NetPerformer® SDM-9600 with SDM-9606 Blades Hardware Installation Guide

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Contents

List of Figures

List of Tables

Preface

1.1 About this Document

This document, *NetPerformer® SDM-9600 Hardware Installation Guide*, provides the following information about the SDM-9600 chassis installed with SDM-9606 blades:

- Unpacking instructions ("Unpacking the SDM-9600" on page 2-1)
- Hardware installation instructions ("Hardware Installation" on page 3-1)
- Product description ("Product Description" on page 4-1)
- Troubleshooting procedures ("Troubleshooting Tips" on page 5-1)
- Networking features ("Networking Features" on page 6-1)
- Notice concerning HyperTerminal connection ("Notice Concerning HyperTerminal Connections" on page 8-1).

For information on configuring the NetPerformer, consult the *NetPerformer System Reference*. See the "NetPerformer Document Set" on page 1-6 for a list of other references.

NOTE: All NetPerformer documents are available on the *NetPerformer Documentation CD,* which is included with your product package.

CAUTION: **All documents on the *NetPerformer Documentation CD,* including this guide, *must* be opened with Adobe™ Acrobat Reader 6.0, which is provided on the CD.** If you open a NetPerformer document with an earlier version of Acrobat Reader, some of the text will not appear in its intended format. This can make the text difficult or impossible to read correctly, especially from a printed copy.

1.2 Audience

This document is intended for use by NetPerformer system administrators as well as technicians who are qualified to set up, configure and troubleshoot a NetPerformer Enterprise Network.

Installation of NetPerformer hardware requires knowledge and proficiency in the configuration, operation, maintenance and security of all enterprise network elements in your application. You should also have a thorough understanding of telecommunications and be familiar with the networking strategies and telephony solutions currently used by your organization.

1.2.1 Instructions to the Reader

Instructions to the reader include notes, cautions and warnings, which are distinguished from the rest of the text by distinctive formatting and icons. Here is an example of each:

NOTE: A note may contain a reference, tip or other information related to the subject at hand. The content of a note is intended to be helpful or of interest to the reader.

CAUTION: A caution contains an instruction that the reader **must follow** in order to prevent damage to equipment, network failure or loss of data. **The content of a caution must be read carefully and explicitly obeyed.**

WARNING: A warning contains an instruction that the reader **must follow** in order to prevent electrical shock, death or serious injury to personnel. **The content of a warning must be read carefully and explicitly obeyed.**

1.3 Product Overview

1.3.1 SDM-9600 Chassis

The NetPerformer SDM-9600 is a high-end chassis based on a standardized platform architecture for carrier-grade telecommunication applications. It is ideal for large-scale network applications such as DCME using point-to-point E1/T1 circuits, transport through IP (terrestrial or satellite) or satellite Single Channel Per Carrier (SCPC) connections, and Voice over IP (VoIP). Voice/data over PowerCell applications can use IP or WAN connections and are able to integrate SCPC on digital or serial interfaces.

- PICMG 3.0 standard rack solution
- 19" rack-mountable
- -48 VDC (dual feed)
- Maximum 5 blades, loaded from the front

NOTE: All slots on the SDM-9600 must be installed with the same type of blade, in this case, the SDM-9606.

- Hot swappable components
- Removable fan control module and air filter.

The basic software set provides support of PowerCell Voice and Data (including legacy user data) and IP routing over Ethernet, serial or digital ports using PPP or Frame Relay RFC-1490. Optional software licenses can be procured for support of VoIP SIP, SkyPerformer satellite access and TCP Acceleration.

1.3.2 SDM-9606 Blade

- Loads into front slots (maximum 5)
- Each blade has 6 built-in T1/E1 universal digital ports in the front (NT hard-wired)
- Can be loaded with 1 DSP module
- Each blade has a capacity of up to 120 digital telephony channels
- A fully loaded SDM-9600 supports 600 simultaneous voice calls
- 1 RJ-45 console port
- 2 10/100 Ethernet ports
- Hot swap capability and power management control

1.3.3 NetPerformer Software

The basic software set provides support of PowerCell voice and data (including legacy user data) and IP routing over Ethernet, serial or digital ports using PowerCell WAN, PPP or Frame Relay RFC-1490. Optional software licenses can be procured for support of VoIP SIP, SkyPerformer satellite access and TCP Acceleration.

