Collage 740 Backbone ATM Switch Installation Guide

Mandatory regulations

General requirements

The sections that follow outline the mandatory regulations governing the installation and operation of the Collage 740 Backbone ATM Switch. Adherence to these instructions is necessary to ensure that regulatory compliance requirements are met.

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference to radio communications, when the equipment is operated in a commercial environment. The equipment generates, uses, and can radiate radio frequency energy. If it is not installed and used in accordance with the instruction manual, or if it is operated in a residential area, it may cause harmful interference to radio communications. In this case, users will be required to correct the interference at their own expense.

European Directives

The CE mark indicates that the requirements of the following European Directives have been met

- 89/336/EEC Electromagnetic Compatibility Directive
- 73/23/EEC Low Voltage Directive
- 93/68/EEC CE Marking Directive

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Industry Canada

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Food and Drug Administration (FDA)

The product complies with FDA 21 CFR 1040.10 and 1040.11 regulations which govern the safe use of lasers.

Acknowledgments

Release date: August 1996

Safety information: read this first

The following icons are used throughout the guide for safety purposes. You are advised to read, and understand clearly, any procedure marked with these icons.

Hazard: A hazard icon calls attention to a procedure in the installation manual which, if not correctly performed, could result in injury or loss of life. Do not proceed beyond a section marked by this symbol until you fully understand the procedure and can meet the required conditions.

Warning: A warning icon indicates the presence of a hazardous voltage.

Informations de sécurité: lissez attentivement le passage suivant, avant toute autre manipulation

Les icônes suivantes sont utilisées tout au long de ce guide pour les informations de sécurité.

Danger: Une icône de DANGER avertit qu'il existe une procédure spécifique dans le manuel d'installation, si celle-ci n'est pas scrupuleusement respectée, l'utilisateur prend le risque d'une blessure grave, voir la perte de vie. N'avancez pas dans une section qui est marquée par cette icône avant de comprendre entièrement la procédure en question. Assurez-vous de bien remplir les conditions nécessaires.

Attention: Une icône d'avertissement indique la présence d'un voltage dangereux.

Sicherheitsinformation: zuerst lesen

Die folgenden Symbole werden in diesem Handbuch aus Gründen Ihrer Sicherheit verwendet. Wir raten Ihnen jede Prozedur, die mit diesen Symbolen gekennzeichnet ist, aufmerksam zu lesen und genau zu verslehen.

Gefahr: Das Gefahrsymbol macht auf jene Verfahren im Installationshandbuch aufmerksam, die zu Verletzung oder Tod führen können, wenn die Prozedur nicht richtig ausgeführt wird. Fahren Sie unter keinen Umständen fort, wenn Sie dieses Symbol sehen, bevor Sie die Prozedur verslehen und die notwendigen Voraussetzungen erfüllen können.

Warnung: Das Warnsymbol weist auf vorliegende, gefährliche Stromspannung hin.

Safety information: associated documents

To make sure you do not injure yourself or damage your Madge product:

English	Read Madge Networks Safety Guidelines (part number: 102-002) before installing the product.
Chinese	在安装产品之前, 请读 Madge 网络产品安全指示 (102-002 部分).
Dansk	Læs Retningslinjer for sikkerhed mht. Madge netværk (delnummer: 102-002), før produktet installeres.
Nederlands	Lees eerst de Richtlijnen voor de veiligheid van Madge netwerken (artikelnummer 102-002) voordat u dit product installeert.
Suomi	Lue Madge-verkkojen turvaohjeet (osa numero: 102-002) ennen tuotteen asennusta.
Français	Lire les Règles de sécurité pour réseaux Madge (Référence No : 102-002) avant d'installer le produit.
Deutsch	Vor dem Installieren des Produkts die Sicherheitsrichtlinien für Madge Netzwerke (Teilenummer: 102-002) lesen!
Greek	Διαβάστε τις Οδηγίες Ασφαλείας για Δίκτυα **Madge** (αριθμός τεμαχίου: 102-002) πριν εγκαταστήσετε το προϊόν.

Hebrew	קרא את הוראות הבטיחות לרשתות Madge (מס' פריט: 102-002) לפני התקנת המוצר
Italiano	Leggere le Linee orientative per la sicurezza delle reti Madge (n. parte: 102-002) prima di installare il prodotto.
Japanese	製品を取り扱う前に、マッジ ネットワークスのセーフティ ガイドラインをお読みください。（部品番号：102-002）
Norsk	Les Sikkerhet for Madge-nettverk (delnr. 102-002) før du installerer produktet.
Português	Leia as Instruções de Segurança dos Produtos Madge Networks (ref.a 102-002) antes de instalar o produto.
Español	Antes de instalar el producto, lea las Normas de seguridad de las redes Madge (número de pieza: 102-002).
Svenska	Läs gärna "Madge nätverk: säkerhetsföreskrifter" (delnummer: 102-002) innan du installerar produkten.

Contents

Introduction

The Collage 740 Backbone ATM Switch is a high-performance Asynchronous Transfer Mode (ATM) switch that is designed for building and campus backbone applications, high-performance centralized servers, and power-user environments. Its advanced architecture, incorporating Madge Cellrunner switching technology, can support very high traffic loads with no data loss or breaks in communication. The Collage 740 also implements LAN emulation components. LAN emulation enables legacy LAN applications to use a transparent ATM transport medium, so endstations on existing Token Ring and Ethernet LANs can communicate with ATM endstations.

The Collage 740 supports a range of optional modules that enable you to customize the switch to accomodate applications that are appropriate to your networking requirements. It is designed as a software-upgradable product, and therefore, you can extend the functionality of the switch by downloading new microcode software.

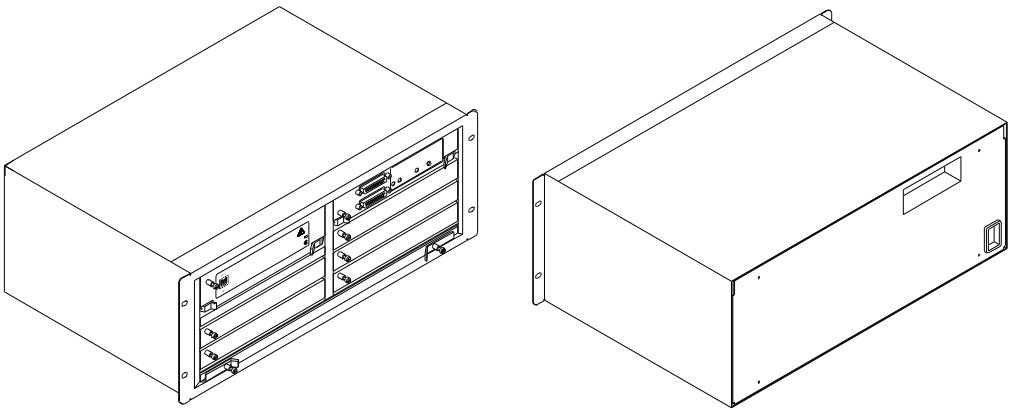
The Collage family provides a complete range of ATM products that enable you to connect switched Ethernet, Token Ring, FDDI, and 25 Mbps ATM to the ATM backbone.

Physical description

The Collage 740 is chassis-based switch that occupies 4U in a standard rack. The Collage 740 is provided with a Power Supply Unit (PSU) Module, a Processor Module, and a Switch Fabric pre-installed. The pre-installed modules perform functions vital to the integrity of the switch and, should they develop a fault, they should only be replaced with modules of the same type.

The Collage 740 chassis contains a fan tray with two cooling fans. The fans must only be serviced or replaced by an approved service engineer. If a fault occurs, contact Madge Networks' technical support services (see Appendix B, "Technical support services").

