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Hardware Installation Guide

Mediatrix C7 Series

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Mediatrix C7 Series Hardware Installation Guide

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About this Manual

Thank you for purchasing the Mediatrix C7 Series from Media5 Corporation.

Introduction

The Mediatrix C7 Series are multi-function devices combining VoIP Analog Adapter, Gateway and QoS control in a secure and powerful platform.

This platform, featuring FXS/FXO interfaces, provides an ideal solution for enterprise voice applications or for connecting to a service provider's broadband access.

With FXO interfaces, it is the ideal solution to deploy private or hosted toll bypass networks. It provides a simple, transparent and cost-effective way of maintaining a connection to the PSTN.

The Mediatrix C7 Series also allows Enterprises, Service Providers, and System Integrators to deploy secure systems and generate additional revenue streams.

The Mediatrix C7 Series Series are available in the following models:

Table 1: Mediatrix C7 Series Series Models

Model	Interfaces
Mediatrix C710	4 FXS ports
Mediatrix C711	8 FXS ports
Mediatrix C730	4 FXO ports
Mediatrix C733	8 FXO ports
Mediatrix C731	4 FXS ports + 4 FXO ports

Document Objectives

The *Mediatrix C7 Series Hardware Installation Guide* provides technical information on how to physically install the Mediatrix C7 Series. It also describes the cabling required for the Mediatrix C7 Series device.

The information included in this guide consists of:

- ▶ Hardware descriptions of the Mediatrix C7 Series device
- ▶ Hardware installation instructions
- ▶ Installation scenarios examples
- ▶ LED indications
- ▶ Cabling and pin-out data



Note: There are many flavours of the Mediatrix C7 Series device. Because of this, some of the information provided may not apply to your particular Mediatrix C7 Series device model.

Please refer to the *Dgw v2.0 Software Configuration Guide* for software configuration information.

Use the *Mediatrix C7 Series Hardware Installation Guide* in conjunction with the appropriate publications listed in [“Related Documentation” on page viii](#).

Intended Audience

This guide is intended for the following audiences:

- ▶ Technical staff who are familiar with electronic circuitry, networking theory and have experience as an electronic technician.
- ▶ System administrators with a basic networking background and experience, but who might not be familiar with the Mediatrix C7 Series device.
- ▶ System administrators who are responsible for installing and configuring networking equipment and who are familiar with the Mediatrix C7 Series device.

Related Documentation

In addition to this manual, the Mediatrix C7 Series document set includes the following:

- ▶ *Dgw v2.0 Software Configuration Guide*
Describes how to configure and operate the Mediatrix C7 Series.
- ▶ *Mediatrix C7 Series Installation Guide*
This booklet allows you to quickly setup and work with the Mediatrix C7 Series. The booklet for your specific platform is available at: <http://www.media5corp.com/quickstart>
- ▶ *Configuration Reference Guide*
Lists all the parameters, tables, and commands available in the Mediatrix C7 Series.
- ▶ *Notification Reference Guide*
Lists and describes all syslog messages and notification messages that the Mediatrix C7 Series may send.
- ▶ *Third Party Software Copyright Information*
This document lists the third-party software modules used in the Mediatrix C7 Series along with any copyright and license information. This document is available at: http://www.media5corp.com/repository/common%20manuals/Third-Party_Software_Copyright_Information_Mediatrix.pdf.

Be sure to read any readme files, technical bulletins, or additional release notes for important information.

Document Structure

The Mediatrix C7 Series *Hardware Installation Guide* contains the following information.

Table 2: Mediatrix C7 Series Hardware Installation Guide Chapter/Appendices

Title	Summary
“Chapter 1 - Overview” on page 1	Provides a brief description of the Mediatrix C7 Series.
“Chapter 2 - Installation” on page 5	Contains instructions for installing the Mediatrix C7 Series and connecting the cables.
“Chapter 3 - Powering on the Mediatrix C7 Series” on page 13	Leads you through the basic steps to start the Mediatrix C7 Series.
“Appendix A - Standards Compliance and Safety Information” on page 21	Lists the various standards compliance of the Mediatrix C7 Series.
“Appendix B - Cabling Considerations” on page 29	Describes the pin-to-pin connections for cables used with the Mediatrix C7 Series.
“Appendix C - Standard Hardware Information” on page 87	Lists the technical hardware information of the Mediatrix C7 Series.

Document Conventions

The following information provides an explanation of the symbols that appear on the Mediatrix C7 Series and in the documentation for the product.

Warning Definition



Warning: Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

Where to find Translated Warning Definition

For safety and warning information, see [“Appendix A - Standards Compliance and Safety Information” on page 21.](#)

This Appendix describes the international agency compliance and safety information for the Mediatrix C7 Series. It also includes a translation of the safety warning listed in the previous section.

Other Conventions

The following are other conventions you will encounter in this manual.



Caution: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or damage to the equipment or property.



Note: Indicates important information about the current topic.

Standards Supported

Indicates which RFC, Draft or other standard document is supported for a specific feature.

SCN vs PSTN

In Media5' and other vendor's documentation, the terms SCN and PSTN are used. A SCN (Switched Circuit Network) is a general term to designate a communication network in which any user may be connected to any other user through the use of message, circuit, or packet switching and control devices. The Public Switched Telephone Network (PSTN) or a Private Branch eXchange (PBX) are examples of SCNs.

Standards Supported

When available, this document lists the standards onto which features are based. These standards may be RFCs (Request for Comments), Internet-Drafts, or other standards.

The Mediatrix C7 Series's implementations are **based** on the standards, so it's possible that some behaviour differs from the official standards.

For more information on and a list of RFCs and Internet-Drafts, refer to the IETF web site at <http://www.ietf.org>.

Obtaining Documentation

These sections explain how to obtain documentation from Media5.

Media5 Web Site

Media5 offers the latest version of its products' documentation on its web site. You will thus be able to access and download the most current Media5 documentation. Follow this link: <http://www.media5corp.com/en/documentation>.



Note: This site does not contain any firmware versions.

Media5 Download Portal

Media5 offers online documentation via a self register web-portal. You will thus be able to access and download the most current Media5 documentation. Follow this link to register: <http://www.media5corp.com/en/support-portal>.



Note: This site does not contain any firmware versions.

Documentation Feedback

Media5 welcomes your evaluation of this manual and any suggestions you may have. These help us to improve the quality and usefulness of our publications.

Please send your comments to:

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We appreciate your comments.

End User Technical Support

In order to maximize technical support resources, Media5 works through its partners to resolve technical support issues. All end users requiring technical support are encouraged to contact their vendor directly.

This chapter describes the Mediatrix C7 Series connectors and indicators.

Overview

Provider-specific profiles ensure that the Mediatrix C7 Series is a genuine plug and play solution. It offers a low total cost of ownership as it reduces installation and maintenance costs. Moreover, the Mediatrix C7 Series integrates features such as TLS, SRTP, and HTTPS designed to bring enhanced security for network management, SIP signalling and media transmission aspects.

The Mediatrix C7 Series is a standalone Internet telephony access device that connects to virtually any business telephone system supporting standard analog lines.

The Mediatrix C7 Series offers two Ethernet connectors switches enabling to establish two connections between conventional analog telephones or Group 3 fax machines and either a WAN, a LAN or a personal computer.

