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Hardware Installation Guide

Mediatrix® 4100 Series
Analog Access Devices
4108 / 4116 / 4124 models (FXS)

Pb RoHS COMPLIANT 2002/95/EC

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Mediatrix® 4100 Series Hardware Installation Guide

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The Mediatrix® 4100 Series firmware aggregates some third-party software modules (open source and commercial) that are distributed to you in accordance with their respective licenses. Refer to the *Third Party Software Copyright Information* addendum available on the Mediatrix Download Portal, which lists the third-party software modules along with any copyright and license information.

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About this Manual

Thank you for purchasing the Mediatrix 4100 Series from Media5 Corporation.

The Mediatrix 4100 Series FXS VoIP Integrated Access Devices are telephony adaptors that connect up to 24 conventional analog telephones or fax machines to a LAN or a WAN with access to an IP Packet Network to permit high-quality, full duplex, audio/fax communications.

The Mediatrix 4100 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.

The Mediatrix 4100 Series are available in the following models:

Table 1: Mediatrix 4100 Series Models

Model	Interfaces
Mediatrix 4108	8 FXS ports
Mediatrix 4116	16 FXS ports
Mediatrix 4124	24 FXS ports

Document Objectives

The *Mediatrix 4100 Hardware Installation Guide* provides technical information on how to physically install the Mediatrix 4100. It also describes the cabling required for the Mediatrix 4100 device.

The information included in this guide consists of:

▶ Hardware descriptions of the Mediatrix 4100 device

▶ Hardware installation instructions

▶ Installation scenarios examples

▶ LED indications

▶ Cabling and pin-out data

> **Note:** There are many flavours of the Mediatrix 4100 device. Because of this, some of the information provided may not apply to your particular Mediatrix 4100 device model.

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

Use the *Mediatrix 4100 Hardware Installation Guide* in conjunction with the appropriate publications listed in .

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 4100 device.

▶ System administrators who are responsible for installing and configuring networking equipment and who are familiar with the Mediatrix 4100 device.

Related Documentation

In addition to this manual, the Mediatrix 4100 document set includes the following:

▸ *Dgw v2.0 Software Configuration Guide*

Describes how to configure and operate the Mediatrix 4100.

▸ *Mediatrix 4100 Installation Guide*

This booklet allows you to quickly setup and work with the Mediatrix 4100. 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 4100.

▸ *Notification Reference Guide*

Lists and describes all syslog messages and notification messages that the Mediatrix 4100 may send.

▸ *Third Party Software Copyright Information*

This document lists the third-party software modules used in the Mediatrix 4100 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 4100 *Hardware Installation Guide* contains the following information.

Table 3: Mediatrix 4100 Hardware Installation Guide Chapter/Appendices

Title	Summary
"Chapter 1 - Overview" on page 1	Provides a brief description of the Mediatrix 4100.
"Chapter 2 - Installation" on page 5	Contains instructions for installing the Mediatrix 4100 and connecting the cables.
"Chapter 3 - Powering on the Mediatrix 4100" on page 13	Leads you through the basic steps to start the Mediatrix 4100.
"Appendix A - Standards Compliance and Safety Information" on page 23	Lists the various standards compliance of the Mediatrix 4100.
"Appendix B - Cabling Considerations" on page 31	Describes the pin-to-pin connections for cables used with the Mediatrix 4100.
"Appendix C - Standard Hardware Information" on page 37	Lists the technical hardware information of the Mediatrix 4100.

Document Conventions

The following information provides an explanation of the symbols that appear on the Mediatrix 4100 and in the documentation for the product.

Warning Definition

STOP	**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 <u>"Appendix A - Standards Compliance and Safety Information" on page 23</u>.

This Appendix describes the international agency compliance and safety information for the Mediatrix 4100. 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 4100'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 <u>http://www.ietf.org</u>.

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.

1

Overview

This chapter describes the Mediatrix 4100 connectors and indicators.

Overview

Provider-specific profiles ensure that the Mediatrix 4100 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 4100 integrates features such as TLS, SRTP, and HTTPS designed to bring enhanced security for network management, SIP signalling and media transmission aspects.

The Mediatrix 4100 is a standalone Internet telephony access device that connects to virtually any business telephone system supporting standard analog lines.

The Mediatrix 4100 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.

The following are the Mediatrix 4100 Series models currently available:

Table 4: Mediatrix 4100 Series Models

Model	Interfaces	Bypass
Mediatrix 4108	8 FXS ports	☑
Mediatrix 4116	16 FXS ports	☑
Mediatrix 4124	24 FXS ports	☑

Key Features

▸ IP connectivity for analog phones and faxes

▸ Up to 24 simultaneous calls

▸ FXS interface ports

▸ Two Ethernet ports (older models may have only one port)

▸ 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 4100 Connectors and Indicators

This section provides an overview of the front and rear panels of the Mediatrix 4100.

Product Serial Number Location

The serial number label for the Mediatrix 4100 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 4100 may have and the states they represent.

Figure 1 shows the visual indicators and connectors located on the front of the Mediatrix 4108/4116/4124.

Figure 1: Mediatrix 4108/4116/4124 Front Panel Indicators

Table 6 describes the LEDs and connectors on the front panel of the Mediatrix 4100.

Table 6: Mediatrix 4108/4116/4124 Front Connectors and LEDs

	Connector / LED	Description
1.	ETH2	A 10/100 BaseT Ethernet RJ-45 connector that can be connected into the network card of a computer. Older models may not have this connector.
2.	ETH1	RJ-45 connector for 100 BaseT Ethernet access to a LAN.