Figure 1.1 Collage 740 Backbone ATM Switch



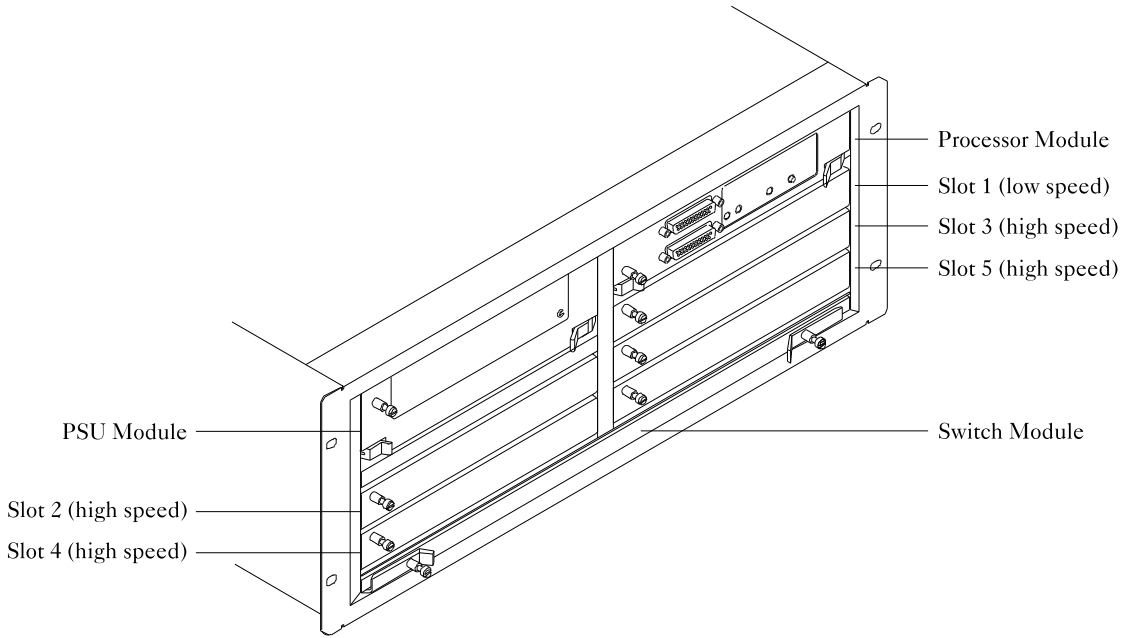
Front Panel

Rear Panel

Front panel

The Collage 740 has five option slots that support the installation of option cards. Option slots 2 through 5 are high-speed slots, which each provide 622Mbps capacity. Option slot 1 is a low speed slot, which provides 155Mbps capacity.

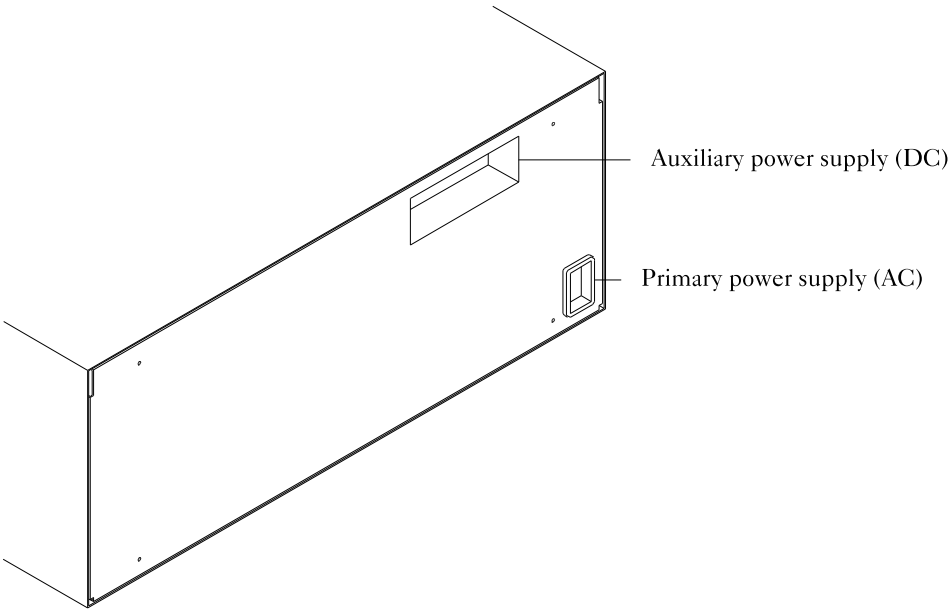
Figure 1.2 Front panel of the Collage 740



Rear panel

The rear of the Collage 740 has two power sockets: an AC mains socket and a DC Backup PSU socket to support a Backup PSU. The AC mains socket enables you to connect the power cord provided with the Collage 740 to power the Internal PSU Module. The DC Backup socket enables you to connect a Backup PSU to the Collage 740 to provide increased resilience by insuring against the possibility of a fault in the internal PSU Module.

Figure 1.3 Rear panel of the Collage 740



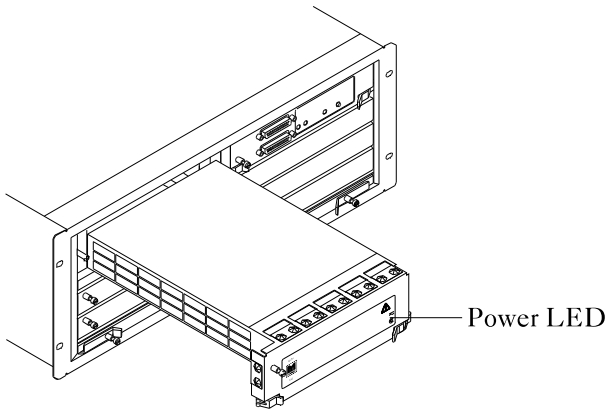
PSU Module

The PSU Module supplies power to the Collage 740 via the backplane. No external connectors are required. You can order the PSU Module as a replacement part. For information about replacing the PSU Module, see “Replacing the PSU Module” in Chapter 3, “Installing modules”.

The Collage 740 also supports the installation of an external Backup PSU device. When a Backup PSU is operating, the power load is shared between the internal and external PSUs. Power sharing adds resilience because if one power supply fails, the other unit supplies the full power load.

The front panel of the PSU Module has an LED labelled ‘Power’ that indicates the status of the internal PSU Module.

Figure 1.4 PSU Module



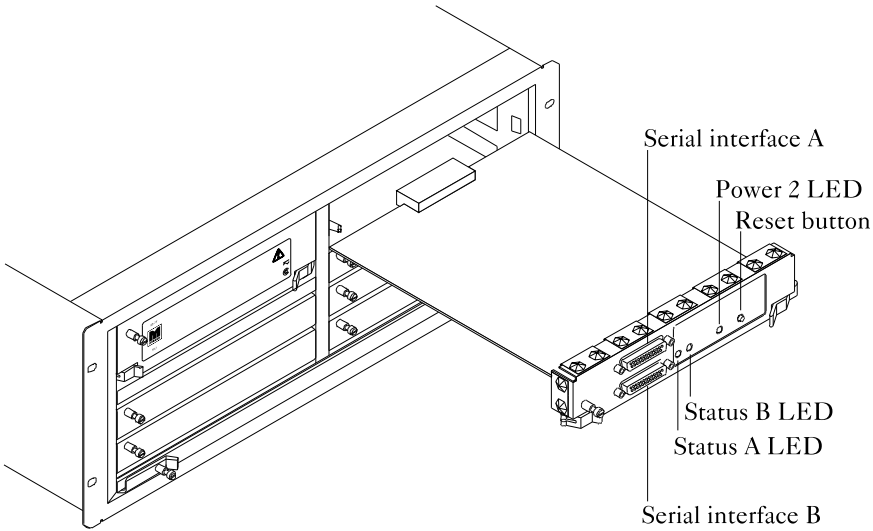
The PSU Module is a pre-installed module that is vital to the integrity of the switch. You must only replace the PSU Module with another module of the same kind.

Only one PSU Module must be installed in the Collage 740. Only the top-left slot in the Collage 740 chassis supports the PSU Module.

Processor Module

The Processor Module provides a hardware platform for running the system software. The Processor Module is connected by a control bus to the Switch Fabric and the option slots; this enables it to manage the operation of the switch fabric, although it does not participate in cell switching. The module also provides management access and is responsible for storing and updating all management information.

Figure 1.5 Processor Module



The Processor Module is a pre-installed module that is vital to the integrity of the switch. You must only replace the Processor Module with another module of the same kind.

The Collage 740 cannot start up without the Processor Module, and must contain only one Processor Module. Only the top-right slot in the Collage 740 chassis supports the Processor Module.