Key Features

- ▶ IP connectivity for analog phones and faxes
- ▶ Up to 8 simultaneous calls
- ▶ FXS interface ports
- ▶ FXO interface ports
- ▶ Two Fast-Ethernet ports
- ▶ HTTP, SNMP, FTP and TFTP for configuration and management
- ▶ True Plug-and-Play
- ▶ Automatic configuration script download
- ▶ Call Routing service
- ▶ Secure SIP signalling
- ▶ Secure Media transmission
- ▶ SNMPv3 and web management
- ▶ DHCP Client
- ▶ PPPoE Client
- ▶ T.38 support
- ▶ Command Line Interface (CLI)
- ▶ SSL/TLS Encryption

Mediatrix C7 Series Connectors and Indicators

This section provides an overview of the front and rear panels of the Mediatrix C7 Series.

The rear panel differs depending on the Mediatrix C7 Series model you have.

Product Serial Number Location

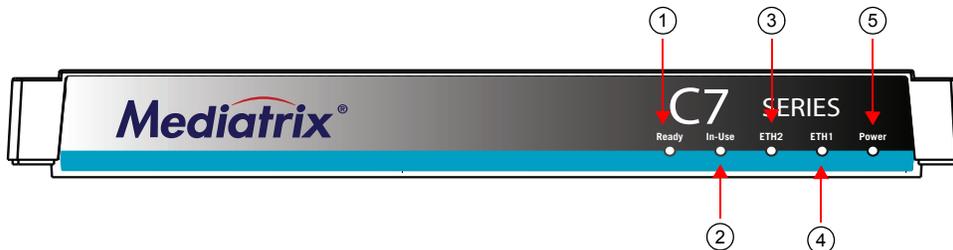
The serial number label for the Mediatrix C7 Series device is located on the bottom of the unit.

Front Indicators and Connectors

See “[Indicators \(LEDs\)](#)” on page 16 for a description of the LED patterns the Mediatrix C7 Series may have and the states they represent.

[Figure 1](#) shows the five visual indicators located on the front of the Mediatrix C7 Series.

Figure 1: Mediatrix C7 Series Front Panel Indicators



[Table 3](#) describes the LEDs on the front panel of the Mediatrix C7 Series.

Table 3: Mediatrix C7 Series Front LEDs

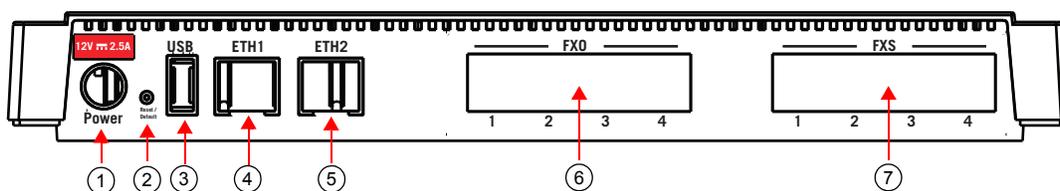
LED	Description
1. Ready	When lit, the Mediatrix C7 Series is ready to initiate or receive a call. The unit does not have to be registered to a server.
2. In-Use	When lit, at least one of the FXS/FXO lines is in use.
3. ETH2	Provides the state of the network connected to the <i>ETH2</i> connector.
4. ETH1	Provides the state of the network connected to the <i>ETH1</i> connector.
5. Power	When lit, power is applied to the Mediatrix C7 Series.

Rear Connectors

The Mediatrix C7 Series has several connections that must be properly set. [Figure 2](#) shows the rear panel of the Mediatrix C7 Series.

 **Note:** The FXS and FXO ports may differ location depending on the model you have.

Figure 2: Mediatrix C7 Series Rear Panel Connectors



[Table 4](#) describes the rear panel connections (from left to right).

Table 4: Rear Connections of the Mediatrix C7 Series

	Connection	Description
1.	Power connector	External 12 Vdc power supply. The Mediatrix C7 Series may use one of two power supply units: <ul style="list-style-type: none"> • a 2.5A power supply. This is required for units with 8 FXS ports and with the Long Loop version. In this case, a special label is affixed over the power connector. • a 1.5A power supply.
2.	Reset / Default switch	Resets configuration parameters of the Mediatrix C7 Series to default (known) values. It can be used to reconfigure the unit. Warning: Read Section “RESET/DEFAULT Button” on page 18 before attempting to reset the unit.
3.	USB connector	TBD
4.	ETH1	A 10/100 BaseT Ethernet RJ-45 connector for access to a LAN, WAN or computer. This port is by default used for uplink / WAN connection.
5.	ETH2	A 10/100 BaseT Ethernet RJ-45 connector for access to a LAN, WAN or computer. This port is by default used for LAN connection.
6.	FXO Port 1 - 4	4 x RJ-11 connectors offering SCN access for various VoIP endpoints such as IP phones, FXS devices, softphones and IP-based PBX and Key Systems.
7.	FXS Port 1 - 4	4 x RJ-11 connectors to attach a conventional telephone or G3 fax machine.

This chapter describes the installation of the Mediatrix C7 Series.

Planning the Installation

Before installing the Mediatrix C7 Series, you should complete the following tasks:

- ▶ Create a network diagram (see section [“Network Diagram” on page 6](#)).
- ▶ Gather IP-related information (see section [“IP-Related Information” on page 6](#) for more information).
- ▶ Install the hardware and software needed to configure the Mediatrix C7 Series (see section [“Network Information” on page 6](#)).

Installation Checklist

The installation checklist lists the tasks for installing the Mediatrix C7 Series. Print a copy of this checklist and mark the entries as you complete each task. Include the completed checklist in your site log.

Figure 3: Installation Checklist

Mediatrix C7 Series name/serial number

Task	Verified By	Date
Network information available & recorded in site log		
Environmental specifications verified		
Site power voltages verified		
Installation site pre-power check completed		
Required tools available		
Additional equipment available		
Mediatrix C7 Series received		
Quick start guide received		
Regulatory compliance and safety information received		
Warranty card received		
Software version verified		
Rack, desktop mounting of chassis completed		
Initial electrical connections established		
ASCII terminal attached to console port		
Cable length limits verified		
Initial configuration performed		
Initial operation verified		

Site Log

Media5 recommends that you maintain a site log to record all actions relevant to the Mediatrix C7 Series, such as:

- ▶ Installation: Print a copy of the installation checklist and insert it into the site log.
- ▶ Upgrades and maintenance: Use the site log to record ongoing maintenance and expansion history. Update the site log to reflect the following:
 - Configuration changes
 - Maintenance schedules, requirements, and procedures performed
 - Comments, notes, and problems
 - Software changes and updates to firmware

Network Information

When planning the installation of the Mediatrix C7 Series, you should consider the following network information.

Network Diagram

It is always good practice to draw a network overview diagram that displays all neighbouring IP nodes, serial connected elements, and other components. It is recommended that you keep a copy in the site log (see [“Site Log” on page 6](#) for more information on keeping a site log).

IP-Related Information

Before you can install the Mediatrix C7 Series, you need to have the following information:

- ▶ IP addresses used for Ethernet LAN and WAN connectors
- ▶ Subnet mask used for Ethernet LAN and WAN connectors
- ▶ IP addresses of the central SIP server
- ▶ IP addresses of the central server used for configuration upload and download

Power Source

If you suspect that your AC power is not reliable, for example if room lights flicker often or there is machinery with large motors nearby, have a qualified professional test the power. Install a power conditioner if necessary.

