
The Part Number field contains the part number of your MKP model. For the MKP 2000, this field displays 60-682-00.

**Switcher Control Settings Section**
This section contains switcher settings that can be configured via the MKP. After making all desired changes to the fields in this section, click the Submit button at the bottom of the section to implement your changes. Click Cancel if you want to reject all your changes and restore the previous settings.

**MKP Connection Priority settings**
Select the radio button for the type of connection between the MKP and the switcher.

- **Primary – RS-232 Connection to Switcher** — The MKP directly controls the matrix switcher via its Switch RS-232 port.
- **Secondary – IP Connection to Primary MKP** — The MKP controls the switcher through another (primary) MKP Internet address.
- **IP Connection to Switcher** — The MKP directly controls the switcher through the Ethernet (IP) port.

**Host Control Port settings**
If Primary – RS-232 has been selected in the MKP Connection Priority section, select one of the following radio buttons to specify how the Host RS-232 port will function:

- **MKP 2000** — Commands received on the Host RS-232 port are executed by the MKP.
- **Pass Through** — Commands received on the Host RS-232 port are forwarded to the connected switcher via the Switch RS-232 port.

If either Secondary – IP Connection to Primary MKP or IP Connection to Switcher was selected in the MKP Connection Priority section, the Host Control Port Settings selections are grayed out and unavailable.

**Switcher Size settings**
The MKP cannot determine the matrix size of the switcher to which it is connected. You must use the Switcher Size drop boxes to specify the number of inputs and outputs. The default switcher size is 16 x 16.

**NOTE:** After you set the size of the connected switcher input/output matrix, if you attempt to use the front panel to tie to an input or output that is outside the available range for your MKP or your connected matrix switcher, the LED display shows n-a.
Switcher IP settings/Primary MKP settings

Depending on the connection type selected in the MKP Connection Priority section, you can enter an IP address and password (if one was assigned) for the switcher or the MKP. The address and password are required for the MKP and the matrix switcher to communicate via their RJ-45 LAN connections. The default IP address value is 000.000.000.000.

- **Primary – RS-232 Connection to Switcher** — The IP address fields are unavailable.
- **Secondary – IP Connection to Primary MKP** — Enter the IP address and/or password for the MKP that is directly controlling the switcher (via IP or RS-232).
- **IP Connection to Switcher** — Enter the IP address and/or the password for the switcher.

Authorized Inputs and Authorized Outputs section

You can use the **Authorized Inputs** and **Authorized Outputs** drop boxes to narrow the number of inputs and outputs that are controllable from the MKP.

**NOTE:** When you have set the size of the connected switcher input/output matrix, the LED display shows n-a if you attempt to tie to an input or output outside the available range for this MKP or the connected matrix switcher from the front panel.

Front Panel Configuration Lock section

Select the radio button for the executive mode that locks or unlocks the MKP front panel. The available modes are:

- **Administrator** — All front panel controls are unlocked.
- **User** — Limited front panel control is enabled (input and output selection only). Panel configuration and IP and switcher addressing are not available.
- **Panel Locked** — All front panel controls are locked and unavailable.

**NOTE:** This is the same function as the front panel security lock described in Control Panel Security Lockout (Executive Mode) (see page 21). The front panel can also be locked/unlocked via SIS commands (see Front panel security lockout (executive mode) on page 28).

Date/Time Settings Fields

The Date/Time Settings fields enable you to view and set the time functions. After making all desired changes to the fields in this section, click the Submit button at the bottom of the section to implement your changes. Click Cancel if you want to reject all your changes and restore the previous settings.

Change the date and time settings as follows:

1. In the desired Date/Time Settings field, click on the drop box for the variable that you want to change. The adjustable variables are month, day, year, hours, minutes, AM/PM, and (time) zone. A drop-down scroll box appears.
2. Click and drag the slider, or click the scroll up or scroll down button, until the desired variable is visible.
3. Click on the desired variable.
NOTE:
• If you are setting the time, set the local time. The Zone variable allows you to then enter the offset from Greenwich Mean Time (GMT).
• The Zone field identifies the selected standard time zone and displays the amount of time, in hours and minutes, that the local time varies from the GMT international time reference.

4. Repeat steps 1 through 3 for other date/time parameters that you want to change.

5. Select the appropriate Daylight Saving radio button. To turn off daylight savings time, select off.

NOTE: When daylight savings time is enabled, the MKP updates its internal clock between Standard Time and Daylight Savings Time, on the dates that the time change occurs in the United States of America and parts of Europe and Brazil. When daylight savings time is turned off, the MKP does not adjust its time reference.

Port (RS-232) Settings Page

The Port Settings page (see figure 31) allows you to configure the two RS-232 ports (Host and Switch) on the MKP. To access the Port Settings page, click the Port Settings link on the left sidebar menu on the Configuration tab.

![Port Settings Page](image)

Figure 31. Port Settings Page

The Serial Port 1 radio button selects the Host RS-232 port, and the Serial Port 2 radio button selects the Switch RS-232 port.