The Processor Module performs the following key functions:

- Collects signalling and management information from the Switch Fabric, which communicates with the option cards by means of the backplane.
- Comprises a boot PROM and flash memory that hold the control software.
- Monitors the status of the PSU Module and Switch Fabric and reports it via LEDs on the front panel.
- Provides two serial ports for out-of-band management and diagnostics.
- Provides a reset button that enables you to reset the Collage 740.
- Monitors the cooling fan and temperature sensor inside the chassis.

The front panel (see Figure 1.5) has three status indicators, two RS-232 ports, and a reset button.

- Status indicators
  The three LEDs on the front panel are labelled 'Status A', 'Status B', and 'Power 2'. During the boot process and start-up diagnostics, the indicators provide information about the status of the Collage 740 modules. The indicators also identify non-critical problems during normal operation.
- Serial ports
  The front panel has two RS-232 serial interfaces. Serial interface A (the upper serial port) provides terminal access to the Processor Module for a VT100 or compatible terminal, or a terminal emulation program. The serial ports have standard 25-way D-type female connectors. You can use serial interface B (the lower serial port) to download software to the Collage 740.
- Reset button
  The reset button provides a hard boot facility that enables you to reset the control software. When you press the reset button, the startup diagnostics run. For the duration of the diagnostic tests, all open management sessions are closed, and ports on the option cards lose their connections. After the reset process, the system reverts to the default software image stored in flash memory.

Note: When the Collage 740 software image is running, use the appropriate command to reboot the switch. Only use the hard boot feature if you cannot gain access to the command-line interface.

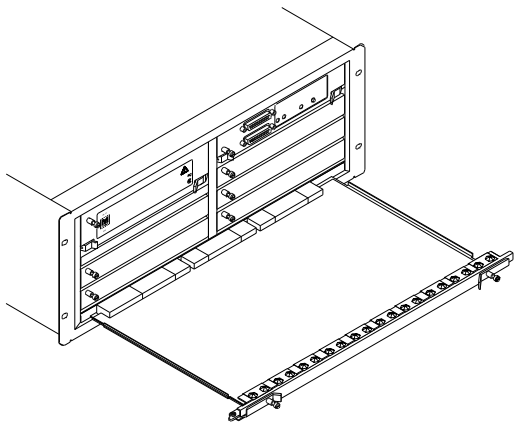
For information about the commands you can use to reboot the Collage 740, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239).

Switch Fabric

The Switch Fabric performs cell switching functions for the option cards via the Collage 740 backplane. The Switch Fabric contains routing circuitry to ensure that a cell received from an input port is correctly switched to one or more output ports. The Switch Fabric also monitors the buffer fill levels and passes the buffer fill level to the option slots. This information is used in the packet discard algorithm that is performed by the option cards on the receive data path.

The Switch Fabric uses a shared output buffer, which supports queues for three priority levels.

Figure 1.6 Switch Fabric



The Switch Fabric is a pre-installed module that is vital to the integrity of the switch. You must only replace the Switch Fabric with another Switch Fabric.

The Collage 740 cannot start up without the Switch Fabric.

Option slots

The Collage 740 chassis comprises a backplane that allows the option cards to exchange information. The option cards act as the physical interface to the Switch Fabric. The control software resides in the Processor Module. Therefore, the Processor Module uses the backplane to communicate control information to the functional modules.

The chassis provides five option card slots, numbered 1 through 5, that support the installation of up to five optional modules. The Collage 740 features two kinds of option card slot.

Table 1.1 Low-speed and high-speed option card slots

Slot	Type	Description
1	Low speed	Option slot 1 provides a 155Mbps data path to the Switch Fabric and supports the installation of low-speed option cards.
2, 3, 4, 5	High speed	Option slots 2 through 5 each provide a 622Mbps data path to the Switch Fabric and support the installation of high-speed option cards. When you install an option card such as the Collage 743 155 Mb Fiber Option Card, the bandwidth is divided to provide four 155Mbps ports.

Managing the switch

The Collage 740 provides a console management interface, which enables you to perform simple configuration of the switch. It is also supplied with TrueView Collage 740 Manager, which is an easy-to-use management application that combines a comprehensive range of management features with a graphical user interface.

You can use the following management methods:

- Management from a local or remote console using the command-line interface.
- Management from a management station using TrueView Collage 740 Manager and SNMP.

For information about the commands that are available over the command-line interface, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239).

Management from a local or remote console

You can manage the Collage 740 using the following methods:

- Out-of-band console management by means of a VT100-compatible terminal connected to the upper serial port.
- Remote console management using a terminal via Telnet over TCP/IP over an emulated LAN.

For information about connecting a terminal device to the serial interfaces, see Chapter 1, “Installing the Collage 740”.

Management from the network management station

You can manage the Collage 740 using the following methods:

- SNMP management running over UDP/IP over an emulated LAN (ELAN).
  When you manage the Collage 740 over SNMP:
  - Connect the management station to the emulated LAN that the Collage 740 management LEC (MLEC) is connected to, or make sure it can communicate with that ELAN.
  - If you manage the Collage 740 using SNMP over IP, set the IP address of the Collage 740 management LEC, and make sure the management station is either on the same subnet or can communicate with that subnet. If the management station and MLEC are on different subnets, set the default gateway on the Collage 740 so it can communicate with the management station.
  - Make sure you know the SNMP community string.
- TrueView network management station running TrueView Collage 740 Manager. TrueView is a network management platform that supports management applications for a range of Madge products. TrueView Collage 740 Manager enables you to view the device and check the status indicators from the management station, and perform a range of management tasks.
  For more information about TrueView Collage 740 Manager, refer to the *TrueView Collage 740 Manager User Guide* (part number: 100-241).

Installing the Collage 740

When you install the Collage 740 Backbone ATM Switch for the first time, the installation procedure consists of the following tasks:

Hazard: To make sure you do not injure yourself or damage your Madge product, always refer to the installation manual and the *Madge Safety Guide* (part number: 100-002) before installing hardware. If you are in any doubt, contact your customer support representative.

1 Rack-mounting the Collage 740
The Collage 740 is designed to fit into a standard 480 mm (19 inch) rack. You may also need to rack-mount optional hardware such as a Backup Power Supply Unit (PSU).

2 Installing optional hardware
Install option cards into option slots 1 through 5, and install optional hardware such as a Backup PSU, according to your needs.

3 Connecting a serial cable
Prepare the Collage 740 for local or remote management by a terminal or terminal emulator.

4 Connecting the primary power cable

Note: Do not install the Collage 740 until you have read the instructions in the manuals provided.

Prerequisites

This section lists the parts and tools you require to install the Collage 740.

Note: Before you attempt to power up the Collage 740, read through the entire installation procedure.

Parts and tools

To install the Collage 740 and option cards, you need the following parts and tools:

- 3/8" flat-blade screwdriver for the installation screws.
- Electrostatic discharge (ESD) cord and wrist strap.

Associated manuals

When you have installed the Collage 740 according to the instructions in this manual, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239) for information about setting up and managing the switch.

The Collage 740 is designed as a software-upgradable product, which means you can expand the functionality of the switch by downloading new microcode software. The *Collage 740 Backbone ATM Switch User Guide* contains information about configuring the Collage 740 with a particular software release. Make sure the manual is up-to-date for the software release that you have downloaded to the Collage 740.

Electrical considerations

This section provides important information about working with electrical equipment and preventing electrostatic discharge. This section also provides information about online insertion and removal, and lists the manuals that you will need when you install the Collage 740.

Electrical equipment

Follow these basic guidelines when working with any electrical equipment:

- Before beginning any procedures requiring access to the interior of the unit, locate the emergency power-off switch for the room in which you are working.
- Before moving the unit, disconnect all power and external cables.
- If potentially hazardous conditions exist, do not work alone.
- 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 the equipment unsafe.
- Carefully examine your work area for possible hazards such as moist floors and ungrounded power cables.
- Only connect the product to a correctly wired and earthed receptacle.

Preventing electrostatic discharge damage

Electrostatic discharge (ESD) damage, which can occur when electronic cards or components are improperly handled, results in complete or intermittent failures. Collage 740 option cards comprise a printed circuit board that is fixed to a metal carrier. Electromagnetic interference (EMI) shielding and connectors are integral components of the carrier. Although the metal carrier helps protect the board from ESD, whenever you handle option cards you must use a preventative antistatic strap. Handle the option card by the metal carrier and the edges of the card only; never touch components on the board or the connector pins.