Table 6: Mediatrix 4108/4116/4124 Front Connectors and LEDs (Continued)

	Connector / LED	Description
3.	FXS connectors	Eight RJ-11 connectors to attach conventional telephones or G3 fax machines. These connectors are available on the Mediatrix 4116 only.
4.	Analog Lines	A RJ21X connector with 24 RJ-11 Teladapt connectors to provide line cord connection to analog phones, faxes and modems. This connector is available on the Mediatrix 4124 only. See "RJ21X Connector (Mediatrix 4124)" on page 34 for more details.
5.	FXS connectors	Eight RJ-11 connectors to attach conventional telephones or G3 fax machines. These connectors are available on the Mediatrix 4108 and Mediatrix only.
6.	Bypass	Permits users to make and receive calls even when the Mediatrix 4100 is not operating.
7.	Ready LED	When lit, the Mediatrix 4100 is ready to initiate or receive a call. The unit does not have to be registered to a server.
8.	In Use LED	When lit, at least one of the FXS lines is in use.
9.	LAN LED	Provides the state of the network connected to the *ETH1* and *ETH2* connectors.
10.	Power LED	When lit, power is applied to the Mediatrix 4100.
11.	Reset / Default button	Resets configuration parameters of the Mediatrix 4100 to default (known) values. It can be used to reconfigure the unit. See "RESET/DEFAULT Button" on page 18 for more details.

Rear Connectors

The Mediatrix 4108/4116/4124 models do not have rear connectors except for the IEC320-C14 Power Cord Receptacle. This power cord supplies an internal Switching Mode Power Supply (SMPS) Universal input. The power supply range is 100 – 240 VAC; 50/60 Hz; 1.6 A.The Mediatrix 4100 has several connections that must be properly set. The following describes these connections for the various Mediatrix 4100 models.

Standards Supported	• ITU-T I.430 Basic user-network interface - Layer 1 specification (section 9).

Figure 2: Mediatrix 4108/4116/4124 Rear Panel Connectors

Rack-mounting bracket

Universal Power Supply Unit

Port Numbering Convention

Mediatrix 4108/4116

The following describes the port numbering conventions of the FXS connectors available on the Mediatrix 4108 and Mediatrix 4116. Note that the connectors in the left section are available only on the Mediatrix 4116 model.

Figure 3: FXS Connectors Port Numbering Convention (Mediatrix 4108/4116)

Analog Lines Numbering Convention (Mediatrix 4124)

The following describes the numbering conventions of the FXS analog lines available on the Mediatrix 4124.

Figure 4: Analog Lines Numbering Convention (Mediatrix 4124)

Bypass Feature

During normal operation, the SCN line connected to the *Bypass* connector is switched out of the circuit through commuting relays. The *Bypass* connector can be activated by two different conditions:

▶ When power is removed from the Mediatrix 4100.

▶ When the IP network is down.

This is indicated by the *In Use* LED being steady ON (except when the power is removed). If one of these conditions is met, a phone/fax used on FXS connector 1 (Mediatrix 4108/4116) or analog line 1 (Mediatrix 4124) is directly connected to the SCN Bypass line. FXS connector 1 (Mediatrix 4108/4116) or analog line 1 (Mediatrix 4124) stays in Bypass connection until:

▶ The error conditions have been cleared.

▶ The device connected to it is on-hook and a delay has elapsed.

C H A P T E R

2

Installation

This chapter describes the installation of the Mediatrix 4100.

Planning the Installation

Before installing the Mediatrix 4100, 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 4100 (see section "Network Information" on page 6).

Installation Checklist

The installation checklist lists the tasks for installing the Mediatrix 4100. Print a copy of this checklist and mark the entries as you complete each task. Include the completed checklist in your site log.

Figure 5: Installation Checklist

Mediatrix 4100 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 4100 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 4100, 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 4100, 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 for more information on keeping a site log).

IP-Related Information

Before you can install the Mediatrix 4100, you need to have the following information:

▶   IP addresses and subnet mask used for the Ethernet WAN connector

▶   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 4100.

Maintaining Safety with Electricity

STOP	**Warning:** Do not work on the Mediatrix 4100, connect or disconnect cables during periods of lightning activity.

STOP	**Warning:** Disconnect all power before servicing the Mediatrix 4100.

STOP	**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 4100 first.

General Safety Practices

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

▶ Keep the Mediatrix 4100 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 4100.

▶ 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.

> **STOP**   **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

Always follow electrostatic discharge (ESD) prevention procedures when installing or working around the Mediatrix 4100.

▶ Ensure that the Mediatrix 4100 chassis is electrically connected to earth ground.

▶ 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. If no ESD wrist strap is available, ground yourself by touching the metal part of the chassis.

Required Mounting Tools and Equipment

You will need the following tools and parts to properly install the Mediatrix 4100:

▶ Screwdriver as required for attaching brackets to rack.

▶ Philips screwdriver for attaching brackets to the Mediatrix 4108/4116/4124.

▶ 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 4100 device. Carefully remove it from the package and packing material. The Mediatrix 4100 package contains the following items:

▶ 1 x Mediatrix 4100 unit

▶ 1 x power cord for the country in which you are using the Mediatrix 4100

▶ 2 x rack-mounting brackets

▶ 1 x Bumpon^{TM} kit for desktop use

▶ 1 x Printed Flyer

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

Location and Mounting Requirements

> **STOP** **Warning:** The analog lines of the Mediatrix 4100 are not intended for connection to a telecommunication network that uses outside cable.