1.3.4 Changes to Console Operations

The following change to console operations was made in NetPerformer firmware version V9.2.0 and higher. If you are familiar with earlier versions of the NetPerformer firmware, this change should be taken into consideration before you configure or manage the product.

- The way you access the NetPerformer console has changed to allow for multiple user profiles:

CAUTION: The default **LOGIN** is now **ADMIN** instead of **ACT**.

NOTE: The default **PASSWORD** for this login remains **SETUP**.

For full instructions on setting up user profiles, refer to the *Quick Configuration* module of the *NetPerformer Reference Guides*.

1.4 Related Documents

NOTE: All of the documents listed here are available on the *NetPerformer Documentation CD*, which is included with your product package (Part No. 520-0081-001).

1.4.1 NetPerformer Document Set

For complete information on the NetPerformer, consult the following:

- *NetPerformer System Reference*

  Includes detailed information on NetPerformer features, menus, commands, parameters and statistics displays for versions V10.2.1 R02 and higher. This System Reference, which is divided into fascicles for each application, also integrates all information from the *Addenda to the NetPerformer System Reference Manual* for versions 9.0.0, 9.1.0, 9.2.0 and 10.1.X.

- *NetPerformer Hardware Installation Guides*

  These documents describe the hardware specific to each NetPerformer product, including installable options, complete installation instructions and firmware download procedures.

- *NetPerformer Release Bulletins*

  These documents summarize the system specifications, software fixes and changes, and post-production documentation changes for a particular NetPerformer release. They also include firmware upgrade procedures.

- *NetPerformer Network Design Guide*

  Offers valuable tips on how to design a NetPerformer application for maximum efficiency, including an analysis of data and voice traffic throughput issues and the impact of traffic flow. Provides examples of network setup and traffic measurement using various NetPerformer products.

1.4.2 Request for Comments

Our Technical Publications group welcomes your feedback. Please help us improve future releases of this document by sending us your comments and suggestions. You can send email to docs@memotec.com.

1.4.3 Training

We offer a variety of classes to reduce your learning curve and make your employees more productive. Students learn how to tailor NetPerformer products to meet their specific business requirements. Each course is developed and delivered by certified instructors who have in-depth expertise and extensive technical training experience.

To learn more about our training services, email our education facilities at memotectraining@memotec.com.

1.5 Technical Support

Memotec Technical Support is designed to meet your full range of support needs. From basic service to mission-critical support, we are committed to ensuring your success with NetPerformer products. We tailor different support plans to meet your evolving business requirements. By employing state-of-the-art products and the latest technologies available, we provide some of the fastest, most efficient service in the industry.

Our entire support organization is focused on complete customer satisfaction and providing immediate solutions to your business needs.

You can contact Technical Support by calling or sending email to our helpdesk facilities:

Telephone: + (1) 514 738 4781 during regular business hours, EST (GMT-05:00)

Email: MemotecSupport@memotec.com

Be prepared to provide the following information:

- Your name
- Company name
- Your location
- Telephone number
- Product serial numbers (see next section)
- Product work order number (see next section)
- Detailed problem description
- Remote access to the troubled unit via Telnet or dial-up modem.

1.5.1 Providing Product Numbers to Technical Support

You may be requested to provide the product serial number and work order number when communicating with Technical Support.

1.5.2 Product Serial Number

The product serial number is provided on the nameplate on the underside of the SDM-9606 blade (see Figure 1-1).

1.5.3 Product Work Order Number

The product work order number provides the manufacturing year and month of your unit. This may be required for RMA or inspection purposes. **The work order number appears**

only on the nameplate on the underside of the blade (see Figure 1-1).