Observe the following guidelines to help prevent ESD damage:

- Always use an ESD-preventative wrist or ankle strap and ensure that it makes good skin contact.

Hazard: For safety, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megaohms.

- Connect the equipment end of the strap to the metal case of the Collage 740.
- Handle the option card by the metal carrier and the edges of the card only; never touch components on the board or the connector pins.
- Place a removed option card on an antistatic surface or in a static shielding bag. If the component will be returned to the factory, immediately place it in a static shielding bag.
- Avoid contact between the option card and clothing. The wrist strap only protects the board from ESD voltages on the body; ESD voltages on clothing can still cause damage.

Warning: Do not attempt to remove the backplate on the rear panel of the Collage 740. Removing the backplate exposes you to hazardous voltages that could cause injury or loss of life.

Unpacking the unit

When you unpack the Collage 740, make sure you keep the original packaging materials. You may need them to store, transport, or return the product.

Checking the inventory

Check you have received a complete Collage 740 package before installing the unit. If any items are missing or damaged, please contact Madge Networks' technical support services immediately.

The Collage 740 package should contain:

- Collage 740 Backbone ATM Switch
- *Collage 740 Backbone ATM Switch Installation Guide* (this manual, part number: 100-238)
- *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239)
- *Madge Safety Guide* (part number: 100-002)
- 1 power cord
- 1 crossover RS-232 cable
- Product registration cards.

Before you begin the installation, you should also have:

- At least one option card that will provide a physical interface for ATM traffic
- A package containing Collage 740 software
- *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239). Make sure the user guide corresponds to the software revision that you load onto the switch.

Rack-mounting the Collage 740

Note: The Collage 740 chassis weighs 17 kg (37.5 lb). Another person should be present to support the unit whilst you secure the Collage 740.

The Collage 740 occupies 4U, which is 176 mm (6.9 in.), of vertical space in a standard 480 mm (19 inch) rack. The Collage 740 has built-in mounting brackets.

Note: If you are mounting the Collage 740 in a rack, always mount the product before connecting power or signal cables to it.

Before you mount the Collage 740 in a rack, make sure there is enough space in the rack for the Collage 740 and any peripheral devices that you plan to install. If you will install a Backup PSU (part number: 57-97) allow 2U, which is 88 mm (3.5 in.) of vertical space below the Collage 740.

Make sure you provide a clearance of 40 mm (1.575 in.) around the Collage 740 to enable the internal fans to disperse heat.

To mount the product in a rack:

1 Position the Collage 740 in the rack by aligning the two holes in the mounting bracket with the holes in the rack.

2 Secure the Collage 740 in the rack.

Note: With the base of the product supported by another person, so that you do not drop the product onto the floor or onto other equipment already mounted in the rack, tighten the screws.

Note: Make sure the load is distributed evenly in the rack, and do not use the Collage 740 to support other equipment. This can put excessive strain on the mounting points and result in damage to the unit.

Hazard: When the switch is installed in a rack, the ambient temperature of the environment may exceed the ambient temperature of the room. Provide a greater clearance if necessary, and take care not to block the air vents of the switch. Blocking the air vents reduces the amount of air flow and may result in damage to the unit.

Installing optional hardware

The Collage 740 supports the installation of option cards into option slots 1 through 5, and optional external hardware such as a Backup PSU. This enables you to tailor the configuration to suit your needs; however, you need to install a minimum of one option card that carries ATM traffic to enable the Collage 740 to communicate with other ATM devices.

Installing option cards

The Collage 740 and option cards support the online insertion and removal of option cards into option slots 1 through 5. This means you can insert or remove option cards without disconnecting the power cable. This is also known as hot swapping.

Note: The Collage 740 does not support online insertion and removal of the Processor Module or Switch Fabric. If the Collage 740 is connected to a Backup PSU, it supports online insertion and removal of the internal PSU Module. For more information, see "Replacing the PSU Module" in Chapter 3, "Installing modules".

For information about installing option cards into the option slots, see "Installing option cards" in Chapter 3, "Installing modules" and refer to the manual provided with the option card you plan to install.

Installing a Backup PSU

Madge Networks provides optional hardware that you can connect to the Collage 740. For example, you can connect a Backup PSU to the Collage 740 to provide increased resilience by insuring against the possibility of a fault in the internal PSU Module. When a Backup PSU is operating, the power load is shared between the internal and external PSUs so that if one power supply fails, the other unit supplies the full power load.

When you connect optional hardware to the Collage 740, you may need to download new code to the switch. To find out whether your Collage 740 software supports the hardware that you plan to install, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239).

Warning: Only connect a Backup PSU that is connected to the AC outlet by a correctly wired and earthed receptacle. For more information about the Backup PSU, refer to the *Backup PSU Installation Guide* (part number: 100-240).

Connecting a serial cable

The Collage 740 comes prepared for management access by a terminal or terminal emulator. To obtain local management access to the Collage 740, connect a crossover RS-232 cable from serial interface A (the upper serial port) to a terminal, or to the serial port of a workstation or PC running a terminal emulation program.

Note: Serial interface A comes configured at 9600 baud, 8 bits, 1 stop bit, and no parity.

If you connect the terminal device to serial interface A, and turn on the Collage 740, you will see the output from the boot process on the terminal or terminal emulator. For information about accessing the switch via the command-line interface, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239).

Hazard: Make sure you use a complete shielded cable assembly to connect a device to the serial port. If you use a cable assembly without a continuous chassis-shielding connection, you may cause damage to the Collage 740, or to the device that you connect to the serial port.

The pinouts for the serial interfaces are provided in Table 2.1.

Table 2.1 Pinouts for serial interfaces A and B

Pin	Signal	Pin	Signal
1	Frame Ground	2	Transmit Data (TXD)
3	Receive Data (RXD)	4	Request To Send (RTS)
5	Clear To Send (CTS)	6	Data Set Ready (DSR)
7	Digital Ground	8	Data Carrier Detect (DCD)
9	Not Connected	10	Reserved
11	Reserved	12	Reserved
13	Not Connected	14	Not Connected
15	Not Connected	16	Not Connected
17	Not Connected	18	Not Connected
19	Not Connected	20	Data Terminal Ready (DTR)
21	Not Connected	22	Not Connected
23	Reserved	24	Reserved
25	Reserved		

Connecting the primary power cable

When you have mounted the Collage 740 in a rack, connect the primary power supply socket of the Collage 740 to the AC outlet with the power cable provided.

For units used at 115V, use a UL-listed and CSA-certified (or equivalent) cord set consisting of:

- A minimum of 18 AWG, type SVT or SJT, three-conductor cord that is a maximum of 4.5 meters (15 feet) long
- A parallel blade, grounding-type attachment plug rated 15A and 125V

For units used at 230V (for use within the United States), use a UL-listed and CSA-certified (or equivalent) cord set consisting of:

- A minimum of 18 AWG, type SVT or SJT, three-conductor cord that is a maximum of 4.5 meters (15 feet) long
- A tandem blade, grounding-type attachment plug rated 15A and 250V

For units used at 230V, use a cord set consisting of a minimum of 18 AWG cord with a grounding-type attachment plug rated 15A and 250V.

Hazard: Only connect the power cable to a correctly wired and earthed receptacle.

Make sure that the cord set has the appropriate safety approvals for the country in which the equipment will be installed, and that it is designated as harmonized.

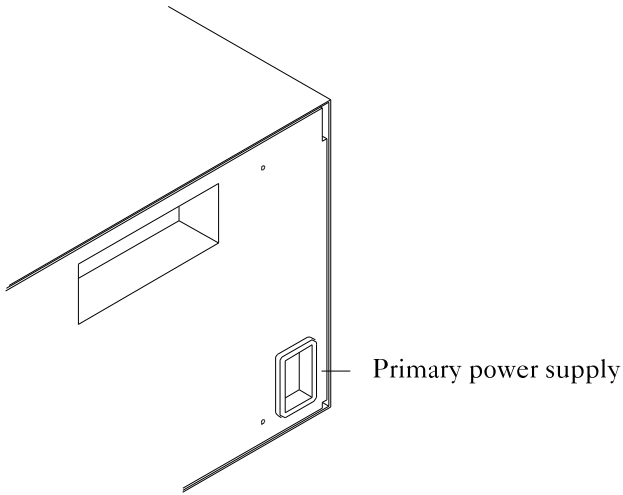
Hazard: For safe operation and servicing, the AC outlet must be located near the product and be easily accessible.