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

The Mediatrix 4108/4116/4124 is suitable for use in an office environment where it can be placed in the same room or cabinet where the PBX/telephony equipment is located. The unit can be mounted on a standard 48.26 cm (19 in.) equipment rack.

Location

Install the Mediatrix 4100 in a well-ventilated location where it will not be exposed to high temperature or humidity. Do not install the Mediatrix 4100 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 4100, ensure that:

▶ The Mediatrix 4100 is accessible for future upgrade, maintenance and troubleshooting, and cables can be easily connected.

▶ The Mediatrix 4100 is installed in a restricted access location.

▶ The Mediatrix 4100 must be installed in a location where equipotential bonding has been applied in order to have all earthed equipments in the location at the same Earth potential .

▶ 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 4100.

▶ The airflow is not restricted around the Mediatrix 4100 or through the vents of the unit. The unit requires a minimum of 25 mm (1 in.) clearance.

▶ The fan on the Mediatrix 4100 is not blocked or that the rear of the unit is not too close to the wall. 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.

Rack-Mounting

Standards Supported	• EIA-310-D
	• ETS 300 119

The Mediatrix 4100 fits in most standard 48.26 cm (19 in.) racks. Media5 recommends to use a rack compliant EIA-310-D.

▶ **To rack-mount the Mediatrix 4100:**

1. Disconnect all of the cables from the Mediatrix 4100, if applicable.

2. Insert the Mediatrix 4100 into the rack and secure with suitable screws (not provided). Be sure that the fan is not obstructed.

   To prevent bodily injury when mounting or servicing the Mediatrix 4100 in a rack, ensure that the rack remains stable.

   The following guidelines are provided to ensure your safety:
   - Mount the Mediatrix 4100 at the bottom of the rack if it is the only unit in the rack.
   - When mounting the Mediatrix 4100 in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
   - If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the Mediatrix 4100 in the rack.

3. Proceed to .

Free Standing Unit

When installing the Mediatrix 4100 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 4100.

You must also apply the Bumpon^{TM} authoadhesive protective products to the bottom of the Mediatrix 4100. These will stabilize the Mediatrix 4100 and offer skidding resistance.

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 4100, wipe with a soft dry cloth. Do not use volatile liquids such as benzine 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 4100.

STOP	**Warning:** Do not connect the Mediatrix 4100 directly to Telecommunication Systems.

⚠	**Caution:** The Mediatrix 4100 must be installed on a circuit equipped with a breaker so that you can easily power the unit off if required.

See "Appendix B - Cabling Considerations" on page 31 for more details on the cables the Mediatrix 4100 uses.

Connecting Cables – Mediatrix 4108/4116 Models

The following describes how to connect the various cables to the Mediatrix 4108 or Mediatrix 4116.

Figure 6: Mediatrix 4108/4116 Hardware Installation

▶ **To install the cables:**

1. Before you begin, be sure that the Mediatrix 4100 is powered off.

2. Connect the power cord to its connector on the rear of the unit. Do not yet connect the other end of the power cord to an electrical earthed socket-outlet.

3. Connect analog telephones or fax machines into the phone/fax connectors

    The Mediatrix 4108 has 8 connectors, while the Mediatrix 4116 has 16 connectors.

    Use a standard telecommunication cord with a minimum of 26 AWG wire size.

☞	**Note:** The Mediatrix 4100 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 4100.

4. Connect a 10/100 BaseT Ethernet RJ-45 cable into the *ETH1* connector of the Mediatrix 4100; 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.

5. Connect a 10/100 BaseT Ethernet RJ-45 cable into the *ETH2* connector of the Mediatrix 4100 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 <u>"RJ-45 Cable" on page 31</u> for more details.

Older models may not have this connector.

6. Connect a SCN line into the *Bypass* connector of the Mediatrix 4100 (optional).

Use a standard telecommunication cord with a minimum of 26 AWG wire size.

You are now ready to start the Mediatrix 4100.

Connecting Cables – Mediatrix 4124 Model

The following describes how to connect the various cables to the Mediatrix 4124.

Figure 7: Mediatrix 4124 Hardware Installation

▶ **To install the cables:**

1. Before you begin, be sure that the Mediatrix 4124 is powered off.

2. Connect the power cord to its connector on the rear of the unit. Do not yet connect the other end of the power cord to an electrical earthed socket-outlet.

3. Connect a RJ21X cable into the RJ21X receptacle of the Mediatrix 4124.

The RJ21X cable contains the connections for the 24 analog lines to connect to the Mediatrix 4124. See <u>"RJ21X Connector (Mediatrix 4124)" on page 34</u> for more details.

4. Connect a 10/100 BaseT Ethernet RJ-45 cable into the *ETH1* connector of the Mediatrix 4124; 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.

5. Connect a 10/100 BaseT Ethernet RJ-45 cable into the *ETH2* connector of the Mediatrix 4100 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 <u>"RJ-45 Cable" on page 31</u> for more details.

Older models may not have this connector.

6. Connect a SCN line into the *Bypass* connector of the Mediatrix 4124 (optional).

Use a standard telecommunication cord with a minimum of 26 AWG wire size.

You are now ready to start the Mediatrix 4100.

3

Powering on the Mediatrix 4100

This chapter describes the initial provisioning of the Mediatrix 4100.

IP Address Discovery or Configuration

This section describes how to contact the Mediatrix 4100's management interface to start with unit configuration.

Note that the Mediatrix 4100 IPv6 interface is disabled by default.