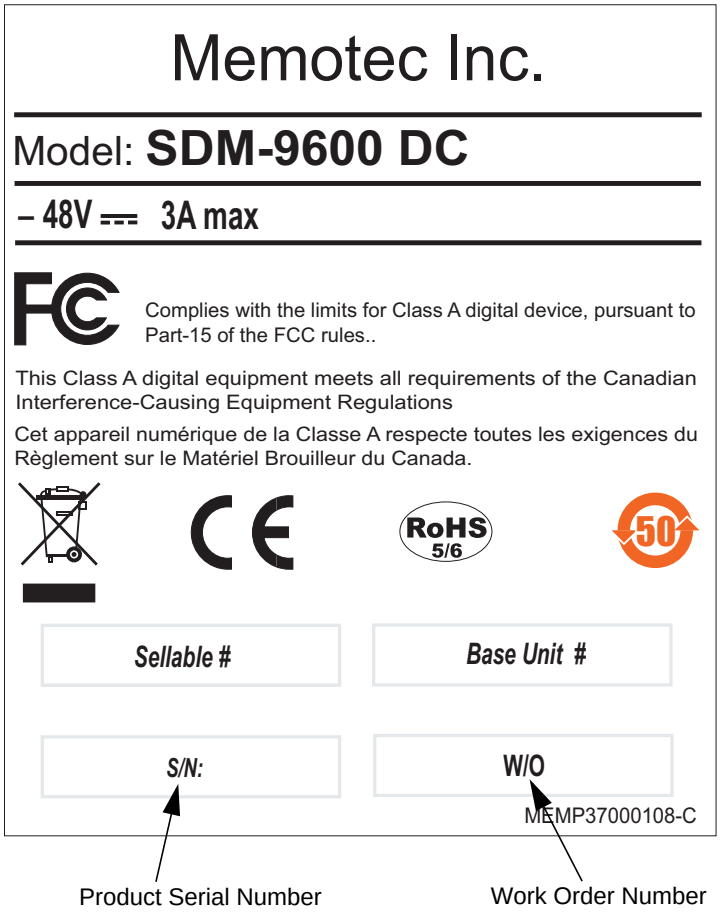

Figure 1-1: Location of Product Numbering on the SDM-9600 DC Nameplate

1.5.4 Checking the Contents of Your Product Package

> **CAUTION:** As soon as you receive your SDM-9600 chassis and components, check the carton and its contents for any sign of damage during shipment. **If there is any damage, contact the shipping agent immediately.**

Before you start SDM-9600 installation, verify the contents of the carton to ensure that you have received all the units, blades, accessories, cables and optional hardware that you ordered.

A summary of product items appears on "Product Description" on page 4-1.

If any items are missing, or if you have any questions concerning your shipment, contact Technical Support.

1.5.5 Returning an SDM-9600 Chassis or SDM-9606 Blade

If you need to return the SDM-9600 chassis or an SDM-9606 blade for any reason, **you must ship it in the original carton using adequate shock insulation material**. Failure to do so may void the equipment warranty. Consult the Warranty statements included with the product package. Contact Technical Support for RMA requirements.

1.6 Sales Contacts

To order NetPerformer units, DSP modules, cables and optional parts, contact Memotec Inc. or your NetPerformer distributor. To contact Memotec Inc.:

- Mail:

  Memotec Inc.
  7755 Henri Bourassa Blvd. West
  Montreal, Quebec
  Canada H4S 1P7

- Telephone: +1 (514) 738-4781 during regular business hours, EST (GMT-5:00)
- Fax: + (1) 514 738 4436
- Web: http://www.memotec.com

Unpacking the SDM-9600

2.1 Selecting a Location

To ensure that the SDM-9600 functions properly, you should install the unit in an appropriate location which satisfies certain criteria for size, connection distance and ambient environment.

2.1.1 Rack Requirements

The SDM-9600 chassis is designed with rackmount ears for installation in a rack:

- Standard 19" rack
- Near an easily accessible -48 VDC power supply.
- To ensure proper ventilation of the SDM-9600 and its components, leave 5 cm (2 inches) of unobstructed space around the unit chassis.

CAUTION: Unit must be installed in a restricted access location.

2.1.2 Distance Requirements

The SDM-9600 unit should be no more than 2 meters (approx. 6 feet) away from:

- A power supply appropriate to the type of power module on the unit: -48 VDC, 3 Amps maximum.
- An independent Ground.

WARNING: Ensure that the unit is independently grounded with a wire from Ground securely attached to the ground lug on the SDM-9600 chassis. The ground lug is located below the **POWER ON** LED at the front of the chassis.

2.1.3 Environmental Requirements

For trouble-free operation of the SDM-9600 its location must satisfy the following environmental criteria:

- Operating temperature: 0°C to 45°C (32°F to 113°F)*
- Storage temperature: -20°C to 65°C (-4°F to 149°F)
- Relative humidity: 10% to 95%, non-condensing

- Maximum operating altitude: 4572 meters (15 000 feet)*

*** NOTE:** Above 3048 meters (10 000 feet) altitude the maximum operating temperature of the unit drops from 45°C to 35°C.

- Ventilation requirement: leave 5 cm (2 inches) of unobstructed space around the unit. **All unused slots must be closed with a filler panel**.