Safety Recommendations

The following are safety recommendations and best practices to follow when working with the Mediatrix C7 Series.

Maintaining Safety with Electricity



Warning: Do not work on the Mediatrix C7 Series, connect or disconnect cables during periods of lightning activity.



Warning: Disconnect all interface cables (FXO and FXS) as well as all power before servicing the Mediatrix C7 Series.



Warning: Hazardous network voltages might be present in WAN, LAN, and telephone networks connectors regardless of whether power to the device is OFF or ON. Use caution when working near these connectors to avoid electric shock. When detaching cables, detach the end away from the Mediatrix C7 Series first.

General Safety Practices

Follow these guidelines to ensure personal safety and protect the equipment:

- ▶ Keep the Mediatrix C7 Series clear and dust-free during and after installation.
- ▶ Locate the emergency power-off switch for the room in which you are working. Then, if an electrical accident occurs, you can act quickly to turn off the power.
- ▶ Disconnect all power before installing the Mediatrix C7 Series.
- ▶ Do not work alone if potentially hazardous conditions exist.
- ▶ Never assume that power is disconnected from a circuit. Always check.
- ▶ Do not perform any action that creates a potential hazard to people or makes equipment unsafe.



Warning: This equipment must be installed and maintained by service personnel. Incorrectly connecting this equipment to a general-purpose outlet could be hazardous. The telecommunications lines must be disconnected before unplugging the main power connector.

Preventing Electrostatic Discharge Damage

Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to earth ground to channel unwanted ESD voltages to ground safely.

Required Mounting Tools and Equipment

You will need the following tools and parts to properly install the Mediatrix C7 Series:

- ▶ ESD-preventive wrist strap.

In addition, you might need the following external equipment:

- ▶ Modem for remote access.
- ▶ RJ-45 cables for the WAN and LAN connections.

Unpacking and Inspection

If you haven't already done so, unpack the Mediatrix C7 Series device. Carefully remove it from the package and packing material. The Mediatrix C7 Series package contains the following items:

- ▶ 1 x Mediatrix C7 Series unit
- ▶ 1 x power supply for the country in which you are using the Mediatrix C7 Series
- ▶ 1 x Bumpon™ kit for desktop use
- ▶ 1 x Printed Flyer

You may also need additional 10/100 BaseT Ethernet RJ-45 cables.

Location and Mounting Requirements



Warning: The analog lines of the Mediatrix C7 Series are not intended for connection to a telecommunication network that uses outside cable. This applies to models with standard FXS (not long loop) connectors.



Warning: To prevent fire or shock hazard do not expose the unit to rain or moisture.

The Mediatrix C7 Series is suited for use in an office environment where it can be wall-mounted or free standing.

Location

Install the Mediatrix C7 Series in a well-ventilated location where it will not be exposed to high temperature or humidity. Do not install the Mediatrix C7 Series in a location exposed to direct sunlight or near stoves or radiators. Excessive heat could damage the internal components.

When deciding where to position the Mediatrix C7 Series, ensure that:

- ▶ The Mediatrix C7 Series is accessible for future upgrade, maintenance and troubleshooting, and cables can be easily connected.
- ▶ The cabling is away from the following:
 - Sources of electrical noise such as radios, transmitters, and broadband amplifiers.
 - Power lines and fluorescent lighting fixtures.
 - Water or moisture that could enter the casing of the Mediatrix C7 Series.
- ▶ The airflow is not restricted around the Mediatrix C7 Series or through the vents of the unit. The unit requires a minimum of 25 mm (1 in.) clearance.
- ▶ The operating temperature is between 0°C and 40°C.
- ▶ The humidity is not over 85% and is non-condensing.

Wiring Requirements

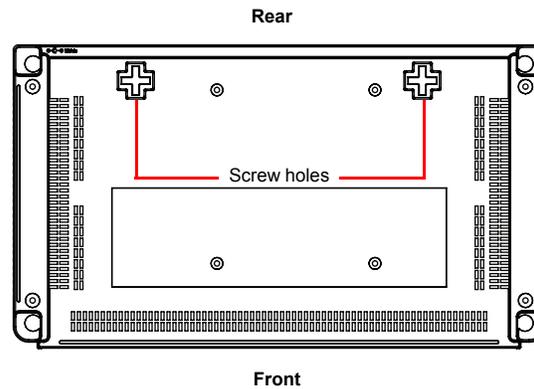
Make sure that the telephone wiring, LAN and WAN cables reach the device and can be dressed in a manner that is safe for the wiring, does not pull or create lateral stress on the connectors on the device, and does not present a trip hazard to personnel working in the vicinity of the equipment. Do not connect any cable or wiring at this time.

Wall-Mounting

► To wall-mount the Mediatrix C7 Series:

1. Disconnect all of the cables from the Mediatrix C7 Series before mounting.
2. Ensure that the wall you are using is smooth, flat, dry and sturdy. Attach a piece of plywood, approximately 250 mm x 200 mm x 12 mm (10 inches x 8 inches x 0.5 inches) securely to the wall, if necessary.
3. If not already done so, apply the Bumpon™ autoadhesive protective products to the bottom of the Mediatrix C7 Series. These will improve airflow under the unit.
4. Position the Mediatrix C7 Series against the wall (or plywood) as illustrated in [Figure 4](#).

Figure 4: Bottom View - Wall Mounting Screw Holes



You can position the Mediatrix C7 Series any way you want.

5. Mark the position of the screw holes on the wall. Drill the two holes and install two screws.
6. Place the screw holes of the Mediatrix C7 Series over the screws installed in the previous step.
7. Proceed to [“Hardware Installation” on page 11](#).

Free Standing Unit

When installing the Mediatrix C7 Series on a desk or table, it should be located at least 20 cm from your monitor, computer casing or other peripherals, including speakers. Never put books or paper on the Mediatrix C7 Series.

You must also apply the Bumpon™ autoadhesive protective products to the bottom of the Mediatrix C7 Series. These will stabilize the Mediatrix C7 Series and offer skidding resistance. They will also improve airflow under the unit.

Condensation

When bringing the unit into a warm environment from the cold, condensation may result that might be harmful to the unit. If this occurs, allow the unit to acclimatize for an hour before powering it on.

Cleaning

To clean the Mediatrix C7 Series, wipe with a soft dry cloth. Do not use volatile liquids such as benzene and thinner that are harmful to the unit casing.

For resistant markings, wet a cloth with a mild detergent, wring well and then wipe off. Use a dry cloth to dry the surface.

Hardware Installation

This section describes how to set the connectors of the Mediatrix C7 Series.



Caution: The Mediatrix C7 Series must be installed on a circuit equipped with a breaker so that you can easily power the unit off if required.



Warning: To avoid electrical shock, apply the following instructions:

- The device must be installed by technical personnel.
- Be sure the ground path is connected.
- Disconnect the FXO (SCN) and FXS Long Loop (if applicable) interface connectors before disconnecting the power cord from the device.

See "[Appendix B - Cabling Considerations](#)" on page 29 for more details on the cables the Mediatrix C7 Series uses.

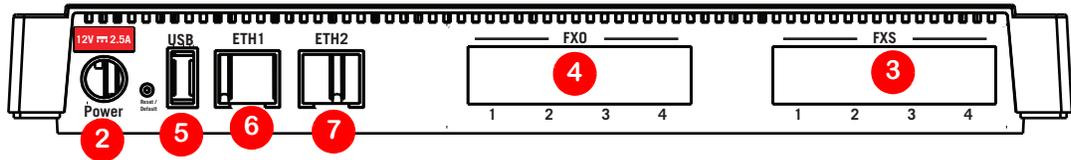
Connecting Cables

The following describes how to connect the various cables to the Mediatrix C7 Series.