Once the physical connection is complete and the Mediatrix 4100 is powered up, you must first find out the IP address the Mediatrix 4100 is using. The Mediatrix 4100's IP address can be set either dynamically or statically. The default behaviour of the Mediatrix 4100 is to try to obtain a dynamic IP address through a DHCP server.

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 4100 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 4100 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 .

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 4100 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.

If you have not reserved an IP address, you can discover which IP address has been assigned to the Mediatrix 4100 by either:

▸ taking one of the telephones connected to the Mediatrix 4100 and dialing ***#*0** on the keypad. The current IP address of the Mediatrix 4100 (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 4100.

▸ using a network packet sniffer (e.g., Wireshark) to examine the DHCP messages exchanged between the Mediatrix 4100 and your DHCP server while the Mediatrix 4100 boots up.

▶ **To start the Mediatrix 4100 with a dynamic IP address:**

1. If you need to discover the IP address of the Mediatrix 4100, install and start your network packet sniffer.

2. Power on the Mediatrix 4100 by connecting the other end of the power cord to an electrical earthed socket-outlet. The electrical outlet must be installed near the Mediatrix 4100 so that it is easily accessible.

Note: If the *Power* LED is always blinking and never turns on, this means that the Mediatrix 4100 cannot find either an IPv4 DHCP server or an IPv6 address automatically. Check that you have a DHCP server properly configured on your network.

You can now access the Mediatrix 4100 web interface. Refer to the *Software Configuration Guide* for more details.

Initial Provisioning Sequence

When starting the Mediatrix 4100 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 Mediatrix 4100 hardware as per <u>"Hardware Installation" on page 10</u>.

The Mediatrix 4100 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 Mediatrix 4100 configuration.

▶ **Initial provisioning sequence:**

1. When the Mediatrix 4100 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 Mediatrix 4100 IP address.

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

   • Mediatrix 4100 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 Mediatrix 4100 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 Mediatrix 4100 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. Power on the Mediatrix 4100 by connecting the other end of the power cord to an electrical earthed sockt-outlet. The electrical outlet must be installed near the Mediatrix 4100 so that it is easily accessible.

4.   Insert a small, unbent paper clip into the **Reset / Default** hole located at the front of the Mediatrix 4100.

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 4100 uses the default IP address 192.168.0.1/24. Refer to <u>"Partial Reset" on page 19</u> for details on the partial reset procedure.

The corresponding link-local IPv6 address is also available and printed on the sticker under the Mediatrix 4100.

You can now access the Mediatrix 4100 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 4100 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.   Power on the Mediatrix 4100 by connecting the other end of the power cord to an electrical earthed socket-outlet. The electrical outlet must be installed near the Mediatrix 4100 so that it is easily accessible.

3.   Insert a small, unbent paper clip into the **Reset / Default** hole located at the front of the Mediatrix 4100.

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 4100 enables its link local IPv6 address. Refer to <u>"Partial Reset" on page 19</u> for details on the partial reset procedure.

The corresponding link-local IPv6 address is also available and printed on the sticker under the Mediatrix 4100.

4.   Proceed with accessing the Mediatrix 4100'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 4100 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 4100 talks back to you with relevant information.

▶ **To access vocal unit information:**

    1.   Take one of the telephones connected to the Mediatrix 4100.

    2.   Dial one of the digits sequence on the keypad.

Table 7: Vocal Unit Information

Digits to Dial	Information Vocally Sent by the Mediatrix 4100
*#*0	Current IP address of the Mediatrix 4100 (static or DHCP).
*#*1	MAC address of the Mediatrix 4100.

Verifying the Installation

There are a few ways to verify that the Mediatrix 4100 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 4100 you want to verify. If the Mediatrix 4100 does not respond, do the following:

- ▶ Verify that the LAN and WAN cables are securely connected to the Mediatrix 4100 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 *LAN* LED should be ON or blinking).

Indicators (LEDs)

The indicators (LEDs) of the Mediatrix 4100 are described in .

LED Patterns – Specific Conditions

describes the different states a Mediatrix unit can have and their associated LED patterns.

Table 8: LED Patterns

Condition	Description	LED Pattern
RestartPending	Triggered when the *RESET/DEFAULT* button is pressed in the *ResetPending* state. The unit prepares for a physical shutdown and restart.	*Power* LED: • blinking, 1Hz, 50% duty All other LEDs: • OFF
RecoveryPending	Triggered when the *RESET/DEFAULT* button is pressed at start-time or for at least 7 seconds.	All LEDs: • blinking, 1Hz, 50% duty

Table 8: LED Patterns (Continued)

Condition	Description	LED Pattern
DefaultSettingsPending	Triggered when the *RESET/DEFAULT* button is not released while in *ResetPending* state. At run time, if the *RESET/DEFAULT* 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. At start time, the unit stays in this state until the *RESET/DEFAULT* button is released. The unit then applies the default settings and restarts.	All LEDs: • steady ON
UpdateInProgress	A firmware pack is downloaded into the unit and written to persistent storage.	All LEDs: • 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: • 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 *In Use* LEDs: • blinking (synchronized) 1Hz, 75% duty
BootOnRecoveryBank	Triggered when the unit is booting on the recovery bank and no update is pending.	Power LED: • 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: • 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: • blinking, 3 Hz, 50% duty.
NetworkRescue	The unit tries to download and install a firmware given by the Network Rescue server.	*Ready* LED: • Off All other LEDs: • 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 8, the LEDs behave individually according to the following rules:

Table 9: Default LED Behaviour

LED Type	Condition	Behaviour
Power	RestartInProgress	Blinking, 1 Hz, 50% duty
	RestartCompleted	Steady ON
LAN	Network traffic	Blinking, variable rate
	No network traffic	Steady ON
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 4100 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 4100 is running without powering the unit off. Table 10 describes the actions you can perform in this case.