Warning: Electrical current from power, telephone, and communications cables is hazardous. To avoid an electrical shock when installing or moving the product or devices attached to the product, connect and disconnect cables as shown in the *Madge Safety Guide* (part number: 100-002).

When you connect the Collage 740 to the AC outlet:

1 Connect the power cable to the primary power supply socket on the rear panel of the unit.

Figure 2.1 Connecting the power cable



2 Connect the power cable to the AC outlet.

Moving the product

Before you move the Collage 740, disconnect the signal cables and power supply cables.

Note: If you have installed a Backup PSU, refer to the *Backup PSU Installation Guide* (part number: 100-240).

To disconnect the cables:

1 Disconnect the power cable from the AC outlet.
2 Disconnect the power cable from the primary power supply socket on the rear panel of the unit.
3 Disconnect the signal cables.

To reconnect the cables:

1 Connect the signal cables.
2 Connect the power cable to the primary power supply socket on the rear panel of the unit.
3 Connect the power cable to the AC outlet.

Installing modules

This chapter provides guidelines for inserting or removing the pre-installed PSU Module, Processor Module, and Switch Fabric. Refer to the manual provided with the option card for detailed installation procedures for option cards.

Hazard: To make sure you do not injure yourself or damage your Madge product, always refer to the installation manual and the *Madge Safety Guide* (part number: 100-002) before installing hardware. If you are in any doubt, contact your customer support representative.

When you install an option card, you may need to download new code to the Collage 740. To find out whether your Collage 740 software supports the option card that you plan to install, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239).

Warning: Electrical current from power, telephone, and communications cables is hazardous. To avoid an electrical shock when installing or moving the product or devices attached to the product, connect and disconnect cables as shown in the *Madge Safety Guide* (part number: 100-002).

Electrical considerations

Before you begin the installation, refer to “Electrical considerations”in Chapter 2, “Installing the Collage 740” for information about working with electrical equipment and preventing electrostatic discharge.

Associated manuals

For other information about installing option cards, refer to the installation manual provided with the option card.

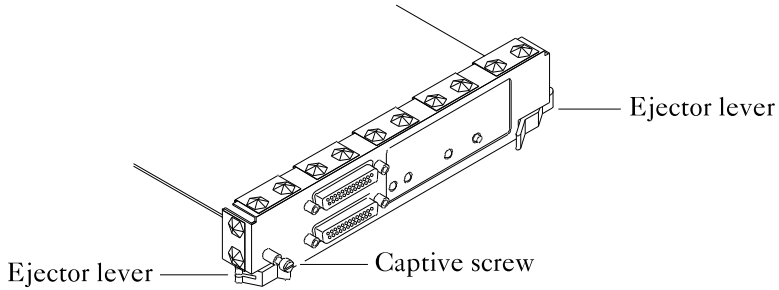
Inserting and removing pre-installed modules

The Collage 740 is provided with a PSU Module, a Processor Module, and a Switch Fabric pre-installed. The pre-installed modules perform functions vital to the integrity of the switch, and can be replaced with modules of the same type should they develop a fault.

The Collage 740 cannot start up at all without the Processor Module or Switch Fabric, therefore the modules do not support online insertion and removal.

Each of the pre-installed modules has two ejector levers, and either one or two captive screws. For example, Figure 3.1 shows the ejectors and screw on the Processor Module.

Figure 3.1 Processor Module ejectors and captive screw



Replacing the PSU Module

If you have a Backup PSU installed to provide power sharing capabilities, and your Collage 740 software supports online insertion and removal, you can install or withdraw the internal PSU Module without turning off the Collage 740.

Note: Only attempt to replace the PSU Module whilst the power is connected if you have installed a Backup PSU, and the Collage 740 has software release 1.1 or later.

To replace the internal PSU Module:

Note: If you manage the Collage 740 by connecting a terminal or terminal emulator to the upper serial port, exit all management sessions before turning off the power.

1 If you have installed a Backup PSU, refer to the *Backup PSU Installation Guide* (part number: 100-240) before disconnecting the power cable.
2 Disconnect the power cable from the AC outlet.

Hazard: Always disconnect the power cable from the AC outlet before proceeding with the installation procedure.

3 Disconnect the power cable from the primary power supply socket on the rear panel of the Collage 740.
4 Using a flat-blade screwdriver, completely loosen the captive screw above the left-hand ejector.
5 Press the ejectors on the existing PSU Module away from the module and, holding the ejectors with both hands, pull the PSU Module away from the unit.
6 Support the underside of the module with one hand, and remove it from the chassis. Place the removed module on an antistatic mat or foam pad, or place it in an antistatic bag if you will return it to the factory.
7 Prepare the replacement module by pressing the ejectors away from the center of the card.

8 Supporting the underside of the module with one hand, line up the replacement module with the card guides in the top-left slot that was occupied by the module that you removed.
9 Holding the ejectors with both hands, push the module towards the back of the unit.

Note: If the module does not slide into the chassis smoothly, do not force it. Check that the module is aligned with the card guides.

10 When you are sure that the module is fully seated in the backplane, press the ejectors on the replacement PSU Module towards the center of the module. If the ejectors do not move easily, gently push the module towards the rear of the unit to make sure that the module is seated properly.
11 Using a flat-blade screwdriver, completely tighten the captive screw.
12 Connect the power cable to the primary power supply socket on the rear panel of the unit.
13 Connect the power cable to the AC outlet.

Replacing the Processor Module

The Processor Module is vital to the integrity of the switch and should only be replaced with another Processor Module. The Collage 740 cannot start up without the Processor Module, so the module does not support online insertion and removal.

To replace the Processor Module:

Note: If you manage the Collage 740 by connecting a terminal or terminal emulator to the upper serial port, exit all management sessions before turning off the power.

1 If you have installed a Backup PSU, refer to the *Backup PSU Installation Guide* (part number: 100-240) before disconnecting the power cable.
2 Disconnect the power cable from the AC outlet.

Hazard: Always disconnect the power cable from the AC outlet before proceding with the installation procedure.

3 Disconnect the power cable from the primary power supply socket on the rear panel of the Collage 740.
4 Using a flat-blade screwdriver, completely loosen the captive screw above the left-hand ejector.
5 Press the ejectors on the existing Processor Module away from the module and, holding the ejectors with both hands, remove the Processor Module. Place the removed Processor Module on an antistatic mat or foam pad, or place it in an antistatic bag if you will return it to the factory.
6 Prepare the replacement module by pressing the ejectors away from the center of the module.

7 Line up the replacement module with the card guides in the top-right option slot that was occupied by the module that you removed, and make sure it is centered between the two card guides.
8 Holding the ejectors with both hands, push the module towards the back of the unit.

Note: If the module does not slide into the chassis smoothly, do not force it. Check that the module is centered between the card guides on each side.

9 When you are sure that the module is fully seated in the backplane, press the ejectors on the replacement Processor Module towards the center of the module. If the ejectors do not move easily, gently push the module towards the rear of the unit to make sure it is seated properly.
10 Using a flat-blade screwdriver, completely tighten the captive screw above the left-hand ejector.
11 Connect the power cable to the primary power supply socket on the rear panel of the unit.
12 Connect the power cable to the AC outlet.
13 If you have installed a Backup PSU device, connect the power cable from the Backup PSU to the auxiliary power supply socket on the rear panel of the Collage 740.

Replacing the Switch Fabric

The Switch Fabric is vital to the integrity of the switch and should only be replaced with another Switch Fabric. The Collage 740 cannot start up without the Switch Fabric, so the module does not support online insertion and removal.

To replace the Switch Fabric:

Note: If you manage the Collage 740 by connecting a terminal or terminal emulator to the upper serial port, exit all management sessions before turning off the power.

1 If you have installed a Backup PSU, refer to the *Backup PSU Installation Guide* (part number: 100-240) before disconnecting the power cable.
2 Disconnect the power cable from the AC outlet.

Hazard: Always disconnect the power cable from the AC outlet before proceding with the installation procedure.