Note: The FXS and FXO ports may differ location depending on the model you have.

Figure 5: Mediatrix C7 Series Hardware Installation



► To install the cables:

1. Before you begin, be sure that the Mediatrix C7 Series is powered off.
2. Connect the power adaptor to the Mediatrix C7 Series. Connect the other end to an electrical earthed socket-outlet.
3. **Models with FXS ports:** Connect analog telephones or fax machines into Ports 1, 2, 3, and 4. Use a standard telecommunication cord with a minimum of 26 AWG wire size.



Note: The Mediatrix C7 Series telephone line interface has been designed to interface with a conventional telephone or fax machine. Connections to FXS ports of third party devices such as a PBX / Key System could damage the Mediatrix C7 Series.

4. **Models with FXO ports:** Connect a SCN line into FXO Ports 1, 2, 3, and 4. Use a standard telecommunication cord with a minimum of 26 AWG wire size.
5. USB: TBD
6. Connect a 10/100 BaseT Ethernet RJ-45 cable into the *ETH1* connector of the Mediatrix C7 Series; connect the other end to a compatible Ethernet interface that supplies TCP/IP network access (e.g., router, switch, hub or computer).
Use a standard telecommunication cord with a minimum of 26 AWG wire size.
7. Connect a 10/100 BaseT Ethernet RJ-45 cable into the *ETH2* connector of the Mediatrix C7 Series and connect the other end to the network card of a computer.

Use a standard telecommunication cord with a minimum of 26 AWG wire size. You can either use a crossover or straight Ethernet cable because it performs automatic MDI / MDIX detection. See ["RJ-45 Cable" on page 29](#) for more details.

You are now ready to start the Mediatrix C7 Series.

Powering on the Mediatrix C7 Series

This chapter describes the initial provisioning of the Mediatrix C7 Series.

IP Address Discovery or Configuration

This section describes how to contact the Mediatrix C7 Series's management interface to start with unit configuration.

Note that the Mediatrix C7 Series IPv6 interface is disabled by default.

Dynamic IPv4 Address Discovery

The default configuration is set so that the unit can be directly plugged into a network and provisioned with a DHCP server. Media5 strongly recommends to set your DHCP server before installing the unit on the network. This way, you know the IP address associated with a particular unit.



Caution: If you set a Mediatrix C7 Series with a static *eth1-4* IPv4 address in a subnet (for instance, 192.168.200.1) and the *eth5* interface receives a dynamic IP address in the same subnet (via a DHCP server or PPP peer), you will not be able to contact the unit via the WAN. You must be careful that a dynamic IP address does not overlap a static IP subnet that is already configured. Note that the current default value of the Mediatrix C7 Series is 192.168.0.10.

See the *Software Configuration Guide* for more details on how to set an external DHCP server.



Caution: If you are experiencing problems, or if you do not want to use a DHCP server and use a static IP address instead, perform a Partial Reset procedure, as explained in ["Partial Reset" on page 19](#).

DHCP servers generally allocate a range of IP addresses for use on a network and reserve IP addresses for specific devices using a unique identifier for each device. The Mediatrix C7 Series unique identifier is its media access control (MAC) address. You can locate the MAC address as follows:

- ▶ It is printed on the label located on the bottom side of the unit.
- ▶ It is stored in the *System Information* page of the web interface.

P address, you can discover which IP address has been assigned to the Mediatrix C7 Series by either:

- ▶ taking one of the telephones connected to the Mediatrix C7 Series and dialing ***#*0** on the keypad. The current IP address of the Mediatrix C7 Series (static or DHCP) will be stated.
- ▶ consulting your DHCP server's logs to find out details on the DHCP lease that was given to the Mediatrix C7 Series.
- ▶ using a network packet sniffer (e.g., Wireshark) to examine the DHCP messages exchanged between the Mediatrix C7 Series and your DHCP server while the Mediatrix C7 Series boots up.

8. The Mediatix C7 Series should be already running. If not, power it on by connecting the other end of the power adaptor to an electrical earthed socket-outlet. The electrical outlet must be installed near the Mediatix C7 Series so that it is easily accessible.



Note: If the *Power* LED is always blinking and never turns on, this means that the Mediatix C7 Series cannot find either an IPv4 DHCP server or an IPv6 address automatically. Check that you have a DHCP server properly configured on your network. If you do not have a DHCP server, go to the section [“Default Static IPv4 Address Configuration” on page 14.](#)

You can now access the Mediatix C7 Series web interface. Refer to the *Software Configuration Guide* for more details.

Initial Provisioning Sequence

When starting the Mediatix C7 Series for the first time, it needs to be configured before it can support calls. This process is known as *provisioning*. This sequence assumes that you have installed the Mediatix C7 Series hardware as per [“Hardware Installation” on page 11.](#)

The Mediatix C7 Series requests its configuration only on the first restart. You can change the configuration at will after the initial provisioning and the provisioning system can refresh the Mediatix C7 Series configuration.

► Initial provisioning sequence:

1. When the Mediatix C7 Series starts, it broadcasts a message requesting DHCP services (if the unit is configured to start in DHCP mode).
2. The DHCP server responds with a set of IP addresses and network parameters, one of which is the Mediatix C7 Series IP address.

The following are some of the network parameters assigned via DHCP:

- Mediatix C7 Series IP address
- Subnet Mask
- Default Router IP address
- DNS IP addresses
- Configuration script server IP address and port number (optional)
- SIP Servers IP address and port number

3. The Mediatix C7 Series request its configuration by using a configuration file.

Default Static IPv4 Address Configuration

If there is no DHCP server in your network, then the IP address has to be configured statically.

► To start the Mediatix C7 Series with a static IP address:

1. With a 10/100 Hub and two 10/100 BaseT Ethernet RJ-45 straight cables, connect both cables to the Hub; one of them is connected into the **ETH1** connector. The other cable links the computer to the Hub.
2. Reconfigure the IP address of your computer to **192.168.0.11** and the Subnet Mask to **255.255.255.0**. Restart the computer.
3. The Mediatix C7 Series should be already running. If not, power it on by connecting the other end of the power adaptor to an electrical earthed sockt-outlet. The electrical outlet must be installed near the Mediatix C7 Series so that it is easily accessible.
4. Insert a small, unbent paper clip into the **Reset / Default** hole located at the rear of the Mediatix C7 Series.

The *Power* LED will start blinking, and after a few seconds, all the LEDS will start blinking. Release the paper clip after all the LEDs start blinking and before they all stop blinking (between 7-11 seconds).

This procedure is called a partial reset. After a partial reset is performed, the Mediatrix C7 Series uses the default IP address 192.168.0.1/24. Refer to [“Partial Reset” on page 19](#) for details on the partial reset procedure.

The corresponding link-local IPv6 address is also available and printed on the sticker under the Mediatrix C7 Series.

You can now access the Mediatrix C7 Series web interface. Refer to the *Software Configuration Guide* for more details.

IPv6 Link Local Address Configuration

If there is no DHCPv6 server or IPv6 router in your network, you can use the link local address to contact the unit. Note that the Mediatrix C7 Series IPv6 interface is disabled by default.