Table 10: RESET/DEFAULT Button Interaction

RESET/ DEFAULT Button Pressed for:	Action	Comments	LEDs Pattern
2 to 6 seconds	Restarts the Mediatrix 4100	No changes are made to the Mediatrix 4100 settings.	*Power* LED: • blinking, 1Hz, 50% duty All other LEDs: • OFF

RESET/ DEFAULT Button Pressed for:	Action	Comments	LEDs Pattern
7 to 11 seconds	Sets the Mediatrix 4100 in Partial Reset Mode	Sets some of the Mediatrix 4100 configuration to pre-determined values.	All LEDs • blinking, 1Hz, 50% duty
12 to 16 seconds	Restarts the Mediatrix 4100 in Factory Reset	Deletes the persistent configuration, creates a new configuration file with the default factory values, and then restarts the unit.	All LEDs • 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 20). This feature reverts the Mediatrix 4100 back to its default factory settings.

Partial Reset

The Partial reset provides a way to contact the Mediatrix 4100 in a known and static state while keeping most of the configuration unchanged.

Following a partial reset, the Mediatrix 4100 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 4100. Any existing network interface that conflicts with the Rescue interface address is disabled.

You can contact the Mediatrix 4100 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 4100. 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 4100 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 4100 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 4100 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 4100 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 4100 off.

2. Insert a small, unbent paper clip into the **Reset / Default** hole located at the front of the Mediatrix 4100. 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 4100 restarts.

   This procedure resets all variables in the MIB modules to their default value.

   When the Mediatrix 4100 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 4100.

Management Choices

Congratulations for properly installing the Mediatrix 4100. You can now configure the software parameters of the unit.

The Mediatrix 4100 offers various management options. All these options are described in the *Dgw v2.0 Software Configuration Guide*.

Table 11: Management Options

Management Choice	Features
Web GUI	The Mediatrix 4100 web interface allows you to configure the following information: • Network attributes • SIP parameters • VoIP settings • Management settings such as configuration scripts, restore / backup, etc.
SNMPv1/2/3	The Mediatrix 4100 SNMP feature allows you to configure all the MIB services.
Command Line Interface (CLI)	The Mediatrix 4100 CLI feature allows you to configure all the MIB services.
Unit Manager Network	The UMN offers the following: • Auto-discovery • Group provisioning • SNMP access and remote management.

Standards Compliance and Safety Information

This Appendix lists the various standards compliance of the Mediatrix 4100.

Standards Supported

The Mediatrix 4100 complies to the following standards:

Table 12: Standards Compliance

Category	Specification
Agency approvals	• European Union, CE mark (Declaration of Conformity)Anatel • CSA • FCC
Safety standards	• UL 60950-1, Second Edition + Amd 1:2011 • CAN/CSA-C22.2 No. 60950-1-07 + Amd 1:2011 • Anatel Resolution 238:2000 • IEC 60950-1:2005 (2nd Edition) + Amd 1:2009 (with all national deviations)
Emissions	• FCC Part 15:1998 Class B • Resolution 442: 2006 • EN55022 (2006) Class B • EN61000-3-2 (2000) Harmonic current emissions • EN61000-3-3 (1995) Voltage fluctuations and flicker (with amendment A1)
Immunity	EN55024:1998 including the following (with amendments A1 and A2): • 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
Telecom	• FCC Part 68:Subpart D, January 31, 2001 • Industry Canada (CS-03, Issue 9, November 15, 2004)

Note: The standards compliance of the Mediatrix 4100 are printed on a sticker located on the bottom of the unit.

Disclaimers

The following are the disclaimers related to the Mediatrix 4100.

Federal Communications Commission (FCC) Part 15

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

‣ Reorient or relocate the receiving antenna.

‣ Increase the separation between the equipment and receiver.

‣ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

‣ Consult the dealer or an experienced radio/TV technician for help

> **Note:** Any changes or modifications not expressly approved by Media5 could void the user's authority to operate the equipment.

Federal Communications Commission (FCC) Part 68

This equipment complies with Part 68 of the FCC Rules. On the underside of this equipment is a label that contains, among other information, the FCC Registration Number, Ringer Equivalence Number (REN) and USOC jack type for this equipment. You must, upon request, provide this information to your telephone company.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the REN's of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your telephone company to determine the maximum REN for your calling area. If your telephone equipment causes harm to the telephone network, the Telephone Company may discontinue your service temporarily. If possible, they will notify you in advance, but if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact Media5 for information on how to obtain service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service provided by the telephone company.

Connection to party lines is subject to state tariffs.

INSTALLATION

This device is equipped with an USOC RJ-11C connector.

Industry Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

The Industry Canada Label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

STOP **Warning:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Note: The Ringer Equivalence Number (REN) for this terminal equipment is 0.0. The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Number of all the devices does not exceed 5.

Note: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

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 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 (Cr⁶⁺)	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.

Translated Warning Definition

The following information provides an explanation of the symbols which appear on the Mediatrix 4100 and in the documentation for the product.

> **STOP** **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 overtreat in een situatie die lichamelijk 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 vare oppmerksom på 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.