2.2 Preparing the Site

2.2.1 What You Will Need

For trouble-free installation of the SDM-9600 hardware make sure you have the following on hand:

- The SDM-9600 chassis, with all SDM-9606 blades, accessories, cables and optional hardware you received in the product package. Refer to "Product Description" on page 4-1.
- At least one of the following configuration and management access devices:
  - A console terminal (TTY terminal or a PC equipped with terminal emulation software) for direct or dial-up connection to the console port on the front face of the SDM-9606 blade
  - A TELNET network device accessed through IP connectivity over LAN/WAN

NOTE: When you first take an SDM-9606 blade out of the box, the only configuration device you can use is the console terminal, since the unit does not yet have an IP address. For details, see "Connecting the Console Terminal" on page 3-18.

CAUTION: If you intend to use the HyperTerminal™ communications program as your console terminal, read the "Notice Concerning HyperTerminal Connections" on page 8-1.

- A sufficient number and length of cables for all digital ports:

  These cables are *not* provided with the SDM-9600 product package.

  - One RJ-48 to RJ-48 cable for each E1/T1 port (at least 26AWG, or 0.4mm)

- One crossover cable for each E1/T1 port that must provide a **TE** connection (connecting to **NT** equipment). **All E1/T1 interfaces are strapped at the factory for NT mode**
- Two BNC coaxial cables for each E1/T1 port that will be configured for E1-75 operations

  An adaptor is also required for an E1-75 connection on an E1/T1 port. The following adaptors is available:

  - Adaptor cable: RJ-48 to E1-75 dual BNC (Part No. AG2CA0001). See "Adaptor Cable" on page 4-16 for details.
- One straight through 10/100/1000BaseT LAN cable, RJ-45M to RJ-45M, for each Ethernet port

- For all voice transmissions using PowerCell, an Internet connection or access to a private IP network that supports the TCP and UDP/IP protocols.

  PPP, Frame Relay (RFC1490) and WAN (PVCR) connections can be made without the requirement to support IP routing.
- All user equipment that will be directly connected to the digital ports.

Hardware Installation

3.1 About the Hardware Installation

Figure 3-1: The SDM-9600 Chassis Equipped with SDM-9606 Blades

Hardware installation of the SDM-9600 involves the following steps:

- Installing the SDM-9600 chassis in a rack ("Installing the SDM-9600 Chassis in a Rack" on page 3-3)
- Installing or upgrading a DSP module on the SDM-9606 blade ("Installing or Upgrading the DSP Modules" on page 3-4)
- Hardware strapping on E1/T1 ports: Operation at 75 ohms ("Strapping for E1-75 Operation" on page 3-8)
- Installing a blade into the front of the SDM-9600 chassis ("Installing a Blade" on page 3-9)
- Removing a blade ("Removing a Blade" on page 3-12)
- Installing the filler panels ("Installing the Filler Panels" on page 3-14)
- Powering up the unit ("Powering Up the Unit" on page 3-15)
- Connecting the console terminal ("Connecting the Console Terminal" on page 3-18)
- Installing the licensed software options ("Installing the Licensed Software Options" on page 3-21)
- (Optional) Connecting the unit to the LAN hub ("Connecting the LAN Hub" on page 3-22)

In addition, the following maintenance procedure should be carried out on a regular basis:

- Cleaning the air filter in the SDM-9600 chassis ("Cleaning the Air Filter" on page 3-23).

3.2 Installing the SDM-9600 Chassis in a Rack

The SDM-9600 chassis is designed with rackmount ears for installation in a standard 19" rack (see Figure 3-1 on page 2). Rack requirements are discussed on page 2.

To install the SDM-9600 chassis in a rack:

1. Carefully insert the SDM-9600 chassis into the front of the rack
2. Secure each rackmount ear onto the rack using 2 mounting screws with washers.

3.3 Installing or Upgrading the DSP Modules

Follow the procedure in this section for both installation and upgrade of a DSP module on the SDM-9606 blade.

You need to have a DSP module to support voice/fax channels. This DSP module is ordered separately from the unit and must be installed when you set up the hardware at your site. For ordering information, refer to "Sales Contacts" on page 1-11.