1. With a 10/100 Hub and two 10/100 BaseT Ethernet RJ-45 straight cables, connect both cables to the Hub; one of them is connected into the **ETH1** connector. The other cable links the computer to the Hub.
2. The Mediatrix C7 Series should be already running. If not, power it on by connecting the other end of the power adaptor to an electrical earthed socket-outlet. The electrical outlet must be installed near the Mediatrix C7 Series so that it is easily accessible.
3. Insert a small, unbent paper clip into the **Reset / Default** hole located at the rear of the Mediatrix C7 Series.

The *Power* LED will start blinking, and after a few seconds, all the LEDs will start blinking. Release the paper clip after all the LEDs start blinking and before they all stop blinking (between 7-11 seconds).

This procedure is called a partial reset. After a partial reset is performed, the Mediatrix C7 Series enables its link local IPv6 address. Refer to [“Partial Reset” on page 19](#) for details on the partial reset procedure.

The corresponding link-local IPv6 address is also available and printed on the sticker under the Mediatrix C7 Series.

4. Proceed with accessing the Mediatrix C7 Series’s web interface by using the unit’s link local address.

The unit’s link local address is printed on a sticker under the unit.

The link local address can be determined by using the following pattern: [fe80::290:f8ff:feXX:XXXX] where XXXXXX are the last 6 digits of the unit’s MAC address. Example: The link local address for the Mediatrix C7 Series with MAC address 00:90:F8:12:34:56 would be **[fe80::290:f8ff:fe12:3456]**.



Note: On Windows, a scope ID needs to be added to the link local address ([fe80::290:f8ff:fe12:3456%11]). You can find this number by executing the ‘ipconfig’ command in a command prompt. Note the number at the end of the IPv6 default Gateway for the interface used to contact the unit.

On Linux, the scope identifier may be the link name or the interface number. The interface number can be determined through the Linux command line.

Vocal Unit Information

When entering special characters on your telephone pad, the Mediatrix C7 Series talks back to you with relevant information. This is available only for units with FXS interfaces.

► To access vocal unit information:

1. Take one of the telephones connected to the Mediatrix C7 Series.
2. Dial one of the digits sequence on the keypad.

Table 5: Vocal Unit Information

Digits to Dial	Information Vocally Sent by the Mediatrix C7 Series
*#*0	Current IP address of the Mediatrix C7 Series (static or DHCP).

Table 5: Vocal Unit Information (Continued)

Digits to Dial	Information Vocally Sent by the Mediatrix C7 Series
*#*1	MAC address of the Mediatrix C7 Series.

Verifying the Installation

There are a few ways to verify that the Mediatrix C7 Series is properly connected to the IP network and is working:

- ▶ By contacting it with a SNMP browser
- ▶ By contacting it via the CLI
- ▶ By contacting it via a web browser
- ▶ By pinging it

These procedures assume that you know the IP address of the Mediatrix C7 Series you want to verify. If the Mediatrix C7 Series does not respond, do the following:

- ▶ Verify that the LAN and WAN cables are securely connected to the Mediatrix C7 Series and to the network connectors.
- ▶ Be sure that you did not connect crossover network cables.
- ▶ Verify the state of the IP network to ensure it is not down (the *ETH1* or *ETH2* LED should be ON or blinking).

Indicators (LEDs)

The indicators (LEDs) of the Mediatrix C7 Series are described in [“Mediatrix C7 Series Connectors and Indicators” on page 1](#).

LED Patterns – Specific Conditions

[Table 6](#) describes the different states a Mediatrix unit can have and their associated LED patterns.

Table 6: LED Patterns

Condition	Description	LED Pattern
RestartPending	Triggered when the <i>RESET/DEFAULT</i> button is pressed in the <i>ResetPending</i> state. The unit prepares for a physical shutdown and restart.	<p><i>Power</i> LED:</p> <ul style="list-style-type: none"> • blinking, 1Hz, 50% duty <p>All other LEDs:</p> <ul style="list-style-type: none"> • OFF
RecoveryPending	Triggered when the <i>RESET/DEFAULT</i> button is pressed at start-time or for at least 7 seconds.	<p>All LEDs:</p> <ul style="list-style-type: none"> • blinking, 1Hz, 50% duty
DefaultSettingsPending	<p>Triggered when the <i>RESET/DEFAULT</i> button is not released while in <i>ResetPending</i> state.</p> <p>At run time, if the <i>RESET/DEFAULT</i> button is released within 5 seconds, the unit applies default settings, otherwise the action is cancelled and the unit goes back to the operation mode state or it resets.</p> <p>At start time, the unit stays in this state until the <i>RESET/DEFAULT</i> button is released. The unit then applies the default settings and restarts.</p>	<p>All LEDs:</p> <ul style="list-style-type: none"> • steady ON

Table 6: LED Patterns (Continued)

Condition	Description	LED Pattern
UpdateInProgress	A firmware pack is downloaded into the unit and written to persistent storage.	All LEDs: <ul style="list-style-type: none"> cycling from left to right, individually blinking 1Hz, 33% duty
UpdateFailed	Triggered after a failure of a firmware pack download operation. After 4 seconds, the unit restarts.	All LEDs: <ul style="list-style-type: none"> blinking at 3Hz, 50% duty. One LED out of two has a 180 degree phase. This pattern lasts for 8 seconds.
Rescue Network Enabled	Triggered after the user has performed a partial reset procedure.	Power and Ready LEDs: <ul style="list-style-type: none"> blinking (synchronized) 1Hz, 75% duty
BootOnRecoveryBank	Triggered when the unit is booting on the recovery bank and no update is pending.	Power LED: <ul style="list-style-type: none"> blinking, 0.25Hz, 75% duty
Automatic network configuration in progress	Waiting for DHCP (IPv4 or IPv6) answer or IPv6 router advertisement or PPPoE connection.	All LEDs: <ul style="list-style-type: none"> Blinking green, 3Hz, 50% duty
No network address set	Triggered when the unit cannot be contacted because DHCP failed, PPP failed, and no static interface is configured.	Power LED: <ul style="list-style-type: none"> blinking, 3 Hz, 50% duty.
NetworkRescue	The unit tries to download and install a firmware given by the Network Rescue server.	Ready LED: <ul style="list-style-type: none"> Off All other LEDs: <ul style="list-style-type: none"> blinking to show a LED displacing light from left to right and right to left.

LED Patterns – Default Behaviour

When no specific condition matches those described in [Table 6](#), the LEDs behave individually according to the following rules:

Table 7: Default LED Behaviour

LED Type	Condition	Behaviour
Power	RestartInProgress	Blinking, 1 Hz, 50% duty
	RestartCompleted	Steady ON
ETH	Network traffic	Blinking, variable rate
	No network traffic	Steady ON
ETH2	Network traffic	Blinking, variable rate
	No network traffic	Steady ON

Table 7: Default LED Behaviour (Continued)

LED Type	Condition	Behaviour
In Use	Lines Idle and Unlocked	Steady OFF
	Lines InUse and Unlocked	Steady ON
	Shutting Down	Steady yellow
	Locked	Blinking yellow, 1 Hz, 50% duty
Ready	All lines are enabled (operational state).	Steady ON
	All lines are disabled (operational state).	Steady OFF
	At least one line is enabled and at least one line is disabled (operational state).	Blink 0.25 Hz 75%

RESET/DEFAULT Button

The *RESET/DEFAULT* button allows you to:

- ▶ Cancel an action that was started.
- ▶ Revert to known factory settings if the Mediatrix C7 Series refuses to work properly for any reason or the connection to the network is lost.
- ▶ Reconfigure a unit.