Varning!: 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
▶ LAN and FXS Ports Connectors Warning
▶ Socket Outlet Warning

Circuit Breaker (15A) Warning

> **STOP** **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

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

Product Disposal Warning

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

No. 26 AWG Warning

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

LAN anf FXS Ports Connectors Warning

> **STOP** **Warning:** Do not connect the LAN and the FXS ports 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

> **STOP** **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 4100.

> **STOP** **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 8: RJ-45 Cable
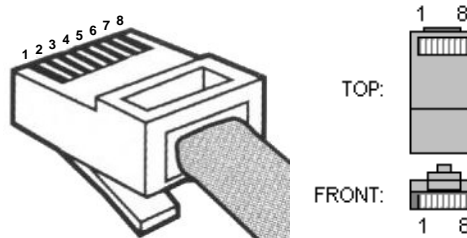
When connecting an Ethernet cable to the Mediatrix 4100, use a standard telecommunication cord with a minimum of 26 AWG wire size. It is possible to use either a crossover or straight Ethernet cable to connect in the Ethernet connectors. These connectors perform automatic MDI / MDIX detection, meaning 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 4100 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 4100 to a hub or a switch, while a crossover cable is required to connect the Mediatrix 4100 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 13: 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 9: Straight Through Connectivity

Pin 1 ←——————→ Pin 1

Pin 2 ←——————→ Pin 2

Pin 3 ←——————→ Pin 3

Pin 6 ←——————→ Pin 6
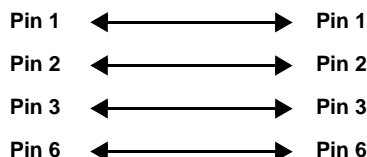
Pin Name and Function

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

Table 14: 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 10: Crossover Connectivity

```
1- TX+                      TX+ -1
2- TX-                      TX- -2
3- RC+                      RC+ -3
6- RC-                      RC- -6
```
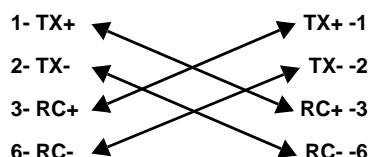
RJ-11 (Telephone) Cable

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 11: RJ-11 Connector Pin Numbers
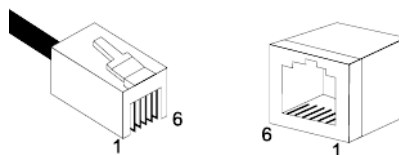
Table 15: RJ-11 Pinout Information

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

Table 15: RJ-11 Pinout Information (Continued)

Pin #	Function
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.

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

RJ21X Connector (Mediatrix 4124)

The Mediatrix 4124 uses the RJ21X, or "Amphenol-type", connector as network interface with the Key Service Unit (KSU) or PBX Main Distribution Frame. The Mediatrix 4124 can thus be used in a variety of situations:

  ▸   It can be directly connected to a PBX via analog lines. These analog lines would be wired in a RJ21X cable.
  ▸   The PBX may have some analog lines connected to the SCN, while other lines could be connected to the IP network via the Mediatrix 4100.

Creating a RJ21X Cable

The Mediatrix 4124 can use from 1 to 24 single or multiple-pair circuits bridged to the network or other connected equipment. These circuits are usually wired in a RJ21X cable and then plugged into the RJ21X connector of the Mediatrix 4124.

To meet the Class B EMI requirements, a shielded cable and connector shall be used. The shield shall be an overall aluminium foil and be connected to the connector shield.

> **Note:** Installation of the analog lines via a RJ21X cable shall be done by a qualified technician.

The cable may be directly connected to the PBX or cross-connected via a Bix termination and cross-connect system. In fact, depending on the technician involved, the scenarios may vary.

RJ21X Pinout

Pins 1 (ring) and 26 (tip) of the ribbon connector are considered position 1. Pins 2 (ring) and 27 (tip) are position 2. This pairing continues through 24 pairs.

Table 16: RJ21X Pinout

Line	Ring	Tip
1 (with Bypass)	pin1	pin26
2	pin2	pin27
3	pin3	pin28
4	pin4	pin29
5	pin5	pin30

Table 16: RJ21X Pinout (Continued)

Line	Ring	Tip
6	pin6	pin31
7	pin7	pin32
8	pin8	pin33
9	pin9	pin34
10	pin10	pin35
11	pin11	pin36
12	pin12	pin37
13	pin13	pin38
14	pin14	pin39
15	pin15	pin40
16	pin16	pin41
17	pin17	pin42
18	pin18	pin43
19	pin19	pin44
20	pin20	pin45
21	pin21	pin46
22	pin22	pin47
23	pin23	pin48
24	pin24	pin49

> **Note:** Pins 25 and 50 are unused.

Figure 12: Front View of the RJ21X Receptacle – Pinout
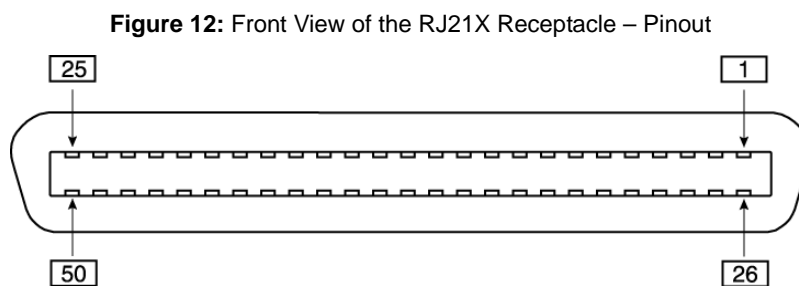
Loop Current vs Cable Length

When installing the Mediatrix 4100, be sure that the cable length is not too long for the loop current. Considering the following operating parameters:

▶   Standard analog devices such as telephones or faxes with typically 300 Ohms of DC impedance.