3 Disconnect the power cable from the primary power supply socket on the rear panel of the Collage 740.
4 Using a flat-blade screwdriver, completely loosen the two captive screws on the Switch Fabric.
5 Press the ejectors on the existing Switch Fabric away from the card and, holding the ejectors with both hands, remove the Switch Fabric. Place the removed Switch Fabric on an antistatic mat or foam pad, or place it in an antistatic bag if you will return it to the factory.
6 Prepare the replacement module by pressing the ejectors away from the center of the module.

7 Line up the replacement module between the card guides in the bottom slot and, holding the ejectors with both hands, push the module towards the back of the unit.

Note: If the module does not slide into the chassis smoothly, do not force it. Check that the module is aligned with the card guides.

8 When you are sure that the module is fully seated in the backplane, press the ejectors on the replacement Switch Fabric towards the center of the module. If the ejectors do not move easily, gently push the module towards the rear of the unit to make sure it is seated properly.
9 Using a flat-blade screwdriver, completely tighten the two captive screws.
10 Connect the power cable to the primary power supply socket on the rear panel of the unit.
11 Connect the power cable to the AC outlet.
12 If you have installed a backup PSU device, connect the power cable from the Backup PSU to the auxiliary power supply socket on the rear panel of the Collage 740.

Installing option cards

The Collage 740 chassis provides five option slots that support the installation of option cards. You need to install at least one option card that carries ATM traffic to enable the Collage 740 to communicate with other ATM devices. For guidelines for installing option cards, refer to the manuals provided with the option card.

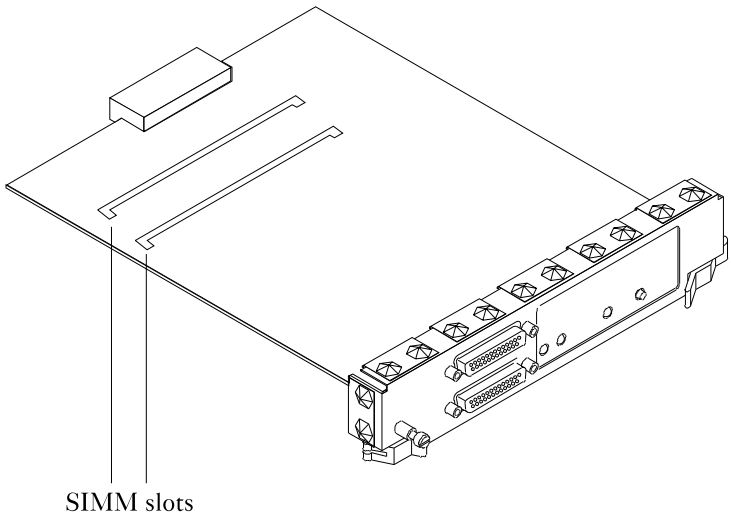
Warning: Electrical current from power, telephone and communications cables is hazardous. To avoid an electrical shock, connect and disconnect cables as shown in the *Madge Safety Guide* (part number: 100-102) when installing or moving the product or devices attached to the product.

When you install an option card, you may need to download new code to the Collage 740. To find out whether your Collage 740 software supports the option card that you plan to install, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239).

Installing additional memory

The Collage 740 is provided with 8 MB of Dynamic Random-Access Memory (DRAM) hard-wired onto the Printed Circuit Board (PCB) of the Processor Module. You can upgrade the Collage 740 by installing additional memory into the two Single In-line Memory Module (SIMM) sockets on the Processor Module PCB. The sockets are located near the top-left side of the PCB, as you face the metal part of the module as shown in Figure 3.2.

Figure 3.2 Locating SIMM slots on the Processor Module PCB



Each of the SIMM sockets can accomodate 16 MB of DRAM. The SIMMs should be NO PARITY 72-pin SIMMs rated at 70 nanoseconds (ns) or faster.

You must make sure that both sockets are occupied and contain SIMMS of the same size. This means you can install two 16 MB SIMMS to add 32 MB DRAM.

Note: If you install additional memory, the Collage 740 continues to make use of the pre-installed RAM that is hard-wired onto the Processor Module. Therefore, installing two 16MB SIMMs provides a total of 40 MB DRAM.

To install a SIMM:

1 Remove the Processor Module from the Collage 740 (see "Replacing the Processor Module" in this chapter).
2 Locate the cutout area on one corner of the SIMM.
3 Hold the SIMM with the cutout facing the back of the PCB.
4 Align the SIMM's edge connector with the slot in the center of the SIMM socket.
5 Press the edge connector firmly into the socket.
6 Pivot the SIMM up and to the right until it clicks into place.

   The metal tabs at each end of the socket snap into place around the SIMM, and the small retention pegs snap into the holes at each end of the SIMM. You should hear a click.

   If you do not hear a click, you have not aligned the SIMM correctly, and the retention pegs have not snapped cleanly into the holes. Remove the SIMM and reinstall it.

To remove a SIMM:

1 Spread the inner metal tabs of the SIMM socket apart just far enough for the SIMM to disengage from the socket.
2 Lift the SIMM away from the socket.

Understanding status indicators

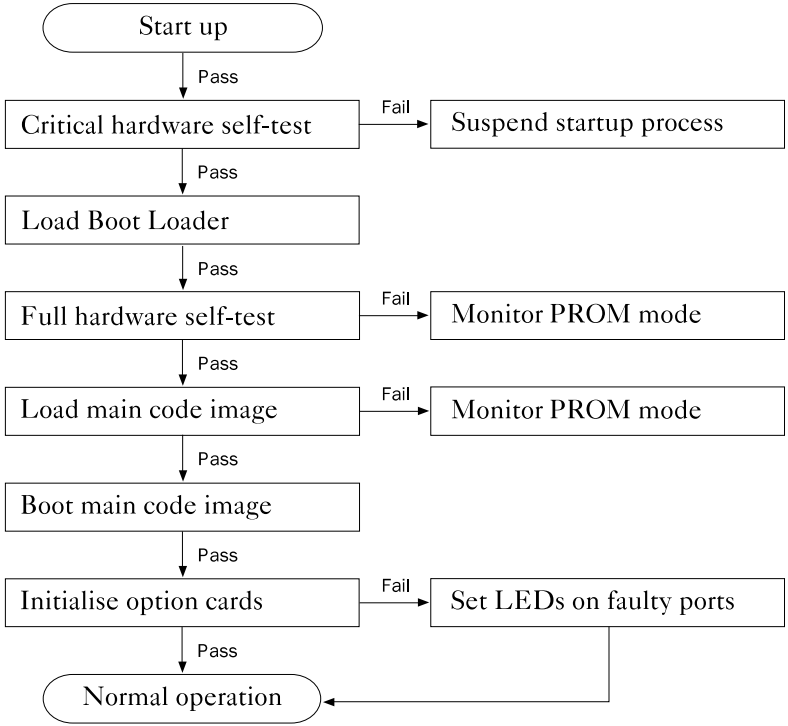
This chapter describes the behavior of the front panel status indicators on the PSU Module and the Processor Module. During the boot process and normal operation, the indicators display information about the status of the Collage 740.

During normal operation, the Collage 740 continuously monitors the hardware for non-critical faults. If the system detects a fault, the status indicators on the front panel describe the fault that occurred.

Startup self tests

After the system boots up and loads the code image from flash memory, the Collage 740 automatically performs a self-test of the hardware (see Figure 4.1), running a low-level critical hardware self-test followed by a full hardware self-test.

Figure 4.1 Startup self-test sequence



The startup stages shown in Figure 4.1 are:

- Critical hardware self-test (see Table 4.1)
  If any component fails the test, the Collage 740 cannot continue with the full hardware diagnostics and the startup process is suspended. Whilst the startup process is suspended, you can view the status of the LEDs at the time of the failure.
- Load boot loader
  The Collage 740 loads the boot loader software that enables it to run the full hardware self-test and load the code image.
- Full hardware self-test (see Table 4.2)
  If any component fails the test, the Collage 740 cannot start up and the startup process is suspended. You can view the status of the LEDs at the time of the failure and, if necessary, enter Monitor PROM mode to attempt to remedy the problem.

Note: For information about the Monitor PROM mode of operation, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239).