At Run-Time

The *RESET/DEFAULT* button can be used at run-time – you can press the button while the Mediatrix C7 Series is running without powering the unit off. [Table 8](#) describes the actions you can perform in this case.

Table 8: RESET/DEFAULT Button Interaction

RESET/DEFAULT Button Pressed for:	Action	Comments	LEDs Pattern
2 to 6 seconds	Restarts the Mediatrix C7 Series	No changes are made to the Mediatrix C7 Series settings.	<i>Power LED:</i> <ul style="list-style-type: none"> • blinking, 1Hz, 50% duty <i>All other LEDs:</i> <ul style="list-style-type: none"> • OFF
7 to 11 seconds	Sets the Mediatrix C7 Series in Partial Reset Mode	Sets some of the Mediatrix C7 Series configuration to pre-determined values.	<i>All LEDs</i> <ul style="list-style-type: none"> • blinking, 1Hz, 50% duty
12 to 16 seconds	Restarts the Mediatrix C7 Series in Factory Reset	Deletes the persistent configuration, creates a new configuration file with the default factory values, and then restarts the unit.	<i>All LEDs</i> <ul style="list-style-type: none"> • steady ON
17 seconds and more	No action is taken	The RESET/DEFAULT Button Pressed event is ignored	N/A

At Start-Time

You can use the *RESET/DEFAULT* button at start-time – you power the unit off, and then depress the button until the LEDs stop blinking and remain ON. This applies the “Factory Reset” procedure (see [“Factory Reset” on page 19](#)). This feature reverts the Mediatrix C7 Series back to its default factory settings.

Partial Reset

The Partial reset provides a way to contact the Mediatrix C7 Series in a known and static state while keeping most of the configuration unchanged.

Following a partial reset, the Mediatrix C7 Series management interface is set to the *Rescue* interface. The default address for this interface is 192.168.0.1/24 and has its corresponding link-local IPv6 available and printed on the sticker under the Mediatrix C7 Series. Any existing network interface that conflicts with the Rescue interface address is disabled.

You can contact the Mediatrix C7 Series at this address to access its configuration parameters. It is not advised to access the unit on a regular basis through the *Rescue* network interface. You should reconfigure the unit’s network interfaces as soon as possible in order to access it through another interface. See [“After a Partial Reset” on page 19](#) for more details.

In a partial reset, the following services and parameters are also affected:

- ▶ AAA service: User(s) from profile are restored with their factory password.
- ▶ SNMP service: Resets the *enableSnmpV1*, *enableSnmpV2*, *enableSnmpV3* and *snmpPort* values to their default values.
- ▶ WEB service: Resets the *serverPort* to its default value.

▶ To trigger the Partial Reset:

1. Insert a small, unbent paper clip into the *RESET/DEFAULT* hole located at the rear of the Mediatrix C7 Series. While pressing the *RESET/DEFAULT* button, restart the unit.
Do not depress before all the LEDs start blinking (between 7-11 seconds).
2. Release the paper clip.

After a Partial Reset

Following a partial reset, you should:

1. Create or activate network interfaces as described in the *Software Configuration Guide*, Chapter *Interface Parameters*, Section *Interfaces Configuration*. Do not disable the *Rescue* interface!
2. Change the Mediatrix C7 Series system management network interface to something other than *Rescue* as described in the *Software Configuration Guide*, Chapter *Miscellaneous – Management Interface*, Section *Management Interface Configuration*.

Note that you must be able to contact the interface you select in order to continue with the following steps.

3. Contact the Mediatrix C7 Series through the new system management network interface.
4. Disable the *Rescue* network interface as described in the *Software Configuration Guide*, Chapter *Interface Parameters*, Section *Interfaces Configuration*.

Factory Reset

The Factory reset reverts the Mediatrix C7 Series back to its default factory settings. It deletes the persistent MIB values of the unit, including:

- ▶ The firmware pack download configuration files.
- ▶ The SNMP configuration, including the SNMPv3 passwords and users.
- ▶ The PPPoE configuration, including the PPP user names and passwords.

The Factory reset creates a new configuration file with the default factory values. It should be performed with the Mediatrix C7 Series connected to a network with access to a DHCP server. If the unit cannot find a DHCP server, it sends requests indefinitely.

► **To trigger the Factory Reset:**

1. Power the Mediatrix C7 Series off.
2. Insert a small, unbent paper clip into the **Reset / Default** hole located at the rear of the Mediatrix C7 Series. While pressing the *Reset / Default* button, restart the unit.
Do not depress before the LEDs stop blinking and are steadily ON.
3. Release the paper clip.
The Mediatrix C7 Series restarts.
This procedure resets all variables in the MIB modules to their default value.
When the Mediatrix C7 Series has finished its provisioning sequence, it is ready to be used with a DHCP-provided IP address and MIB parameters.
This procedure can also be performed at run-time.



Note: The Factory reset alters any persistent configuration data of the Mediatrix C7 Series.

Management Choices

Congratulations for properly installing the Mediatrix C7 Series. You can now configure the software parameters of the unit.

The Mediatrix C7 Series offers various management options. All these options are described in the *Dgw v2.0 Software Configuration Guide*.

Table 9: Management Options

Management Choice	Features
Web GUI	The Mediatrix C7 Series web interface allows you to configure the following information: <ul style="list-style-type: none"> • Network attributes • SIP parameters • VoIP settings • Management settings such as configuration scripts, restore / backup, etc.
SNMPv1/2/3	The Mediatrix C7 Series SNMP feature allows you to configure all the MIB services.
Command Line Interface (CLI)	The Mediatrix C7 Series CLI feature allows you to configure all the MIB services.
Unit Manager Network	The UMN offers the following: <ul style="list-style-type: none"> • Auto-discovery • Group provisioning • SNMP access and remote management.

Standards Compliance and Safety Information

This Appendix lists the various standards compliance of the Mediatrix C7 Series.

Standards Supported

The Mediatrix C7 Series complies to the following standards:

Table 10: Standards Compliance

Category	Specification
Agency approvals	<ul style="list-style-type: none"> European Union, CE mark (Declaration of Conformity)
Safety standards	<ul style="list-style-type: none"> UL60950-1: 2nd Edition, 2007-03-27 CAN/CSA-C22.2 No. 60950-1- 07 2nd Edition, 2007 IEC 60950-1: 2005, 2nd Edition with all national deviations
Emissions	<ul style="list-style-type: none"> EN61000-3-2 (1995) Harmonic current emissions EN61000-3-3 (1995) Voltage fluctuations and flicker (with amendment A1)
Immunity	EN55024:1998 with amendments A1 (2001) and A2 (2003) including the following: <ul style="list-style-type: none"> EN61000-4-2 (1995), ESD EN61000-4-3 (1996), Radiated RF EN61000-4-4 (1995), Burst Transients EN61000-4-5 (1995), Surge EN61000-4-6 (1996), Conducted RF EN61000-4-11 (1995), Voltage Dips and Interruptions



Note: The standards compliance of the Mediatrix C7 Series are printed on a sticker located on the bottom of the unit.