▶   Cable with 85 Ohms/Km (AWG26)

▶   0 dBm signal at interface

Observe the following values:

Table 17: Max DC Resistance

Loop Current in mA	Maximum Cable Length in Meters	Rdc Max in Ohms
20	2100	660
25	1000	470
30	450	375
32	300	350

Rdc max includes both equipment (standard analog telephones or faxes) and cable DC resistance. This is illustrated in .

Figure 13: Max DC Resistance
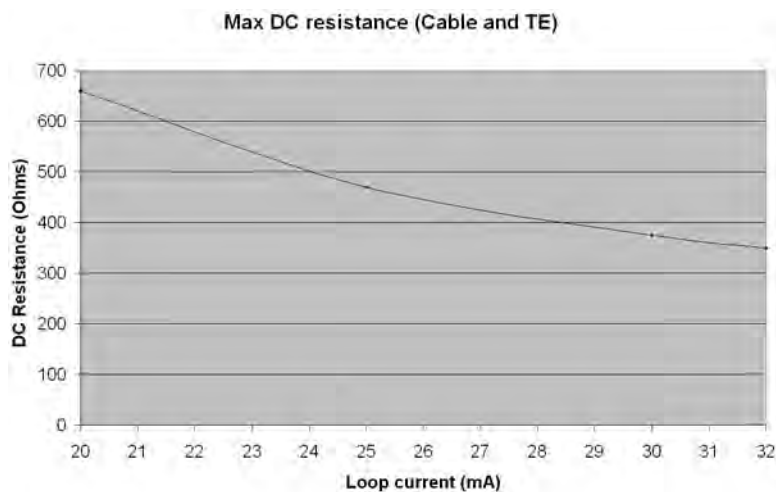
Standard Hardware Information

The specifications and information regarding this product are subject to change without notice. Every effort is made to ensure the accuracy of this document. Because of ongoing product improvements and revisions, Media5 cannot guarantee its accuracy, nor can be responsible for errors or omissions. Please contact your Media5 sales representative to obtain the latest version of the technical specifications.

Industry Standard Protocols

The Mediatrix 4100 has been designed to support all major industry standards used today, as well as those that will eventually be implemented at a later date. Because of this specific design characteristic, the Mediatrix 4100 can be integrated with existing telephone, fax and data equipment such as PCs and routers.

Table 18: Industry Standard Protocols

Parameter	Description
Vocoders	• G.711 (a-law, u-law) with optional VAD support • G.723.1a • G.726 • G.729a • G.729ab
IP Telephony Protocols	• SIP - RFC 3261, RFC 3262, RFC 3263
Real-Time Transport Protocols	• RTP/RTCP - RFC 1889, RFC 1890, RFC 2833, RFC 3389
Network Management Protocols	• SNMPv3 • DHCP - RFC 2131, RFC 2132 • TFTP - RFC 1350 • Syslog - RFC 3164 • HTTP 1.0 - RFC 1945 • HTTP 1.1 - RFC 2616 • HTTPS • Basic and digest HTTP authentication - RFC 2617
Data Features	• PPPoE client - RFC 1332, RFC 1661, RFC 1334, RFC 1994, RFC 2516, RFC 1471, RFC 1472, RFC 1473, RFC 1877. Note: some PPPoE RFCs are implemented partially. • TFTP or HTTP auto-provisioning • DHCP server • NAPT
QoS	• ToS • DiffServ • 802.1p • 802.1Q

Hardware Features

Interfaces

Mediatrix 4108

▶ 2 x RJ-45 WAN connector, 10/100 BaseT Ethernet access
▶ 8 x RJ-11 connectors, analog phone/fax (FXS) interface
▶ 1 x RJ-11 connector, PSTN bypass

Mediatrix 4116

▶ 2 x RJ-45 WAN connector, 10/100 BaseT Ethernet access
▶ 16 x RJ-11 connectors, analog phone/fax (FXS) interface
▶ 1 x RJ-11 connector, PSTN bypass

Mediatrix 4124

▶ 2 x RJ-45 WAN connector, 10/100 BaseT Ethernet access
▶ 1 x RJ-21X TELCO 25 pairs connector, analog phone/fax (FXS) interface
▶ 1 x RJ-11 connector, PSTN bypass

Power

▶ AC: Standard power cord receptacle (IEC 320 – C14) for universal AC input internal SMPS (Mediatrix 4108/4116/4124).

Product Architecture Details

▶ Supports multiple concurrent communications using any vocoders.
▶ DSP-based DTMF detection and generation.
▶ DSP-based echo cancellation (G.168) (Mediatrix 4108/4116/4124).
▶ DSP-based fax/data relay.
▶ Embedded operating system with 32-bit real-time multitasking Kernel.
▶ Embedded IPv4 TCP/IP stack with configurable QoS implemented by:
  • ToS byte at Network layer 3
  • 802.1p at Data Link layer 2
▶ Network parameters assigned via DHCP

Real Time Fax Router Technical Specifications

Automatic selection between voice and fax.