To configure one of these ports:

1. Select Serial Port radio button 1 or 2.
2. Make selections from the drop boxes as desired to configure the selected port.

   The Extron default settings for RS-232 ports are:
   • Baud rate: 9600
   • Data bits: 8
   • Parity: None
   • Stop bits: 1
   • Flow control: None

3. Click Submit to confirm your settings. To reject the changes and restore the previous settings, click Cancel.
Passwords Page

The Passwords page (see figure 32) lets you assign passwords to control access to the MKP 2000 eb pages.

Passwords are case sensitive and are limited to 12 uppercase and lowercase alphanumeric characters. Symbols and spaces are not allowed.

To access the Passwords page, click the Passwords link on the left sidebar menu on the Configuration tab.

**NOTE:** When you have connected multiple MKPs to control a switcher through a primary MKP control panel, do not set a user password on the primary MKP.

![Passwords Page](image)

**Figure 32. Passwords Page**

**Assigning a password**

To assign passwords, follow these steps:

1. Enter the new administrator password in the **Administrator Password** field.
   Characters in these fields are masked (•••••) as you enter them.

   **NOTE:** An administrator password must be created before a user password can be created.

2. In the **Re-enter Admin Password** field, enter the same password again to confirm it.
3. If you want to assign a user password, enter it in the **User Password** field.

   **NOTE:** You cannot assign a user password unless an administrator password has been assigned.

4. Enter the same user password in the **Re-enter the User Password** field.
5. Click the **Submit** button to set the password or passwords.

**Clearing a password**

To remove an assigned password, follow these steps:

1. In the **Administrator Password** or **User Password** field, clear any text, then enter a single space.
2. Repeat step 1 in the **Re-enter Admin Password** or the **Re-enter User Password** field.
3. Click the **Submit** button.
**Firmware Upgrade Page**

The Firmware Upgrade page (see figure 33) enables you to replace the firmware that is coded on the MKP control board without taking the MKP out of service, opening the enclosure, and replacing the firmware chip.

To access the Firmware Upgrade page, select the Firmware Upgrade link on the left sidebar menu of the Configuration tab.

![Firmware Upgrade Page](image)

**Figure 33. Firmware Upgrade Page**

**NOTE:** The Firmware Upgrade page is only for replacing the firmware that controls all MKP operation. To insert your own HTML pages, see Using the File Management Page on page 43.

Update the MKP firmware as follows:

1. Visit the Extron website at [www.extron.com](http://www.extron.com), and select either of the following:
   - Download tab > Firmware (from the sidebar menu) > MKP 2000
   - MKP 2000 product page > Downloads > MKP 2000 (in FIRMWARE section)
2. Select the latest firmware file for the MKP and download it. Note the folder to which you save the firmware file.
   
   **NOTE:** The firmware file name may read, in part, MKP 2000 or MKP 3000. This is normal. The firmware is the same for both products.

3. Connect the MKP to your computer via the MKP Ethernet port.
4. Access the MKP using the HTML pages.
5. Select the Configuration tab.
6. Click the Firmware Upgrade link on the left sidebar menu.
7. On the Firmware Upgrade page, click the Browse button. A Choose File window opens (see figure 34).

![Firmware Upgrade Choose File Window](image)

**Figure 34. Firmware Upgrade Choose File Window**
8. Navigate to the folder where you saved the firmware upgrade file, and open the file. Its name is displayed in the field below Current Firmware Version x.xx on the Firmware Upgrade page.

**ATTENTION:**
- Valid firmware files must have the file extension .S19. A file with any other extension is not a firmware upgrade for this device and could cause the device to stop functioning.

**NOTE:** The original factory-installed firmware is permanently available on the MKP. If the attempted firmware upload fails for any reason, the MKP automatically reverts to the factory-installed firmware.

9. On the Firmware Upgrade page, click the **Upload** button to start the update process.

The firmware upload to the MKP may take several minutes. While the firmware is being uploaded, the **Upload** button changes to **Uploading...**, and the MKP LED display shows **UPL**, then **777**, and then the firmware version number.

**ATTENTION:**
- While the firmware is uploading, do not press any front panel buttons or submit any selections on the web pages.
- Pendant que le logiciel est en train d’être chargé, n’appuyez sur aucun des boutons en face avant ou ne modifiez pas les pages web affichées.

When the LED display shows ..., the firmware upload is complete.

After you have uploaded the firmware to the MKP, refresh the web page. The version number of the newly uploaded firmware is displayed on the **System Status** page (outlined in figure 35), and on the **Firmware Upgrade** page.

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**Figure 35.** Current Firmware Version on the System Status Page

**Updating the firmware using a direct computer-to-MKP connection**

If you have no network access available, you can upgrade the MKP firmware via a direct connection between your computer and the MKP. Your computer must have Microsoft Windows® 2000, XP, or higher loaded.