Disclaimers

The following are the disclaimers related to the Mediatrix C7 Series.

CE Marking



DECLARATION OF CONFORMITY

We Media5 Corporation, located at 4229 Garlock st. Sherbrooke, Québec, Canada J1L 2C8 declare that for the hereinafter mentioned product the presumption of conformity with the applicable essential requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT (RTTE DIRECTIVE) is given.

Any unauthorized modification of the product voids this declaration.

For a copy of the original signed Declaration Of Conformity please contact Media5 at the above address.

RoHS Declaration Of Compliance



The Mediatrix C7 Series is in compliance with the Council Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

RoHS China

这个文件涉及的是在中华人民共和国境内进口或销售的电子信息产品
**Include this document with all Electronic Information Products
 imported or sold in the People's Republic of China**

部件名称 (Parts)	有毒有害物质或元素 (Hazardous Substance)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr ⁶⁺)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
塑料和聚合物部件 (Plastic and Polymeric parts)	○	○	○	○	×	×
集成电路 (Integrated Circuit)	×	○	×	○	×	×

○： 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T-11363 - 2006规定的限量要求以下。
 Indicates that the concentration of the hazardous substance in all homogeneous materials in the parts is below the relevant threshold of the SJ/T-11363 - 2006 standard.

×： 表示该有毒有害物质至少在该部件的某一均质材料中的含量可能超出SJ/T-11363 - 2006规定的限量要求。
 Indicates that the concentration of the hazardous substance of at least one of all homogeneous materials in the parts might exceed the relevant threshold of the SJ/T-11363 - 2006 standard.

除非另外特别的标注,此标志为针对所涉及产品的环保使用期限标志. 某些可更换的零部件会有一个不同的环保使用期限(例如,电池单元模块)贴在其产品上.

此环保使用期限只适用于产品是在产品手册中所规定的条件下工作.

The Environmentally Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked. Certain field-replaceable parts have a different EFUP (for example, battery modules) and so are marked to reflect such. The Environmentally Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.



Altitude of Operation

仅适用于海拔2000m以下地区安全使用“或类似的警告语句



Translated from Chinese as "Used only at altitudes not more than 2000m above sea level" or similar.

Translated Warning Definition

The following information provides an explanation of the symbols which appear on the Mediatrix C7 Series and in the documentation for the product.



Warning: Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and familiar with standard practices for preventing accidents.

Waarschuwing: Dit waarschuwingssymbool betekent gevaar. U overtreedt in een situatie die lichamelijke letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen.

Varoitus: Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista.

Attention: Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents.

Warnung: Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewusst.

Avvertenza: Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti.

Advarsel: Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker.

Aviso: Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes.

¡Advertencia! Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes.

Warning!: Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador.

Safety Warnings

This section lists the following safety warnings:

- ▶ Circuit Breaker (15A) Warning
- ▶ TN Power Warning
- ▶ Product Disposal Warning
- ▶ No. 26 AWG Warning
- ▶ ETH2, ETH1, and FXS Connectors
- ▶ Socket Outlet Warning

Circuit Breaker (15A) Warning



Warning: This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).

TN Power Warning



Warning: The device is designed to work with TN power systems.

Product Disposal Warning



Warning: Ultimate disposal of this product should be handled according to all national laws and regulations.

No. 26 AWG Warning



Warning: To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

ETH2, ETH1, and FXS Connectors Warning



Warning: Do not connect the *ETH2*, *ETH1*, and *FXS* connectors directly to the Public Switched Telephone Network (PSTN), to an off premise application, an out of plant application, any exposed plant application, or to any equipment other than the intended application, connection may result in a safety hazard, and/or defective operation and/or equipment damage.

Exposed plant means where any portion of the circuit is subject to accidental contact with electric lighting or power conductors operating at a voltage exceeding 300V between conductors or is subject to lightning strikes.

Socket Outlet Warning



Warning: The socket outlet, if used, shall be located near the equipment and shall be easily accessible by the user. The AC adaptor inlet is considered as disconnection device. The device must be readily operational.

Safety Recommendations

To insure general safety follow these guidelines:

- ▶ Do not open or disassemble this product.
- ▶ Do not get this product wet or pour liquids into it.
- ▶ Do not perform any action that creates a potential hazard to people or makes the equipment

unsafe.



Caution: When using this equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.

Cabling Considerations

This Appendix describes the pin-to-pin connections for cables used with the Mediatrix C7 Series.



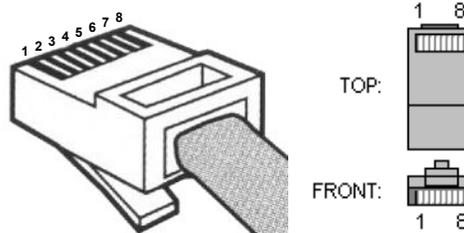
Warning: To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

RJ-45 Cable

The RJ-45 connector is commonly used for network cabling and for telephony applications. It is used to wire both ends identically so the signals pass straight through.

RJ-45 cabling is also known as Twisted-pair Ethernet (TPE), Unshielded twisted pair (UTP) and 10/100 Base-T.

Figure 6: RJ-45 Cable



When connecting an Ethernet cable to the Mediatrix C7 Series, use a standard telecommunication cord with a minimum of 26 AWG wire size. It is possible to use either a crossover or straight Ethernet cable to connect in the Ethernet connectors. These connectors perform automatic MDI / MDIX detection, meaning that they adapt to the type of cable connected to them.

The auto MDI / MDIX feature works only when the connectors are configured in auto detect mode, which is the default mode.

Whenever you force the Mediatrix C7 Series to use a specific Ethernet mode (for example 100 Mb Full Duplex), the type of cable to use depends on the other peer. For example, a straight cable is required to connect the Mediatrix C7 Series to a hub or a switch, while a crossover cable is required to connect the Mediatrix C7 Series to a PC.

Straight Through Cable

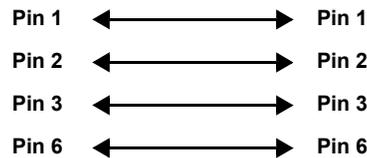
A RJ-45 straight through cable is used to connect a computer to a network device. For instance, you must use straight through cables to connect a computer to a network hub, switch, and router.

Table 11: RJ-45 Pinout Information

Pin #	Function	Colour Coding	
		EIA/TIA 568A	EIA/TIA 568B AT&T 258A
1	Transmit +	White with green stripe	White with orange stripe
2	Transmit -	Green with white stripe or solid green	Orange with white stripe or solid orange
3	Receive +	White with orange stripe	White with green stripe
4	N/A	Blue with white stripe or solid blue	Blue with white stripe or solid blue
5	N/A	White with blue stripe	White with blue stripe
6	Receive -	Orange with white stripe or solid orange	Green with white stripe or solid green
7	N/A	White with brown stripe or solid brown	White with brown stripe or solid brown
8	N/A	Brown with white stripe or solid brown	Brown with white stripe or solid brown

The RJ-45 cable uses two pairs of wires: one pair for transmission and the second pair for reception. It is wired so that pins 1 & 2 are on one twisted pair and pins 3 & 6 are on a second pair according to common wiring standards which meet the EIA/TIA T568A and T568B requirements.

Figure 7: Straight Through Connectivity



Pin Name and Function

The following is the function of each pin in a RJ-45 cable.