Table 19: Fax Technical Specifications

Parameter	Description
Ethernet	10/100 BaseT Ethernet

Table 19: Fax Technical Specifications (Continued)

Parameter	Description
Data Link	Ethernet
Network	IP (Internet Protocol)
Transport	TCP / UDP
Protocols	Group 3 Fax Clear channel (G.711), G.726, or T.38 Real Time Fax Over IP protocol Stack
Fax Data Compression	MH
Fax Transmission	Up to 14.4 kbps

Analog Line Interface (FXS)

- ▶ RJ21X connector (Mediatrix 4124)
- ▶ RJ-11 connectors (Mediatrix 4108/4116)
- ▶ Direct connection to a fax machine or telephone (Internal installation and internal cabling) (Mediatrix 4108/4116)
- ▶ DC feeding of the access line protected for over voltage
- ▶ Loop current detection and hook flash detection capable
- ▶ Generation of Selective Ring

Table 20: Analog Line Interface

Parameter	Description
Trunk Type	Loop Start: capable of Wink and Immediate signalization
Ring Source	45 VRMS max @ 20 up to 50 Hz (selectable) sine signal
Nominal Impedance	BellCore compliant 600/900 ohms default setting.
Ring Drive Capacity	Up to 3 ringer equivalents (3 RENs) per port.
Loop Current Range	15 to 32 ma factory set. Default 20 ma regulated.
Ring Trip Detection Time	2 ring cycles max
On Hook Voltage	-48 VDC
Frequency Response	200 Hz to 3400 Hz ±3 dB (Tx/Rx)
Return Loss	500-3200 Hz: 30 dB

Audio Specifications

- ▶ Software-adjustable dynamic and static jitter buffer protection.
- ▶ Programmable by country: Call progress tone generation including dial tone, busy tone, ringback and error tones.
- ▶ DSP-based echo control device.
- ▶ Silence detection/suppression level software adjustable.

DTMF Tone Detection

Table 21: DTMF Tone Detection

Parameter	Description
16-Digit DTMF Decoding	0 to 9, *, #, A, B, C, D
Permitted Amplitude Tilt	High frequency can be +2 dB to -8 dB relative to low frequency
Dynamic Range	-25 dBm to 0 dBm per tone
Frequency Accept	± 1.5% of nominal frequencies
Minimum Tone Duration	40 ms
Interdigit Timing	Detects like digits with a 40 ms interdigit delay

DTMF Tone Generation

Table 22: DTMF Tone Generation

Parameter	Description
Per Frequency Nominal	-8 dBm to -5 dBm
Frequency Deviation	Within 1.5% of nominal values

Power Consumption

Table 23: Power Consumption

Mediatrix Model	Voltage/ Frequency	Operating Condition	Current (mA)	Power (W)	VA	Thermal Dissipation (W)
4108	120Vac / 60Hz	All ports off hook	226	18	27	17
	240Vac / 50Hz	All ports off hook	176	20	42	19
	120Vac / 60Hz	All ports ringing into 3REN each	306	25	37	15
	240Vac / 50Hz	All ports ringing into 3REN each	233	28	56	18
4116	120Vac / 60Hz	All ports off hook	368	30	44	28.5
	240Vac / 50Hz	All ports off hook	274	34	66	32.5
	120Vac / 60Hz	All ports ringing into 3REN each	532	43	64	23.5
	240Vac / 50Hz	All ports ringing into 3REN each	341	43	82	23.5

Table 23: Power Consumption (Continued)

Mediatrix Model	Voltage/ Frequency	Operating Condition	Current (mA)	Power (W)	VA	Thermal Dissipation (W)
4124	120Vac / 60Hz	All ports off hook	540	41	65	41
	240Vac / 50Hz	All ports off hook	360	41	86	41
	120Vac / 60Hz	All ports ringing into 3REN each	580	37	70	37
	240Vac / 50Hz	All ports ringing into 3REN each	500	37	120	37

MTBF Value

The Mean Time Before Failure (MTBF) value of the Mediatrix 4100 models is estimated as follows:

- ▸ Mediatrix 4108: 200,000 hours
- ▸ Mediatrix 4116: 190,000 hours
- ▸ Mediatrix 4124: 180,000 hours

These values are at 25 degrees Celsius ambient temperature. It has been defined using RelCalc v5.0, Bellcore method (LimitedStress - Method I, Case 3), Desktop unit .

Operating Environment

Table 24: Operating Environment

Parameter	Description
Operating Temperature	0°C to 40°C
Humidity	Up to 85%, non-condensing
Storage	-20°C to +70°C

Dimensions and Weight

Table 25: Dimensions and Weight

Parameter	Description
Dimensions	43 cm x 21 cm x x4.4 cm – 17.19 in. x 8.4 in. x 1.74 in. (approx.)
Weight	1.7 kg (3.7 lbs)

Warranty

All Media5 products carry Media5 Corporation's standard three-year hardware and software warranty. An extended warranty is available.

Glossary

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
ESD	Electrostatic Discharge
FCC	Federal Communications Commission (USA)
IETF	Internet Engineering Task Force
IP	Internet Protocol
KSU	Key Service Unit
LAN	Local Area Network
LED	Light Emitting Diode
ma	milliampere
MAC	Media Access Control
MDI	Media Dependent Interface
MDIX	Media Dependent Interface Crossover
PBX	Private Branch eXchange
PSTN	Public Switched Telephone Network
REN	Ringer Equivalence Number
RFC	Request for Comment
SCN	Switched Circuit Network
SIP	Session Initiation Protocol
SMPS	Switching Mode Power Supply
TPE	Twisted-Pair Ethernet
UTP	Unshielded Twisted pair
VAC	Volts Alternating Current
VoIP	Voice over Internet Protocol
WAN	Wide Area Network

Index

Numerics