**NOTE:** You can obtain the latest version of firmware only by downloading it from the Extron website. If the computer connected to your MKP has no network access, you must download the firmware to a computer with network access, then copy it to your computer hard disk.
1. Connect a crossover cable from the LAN port on your computer to the MKP LAN port.
2. On the Windows Start menu on your computer, right click on My Network Places.
3. From the pop-up menu, select Properties. The Network Connections window opens.
4. Right click on Local Area Connection, and select Properties from the pop-up menu.
5. On the Local Area Connection window, select Internet Protocol (TCP/IP), and click the Properties button. The Internet Protocol (TCP/IP) window opens.
6. Write down the existing IP address and subnet mask shown on the IP properties window. You will need these later in order to restore your computer settings after you configure the MKP for internet use.
7. Select the Use the following IP address radio button.
8. If your MKP has not had an IP address assigned to it and is still using its factory default address, enter the following address in the IP Address field: 192.168.254.252. If an IP address has been assigned to your MKP, enter a temporary address for your computer that is in the same subnet as the MKP. Your system administrator should have this information.
9. Enter 255.255.0.0 in the Subnet Mask field. If required, enter the gateway address in the Default Gateway field. (Your system administrator can provide this information.)
10. Click OK, and close the remaining windows.
11. Open Internet Explorer, and enter the IP address of your MKP in the Address field. If the MKP has not been assigned an IP address, enter the factory default address: 192.168.254.253.
12. Press Enter on your keyboard. The System Status web page is displayed.
13. Perform the Firmware Upgrade procedure, beginning with step 5 on page 41.

Using the File Management Page

The File Management page (see figure 36) lets you upload and delete files on the MKP 2000 from your computer or network. You can also upload personalized web pages or event files to the MKP via this screen. To display the File Management page, select the File Management tab.

NOTE: If you want a page you created and uploaded to be the default startup page, name that file "index.html".

Figure 36. File Management Page

NOTE: The files listed in figure 36 are shown as examples only and may not be present on your MKP 2000.
Uploading Files

Files to be uploaded to the MKP 2000 must contain only valid alphanumeric characters and underscores. No spaces or special characters (symbols) are allowed.

**NOTE:** The following characters are invalid: {space} - ' [] {} , ; | and \.

To upload files from the server, follow these steps:

1. Click the **Browse** button to the right of the file name field.
2. Browse to locate the file that you want to upload, and open it. The file name and directory path are displayed in the file name field on the **File Management** screen.
3. Click the **Upload File** button. The selected file name appears in the **Files** column on the **File Management** screen (Files are listed separately under headings of their extensions).

Adding a Directory

To add a directory or folder to the MKP file system, follow these steps:

1. Enter the directory name in the **Dir:** field, following the slash (/).
2. Click the **Add Dir** button.
3. With the directory name displayed, perform the "Uploading files" procedure described in the previous section to add a file to the directory. The directory name appears at the top of the **Files** column, preceded by a slash.

To add more files to the directory, click the directory name to open it, then use the uploading files procedure. To exit the directory, click (root).

Other File Management Activities

You can also perform the following tasks on the **File Management** screen:

- **Opening a file** — Click on the name of the file in the **Files** column.
- **Deleting a file** — Click the **Delete** button at the right end of the line that contains the name of the file you want to remove.
- **Deleting all files** — Click the **Delete All** button.
- **Selecting a file** — From the **Select** menu, select a file name, or select **All** to select all uploaded files.

Special Characters

The HTML language reserves certain characters for specific functions. The MKP does not accept these characters as part of its name, passwords, or locally created file names. Valid file names:

- Are a maximum of 24 uppercase or lowercase alphanumeric characters
- Cannot include spaces or underscore characters
- Cannot start with a number or a dash
- Cannot end with a dash

**NOTE:** These guidelines do not apply to input, output, and preset names.
Mounting the MKP 2000

This section provides procedures for mounting the MKP 2000.

**Electrical Box Cutout**

Any standard box that meets the local electrical codes can be used, but boxes from different manufacturers may have different size openings. Extron recommends testing the fit of the MKP inside the electrical box and then placing the box flush against the mounting surface and tracing the cutout area.

**Panel Mount Cutout Template**

The drawing in *figure 37* on the next page shows the dimensions for cutting a hole to accommodate the keypad circuit board for mounting an MKP 2000 on a flat surface. This type of installation can include a desk or podium, or a control panel or dashboard, where the back is protected and does not require an electrical box.
Figure 37. Panel Mount Cutout Template

Circuit Board Box (behind front panel)
Cut-out area should be slightly larger.
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.

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>714.491.1500 or 800.633.9876</td>
</tr>
<tr>
<td>Asia</td>
<td>65.6383.4400</td>
</tr>
<tr>
<td>Europe</td>
<td>31.33.453.4040</td>
</tr>
<tr>
<td>Japan</td>
<td>81.3.3511.7655</td>
</tr>
</tbody>
</table>

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

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

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