Table 12: Pin Name and Function

Pin #	Name	Function
1	Transmit Data Plus	Positive signal for the TD differential pair. This signal contains the serial output data stream transmitted onto the network.
2	Transmit Data Minus	Negative signal for the TD differential pair. This contains the same output as pin 1.
3	Receive Data Plus	Positive signal for the RD differential pair. This signal contains the serial input data stream received from the network.
4	not connected	
5	not connected	
6	Receive data minus	Negative signal for the RD differential pair. This signal contains the same input as pin 3.
7	not connected	
8	not connected	

Crossover Cable

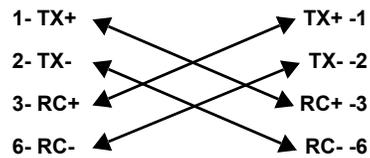
A RJ-45 crossover cable is used when only two systems are to be connected to each other, peer to peer, at the Ethernet Cards by “crossing over” (reversing) their respective pin contacts. An example would be connecting two computers together to create a network. The crossover eliminates the need for a hub when connecting two computers. A crossover cable may also be required when connecting a hub to a hub, or a transceiver to transceiver or repeater to repeater. When connecting a hub to a transceiver, a straight through cable is always used.



Note: This is not an IEEE supported configuration and should be used for test purposes only.

A crossover cable is sometimes called a null modem. The coloured wires at either end are put into different pin numbers, or crossed over.

Figure 8: Crossover Connectivity



RJ-11 (Telephone) Cable

The RJ-11 cable is commonly used for telephone connection.



Caution: Do not plug a phone jack connector into an RJ-45 port.

Wiring Conventions

For telephone connections, a cable requires one pair of wires. Each wire is identified by different colours. For instance, one wire might be red and the other, red with white stripes. Also, an RJ-11 connector must be attached to both ends of the cable.

Each wire pair must be attached to the RJ-11 connectors in a specific orientation. The following figure illustrates how the pins on the RJ-11 connector are numbered. Be sure to hold the connectors in the same orientation when attaching the wires to the pins.

Figure 9: RJ-11 Connector Pin Numbers

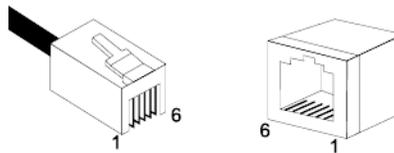


Table 13: RJ-11 Pinout Information

Pin #	Function
1	Not used
2	Not used
3	Ring
4	Tip
5	Not used
6	Not used

The RJ-11 pair of wires is wired so that pins 3 and 4 are connected to the Ring and Tip, which meets the following requirements:

- ▶ EIA/TIA-IS 968
- ▶ CS-03 Issue 8, Part III requirements.



Warning: The RJ-11 cable should comply with UL 1863 and CSA C22.2 No 233 standards.

**10 BaseT**

An Ethernet local area network that works on twisted pair wiring.

100 BaseT

A newer version of Ethernet that operates at 10 times the speed of a 10 BaseT Ethernet.

Domain Name Server (DNS)

Internet service that translates domain names into IP addresses. To use a domain name, a DNS service must translate the name into the corresponding IP address. For instance, the domain name *www.example.com* might translate to 198.105.232.4.

Dual-Tone Multi-Frequency (DTMF)

In telephone systems, multi-frequency signalling in which a standard set combinations of two specific voice band frequencies, one from a group of four low frequencies and the other from a group of four higher frequencies, are used. Although some military telephones have 16 keys, telephones using DTMF usually have 12 keys. Each key corresponds to a different pair of frequencies. Each pair of frequencies corresponds to one of the ten decimal digits, or to the symbol “#” or “*”, the “*” being reserved for special purposes.

Dynamic Host Configuration Protocol (DHCP)

TCP/IP protocol that enables PCs and workstations to get temporary or permanent IP addresses (out of a pool) from centrally-administered servers.

Federal Communications Commission (FCC)

U.S. government regulatory body for radio, television, interstate telecommunications services, and international services originating in the United States.

Foreign Exchange Service/Station (FXS)

A network-provided service in which a telephone in a given local exchange area is connected, via a private line, to a central office in another, i.e., “foreign”, exchange, rather than the local exchange area’s central office. This is the station (telephone) end of an FX circuit. An FXS port will provide dial tone and ring voltage.

International Telecommunication Union (ITU)

Organization based in Geneva, Switzerland, that is the most important telecom standards-setting body in the world.

Internet Protocol (IP)

A standard describing software that keeps track of the Internet’s addresses for different nodes, routes outgoing messages, and recognizes incoming messages.

Light Emitting Diode (LED)

A semiconductor diode that emits light when a current is passed through it.

Local Area Network (LAN)

Data-only communications network confined to a limited geographic area, with moderate to high data rates. See also WAN.

Media Access Control (MAC) Address

A layer 2 address, 6 bytes long, associated with a particular network device; used to identify devices in a network; also called hardware or physical address.

Network

A group of computers, terminals, and other devices and the hardware and software that enable them to exchange data and share resources over short or long distances. A network can consist of any combination of local area networks (LAN) or wide area networks (WAN).

Private Branch Exchange (PBX)

A small to medium sized telephone system and switch that provides communications between onsite telephones and exterior communications networks.

Protocol

A formal set of rules developed by international standards bodies, LAN equipment vendors, or groups governing the format, control, and timing of network communications. A set of conventions dealing with transmissions between two systems. Typically defines how to implement a group of services in one or two layers of the OSI reference model. Protocols can describe low-level details of machine-to-machine interfaces or high-level exchanges between allocation programs.

Public Switched Telephone Network (PSTN)

The local telephone company network that carries voice data over analog telephone lines.

Router

A specialized switching device which allows customers to link different geographically dispersed local area networks and computer systems. This is achieved even though it encompasses different types of traffic under different protocols, creating a single, more efficient, enterprise-wide network.

Switched Circuit Network (SCN)

A communication network, such as the public switched telephone network (PSTN), in which any user may be connected to any other user through the use of message, circuit, or packet switching and control devices.

Server

A computer or device on a network that works in conjunction with a client to perform some operation.

Session Initiation Protocol (SIP)

A protocol for transporting call setup, routing, authentication, and other feature messages to endpoints within the IP domain, whether those messages originate from outside the IP cloud over SCN resources or within the cloud.

Subnet

An efficient means of splitting packets into two fields to separate packets for local destinations from packets for remote destinations in TCP/IP networks.

Transmission Control Protocol/Internet Protocol (TCP/IP)

The basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet).

Voice Over IP (VoIP)

The technology used to transmit voice conversations over a data network using the Internet Protocol. Such data network may be the Internet or a corporate Intranet.

Wide Area Network (WAN)

A large (geographically dispersed) network, usually constructed with serial lines, that covers a large geographic area. A WAN connects LANs using transmission lines provided by a common carrier.

List of Acronyms

AWG	American Wire Gauge
CE	Cummunauté européenne (French)
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Server
IETF	Internet Engineering Task Force
LAN	Local Area Network
MAC	Media Access Control
MDI	Media Dependent Interface
MDIX	Media Dependent Interface Crossover
PBX	Private Branch eXchange
PSTN	Public Switched Telephone Network
RFC	Request for Comment
SCN	Switched Circuit Network
SIP	Session Initiation Protocol
TPE	Twisted-Pair Ethernet
UTP	Unshielded Twisted pair
VoIP	Voice over Internet Protocol
WAN	Wide Area Network

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