- Load main code image
  When the critical hardware self-test and full hardware diagnostics have been completed, the Collage 740 extracts a code image from its flash memory banks.
- Boot main code image
  When the Collage 740 has extracted the code image from flash memory, it uses the main code image to boot up.
- Initialize option cards
  The option cards are initialized when the main code image has booted up.

Critical hardware self-test

The critical hardware self-test checks the status of the hardware components of the Processor Module, and displays different combinations of LEDs for each test (see Table 4.1). The Status A LED is off while the critical hardware self-tests are running, and the 'Status B' LED identifies the current sub-test.

If the Collage 740 fails the critical hardware self-test at any step, reset the switch by pressing the reset button, to check that the problem recurs. If the problem does recur, there may be a fault in the Processor Module. For information about replacing the Processor Module, see "Replacing the Processor Module" in Chapter 3, "Installing modules".

The sub-tests of the critical hardware self-test are shown in Table 4.1.

Table 4.1 LED displays for sub-tests of the critical hardware self-test

Sub-test number and name		Status A LED	Status B LED	Power 2 LED
1	EPROM checksum	off	red	off
2	DRAM	off	amber	off
3	Timer tick	off	green	off
4	Cache	off	flashing red	off
5	Serial interface A	off	flashing amber	off
6	Serial interface B	off	flashing green	off
7	Power 2 LED	off	off	red

When the Collage 740 passes the final step, the Power 2 LED turns green.

Note: Normally, when the Collage 740 passes the tests, the LEDs change quickly. Steps 4, 5, and 6 of the critical hardware self-test run so quickly that it may not be clear that the Status B LED is flashing unless the Collage 740 fails the test. As the Collage 740 passes each test, you will see the Status B LED change from red, to amber, to green.

Load boot loader

When the critical hardware self-test is complete, the Collage 740 loads the boot loader program, that enables it to run the full hardware self-test and extract and load the code images.

Full hardware self-test

The full hardware self-test checks the status of all the hardware components and option cards, and displays different combinations of LEDs for each test (see Table 4.2). The Status A LED is red while the full hardware self-tests are running, and the 'Status B' LED identifies the current sub-test.

If the Collage 740 fails the full hardware self-test at any step, reset the switch by pressing the reset button, to check that the problem recurs. If the problem does recur, there may be a fault in the Processor Module, the Switch Fabric, or an option card. Use the Monitor PROM mode of operation to attempt to diagnose the cause of the failure.

Note: For information about the Monitor PROM mode of operation, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239).

The LED displays for sub-tests of the full hardware self-test are shown in Table 4.2.

Table 4.2 LED displays for sub-tests of the full hardware self-test

Sub-test number and name	Status A LED	Status B LED
1 EEPROM checksum	red	red
2 DRAM/SIMM	red	amber
3 Flash checksum	red	green
4 Shared memory	red	flashing red
5 SAR	red	flashing amber

During the full hardware self-test, the status of the Power 2 LED is not important. If the system passed the critical hardware self-test, the Power 2 LED appears green, or if it did not pass the test it appears red.

If the code image is missing or corrupted, test 3 of the full hardware test will fail. If this occurs, the Collage 740 sets the Status A LED to red, and the Status B LED to green.

Note: Normally, when the Collage 740 passes the tests, the LEDs change quickly. Steps 4, 5, and 6 of the full hardware self-test run so quickly that it may not be clear that the Status B LED is flashing unless the Collage 740 fails the test. As the Collage 740 passes each test, you will see the Status B LED change from red, to amber, to green.

Load main code image

When the critical hardware self-test and full hardware diagnostics have been completed, the Collage 740 extracts a code image from its flash memory banks.

When the full hardware self-test is complete, the Status A LED flashes green for a short time. This indicates that the critical hardware self-test and full hardware diagnostics have been completed, and the Collage 740 is extracting a code image from its flash memory banks.

If the Collage 740 cannot load the code image because it is corrupted or missing, the Status A LED turns red and the Status B LED flashes alternate red and green. This means you need to download new software to the Collage 740 using the Monitor PROM mode of operation.

Note: For information about the Monitor PROM mode of operation, refer to the *Collage 740 Backbone ATM Switch User Guide* (part number: 100-239).

Boot main code image

When the Collage 740 has extracted the main code image from flash memory, it boots up using the default code image.

Initialise option cards

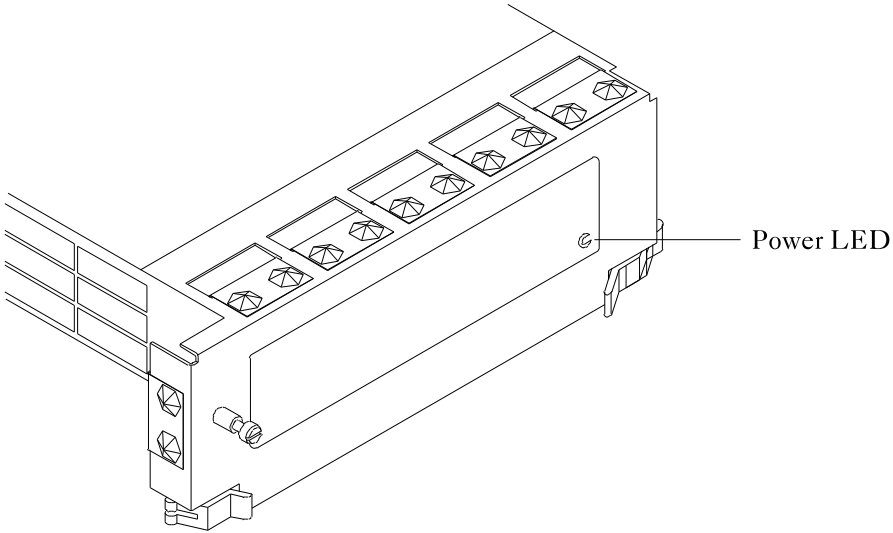
The option cards are initialized when the main code image has booted up. The Collage 740 sets the color of the LEDs on the option cards that are present in the chassis. The color sequence is red, amber, then green, and the option slot sequence is Slot 2, Slot 3, Slot 4, Slot 5, and Slot 1. If any option card fails the self-test, the LEDs on ports that failed remain red.

Note: If any option slot does not contain an option card, it does not take part in the startup tests.

PSU Module status indicators in normal operation

The PSU Module includes an LED labelled ‘Power’.

Figure 4.2 Front panel of the PSU Module



Power LED

The ‘Power’ LED indicates the status of the internal PSU Module.

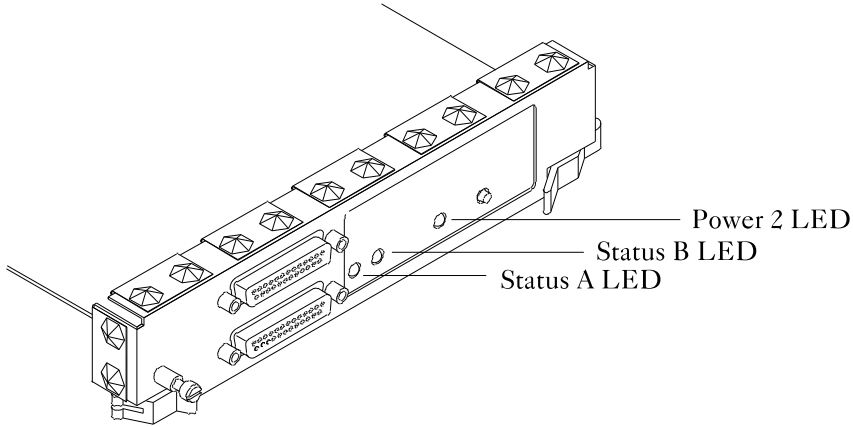
Table 4.3 Power LED description

LED color	Meaning
green	There is power to the Collage 740 and the voltage of the power supply is within the required range.
off	The voltage of the power supply to the Collage 740 is not within the required range. If the Power 2 LED on the Processor Module is off, there is no power to the Collage 740. If the Power 2 LED on the Processor Module is lit, refer to Table 4.4 to diagnose the condition.

Processor Module status indicators in normal operation

The Processor Module has status indicators labelled ‘Status A’, ‘Status B’, and ‘Power 2’.

Figure 4.3 Front panel of the Processor Module



Power 2 LED

The Power 2 LED describes the status of the power supply.

Table 4.4 Power 2 LED description

LED color	Meaning
red	An external Backup PSU Module is powered up and operating correctly. The internal PSU Module is present, but the voltage of the supply is outside the specified range. For more information, contact Technical Support Services (see Chapter 5).
amber	The internal PSU Module is powered up and operating correctly. A Backup PSU is present, but the voltage of the supply is outside the specified range. For more information, contact Technical Support Services.
green	The installed PSU units are powered up and operating correctly. Power is being supplied by the internal PSU Module, an external Backup PSU device, or both. When both internal and external PSUs are operating, the power load is shared between the two units. Power sharing adds resilience because if one PSU fails, the other unit supplies the full power load. If this condition occurs, the LED turns red or amber.
off	There is no power to the Collage 740.

Status A LED

During normal operation, the Status A LED indicates the status of the Collage 740.

Table 4.5 Status A LED during normal operation

LED color	Meaning
amber	Either the Collage 740 cannot use the default code image and has loaded the secondary code image from the other flash memory bank, or the Collage 740 is using the default code image and the secondary image failed a checksum test.
green	If the Status B LED is also green, the Collage 740 is operating correctly.

Status B LED

During normal operation, the Status B LED identifies non-critical problems with the Collage 740.

Table 4.6 Status B LED during normal operation

LED color	Meaning
red	The temperature inside the unit is too high.
amber	The internal or backup fan is too slow.
green	If the Status A LED is also green, the Collage 740 is operating correctly.
off	A non-critical error occurred.

Technical specifications

This appendix provides:

- Physical specifications
- Ordering information

Physical specifications

This section provides physical specifications for the Collage 740 base product.

Dimensions

This section provides the dimensions of the chassis.

Table A.1 Collage 740 dimensions

Feature	Description
Width	444 mm (17.5 in.)
Height	176 mm (6.9 in.)
Depth	305 mm (12 in.)
Weight	17 kg (37.5 lb)

Power requirements

This section provides power requirements.

Table A.2 Collage 740 power requirements

Feature	Description
Universal power entry	100-120/200-240 VAC 50/60Hz
Max power dissipation	<400watts

Environmental specifications

This section provides environmental specifications.

Table A.3 Collage 740 environmental specifications

Feature	Description
Operating temperature	10-40 ºC (50-104 ºF)
Humidity	10-90%RH non-condensing

Ordering information

You can order:

- The Collage 740 base product
- Spares and replacement parts for the Collage 740.

For information about ordering option cards and modules for the Collage 740, refer to the *Collage 740 Option Cards Installation Guide* (part number: 100-244).

Base product

This section lists part numbers for the base product.

Table A.4 Base product ordering information

Part number	Description
57-70	Collage 740 Backbone ATM Switch with LAN Emulation Services
57-81	Collage 740 Backbone ATM Switch
85-09	Collage 749 LAN Emulation Services software
57-91	Backup Power Supply Unit (PSU)

Spares and replacements

This section lists part numbers for spares and replacement parts.

Table A.5 Spares and replacements ordering information

Part number	Description
57-78	Collage 745 Processor Module
57-71	Collage 741 Switch Fabric
57-77	Power Supply Unit (PSU) Module

Technical support services

Technical support is available to all Madge customers.

To receive technical support:

- Use the PC Vendor G Forum on CompuServe.
- Use the Madge Networks section on NIFTY-Serve (only accessible in Japan)
- Email Technical Support (see “Telephone, fax, BBS, and email” on page 61)
- Telephone Madge Technical Support (see “Telephone, fax, BBS, and email” on page 61)

To get software upgrades and product information:

- Use the Bulletin Board System (BBS)
- Use the PC Vendor G Forum on CompuServe
- Use the Worldwide Web home page (http://www.madge.com)
- Use Madge Networks’ FTP server (ftp.madge.com)
- Contact your local Madge office or representative

Worldwide Web (WWW)

To access the Madge Networks service on the web, use either a web browser or FTP software.

Using a web browser

To access the full home page service, enter the URL:

http://www.madge.com

To access the Japanese home page service, enter the URL:

http://www.madge-jp.com

Using FTP software

If you do not have a web browser, you can still download new or updated software by using FTP software.

If you use FTP software:

1 Connect to ftp.madge.com
2 Connect to ftp.madge-jp.com/pub, for the Japanese service.
The system prompts you for your login name.
3 Type ANONYMOUS
The system prompts you for a password.
4 Type your full email address.

Once this is complete, you can issue file transfer commands.

Telephone, fax, BBS, and email

Region	Support Service	Support Number
Europe, Middle East, Africa	Telephone	+44 1628 858700
	Fax	+44 1628 858977
	BBS	+44 1628 858008
	Email	eurtech@madge.com
Americas	Telephone	800 876 2343
	BBS	+1 408 955 0262
	Email	us-suprt@madge.com
Asia, Australia, New Zealand	Telephone	+852 2593 9839
	BBS	+852 2593 9829
	Email	support@madge.com
Japan	Telephone	+81 3 5232 3275
	Fax	+81 3 5232 3276
	Email	support@madge.com

Toll-free regional support numbers

Country	Number
Americas	800 876 2343
Australia	02 9936 1739 *
Austria	0660 8366
Belgium	0800 10485
Denmark	800 17649
Finland	0800 118 074
France	05 90 82 50
Germany	0130 868828
Hong Kong	2593 9839 *
Israel	177 440 2530
Italy	1678 72092
Malaysia	800 4137

Country	Number
Netherlands	06022 7120
Norway	800 11759
Portugal	0505 44 4602
Singapore	800 852 3151
South Africa	0800 991013
Spain	900 974412
Sweden	020 793127
Switzerland *(French)*	155 6432
Switzerland *(German)*	155 1057
Thailand	2231 8191 *
United Kingdom	Lo-call: 0345 125539

* Indicates local telephone numbers where the calls are charged at the normal rate

CompuServe

If you are a CompuServe member, access the Madge Networks Section by typing GO MADGE at the ! prompt or, load a Windows application such as WinCIM, and type MADGE in the Go option from the Services menu.

Madge Networks' service on CompuServe provides the following facilities:

- Message section
- Library
- Conference area
- Latest software releases

For customers who have not experienced the benefits that access to CompuServe can bring, Madge Networks offers a free introductory membership. This includes a user-ID and password, one month's access to all of CompuServe's Basic services, and an introductory US$15 usage credit that enables you to access the Madge Networks Section of the PC Vendor G Forum and CompuServe's other Extended and Premium services. You also get complimentary subscription to the monthly CompuServe magazine. To obtain your free introductory membership, call:

Area	Number
UK	0800 289378
Germany	0130 3732
Rest of Europe	+44 272 255111
Americas	800 524 3388
Rest of the world	+1 614 457 0802

NIFTY-Serve

This is an equivalent service to CompuServe but is only available in Japan.

Log into NIFTY-Serve and, at the **>** prompt, type GO FLANVA.

Bulletin Board System (BBS)

Madge Networks maintains a free 24-hour Bulletin Board System (BBS) that provides the latest software and technical support information.

You need a modem to access the BBS. We recommend you use an ANSI (VT100) terminal emulator (for example, ProComm) with your serial port set to: 8-bit data, NO parity check, and ONE stop bit. This is because it is likely that any other setup will cause transmission errors. The BBS supports modem speeds of up to 14 400 baud (with MNP5). Download protocols supported are X Modem, Y Modem, and Z Modem.

Because the BBS is an open system, anyone can log in. The first time that you log in, the system prompts you for your name and for a password. It also asks you to complete a brief questionnaire. Please take the time to complete the questionnaire. The system displays Madge's license agreement and asks you to acknowledge it.

When you log in on subsequent occasions, make sure you enter the same name and password that you entered when you first logged in. The system tells you the last time that you logged in, asks whether you want to read the bulletins, and tells you whether there are any new mail messages for you.

To find out more about the Madge BBS service call:

Area	Number
Germany	0180 535 7273
Rest of Europe	+44 1628 858008
Americas	+1 408 955 0262
Asia, Australia, New Zealand	+ 852 2593 9829

Madge FaxBack

The Madge FaxBack Product Information Service (based in the United States) is an international service for all Madge customers.

To request technical support documents, marketing documents, and information about seminars and events organized by Madge Networks, phone +1 408 383 1002.

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