3.3.1 Location of DSP Socket on the SDM-9606 Blade

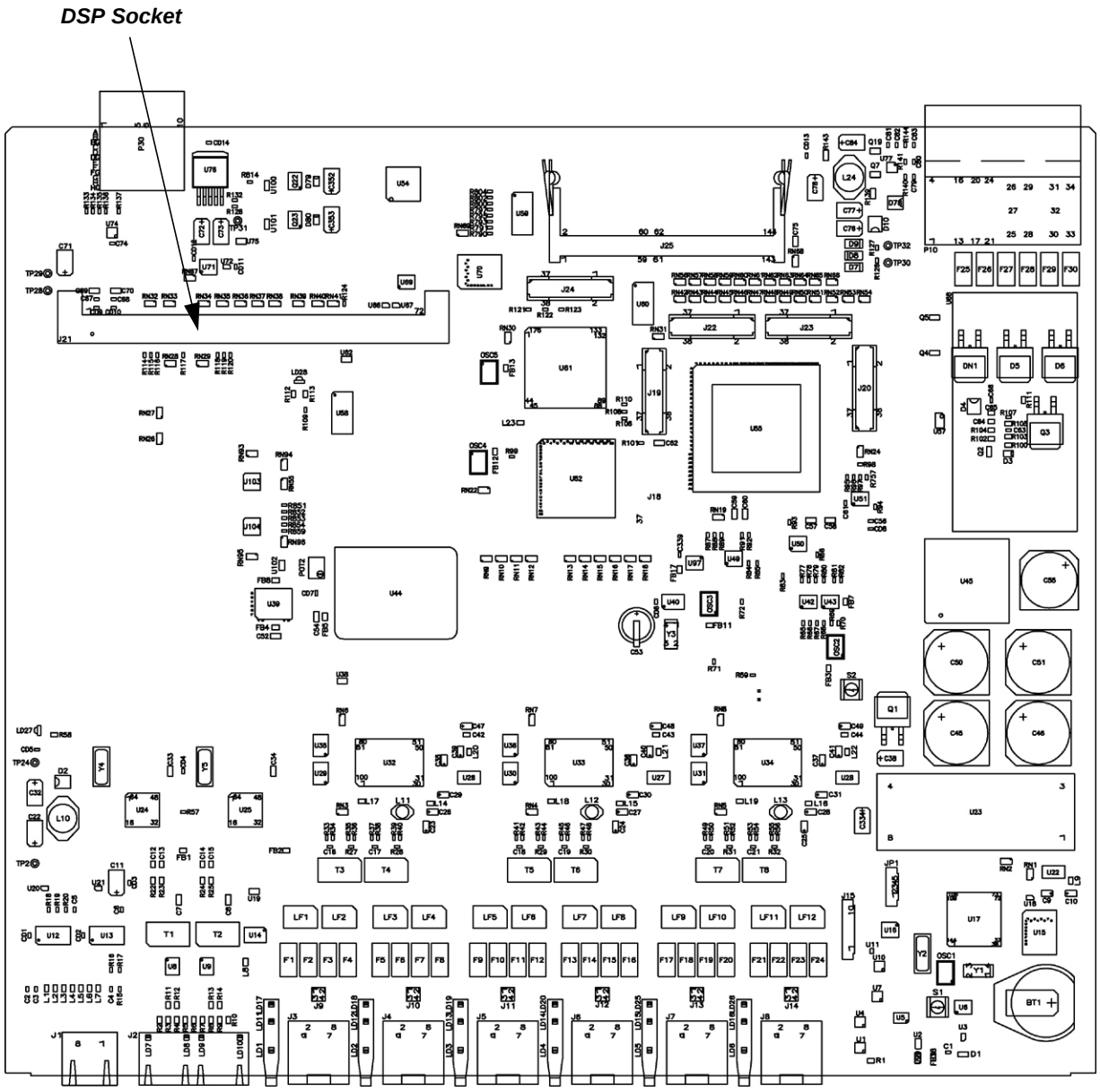

Figure 3-2: DSP Socket on the SDM-9606 Blade

You can increase the number of voice channels supported by upgrading the DSP module. Refer to "DSP Modules" on page 4-11 for a description of the different kinds of DSP modules that can be installed.

CAUTION: These DSP modules are for the SDM-9220, SDM-9230 or SDM-9606 only. **DO NOT use a DSP module intended for the SDM-9360, SDM-9380 or SDM-9585.**

NOTE: The SDM-9606 has one DSP socket for a single DSP module (see Figure 3-2).

3.3.2 Installation Procedure

NOTE: To ensure proper digital voice operations, install all required DSP modules **before** you power up and configure the unit.

To install a DSP module:

1. Wear an ESD (Electrostatic Sensitive Devices) wrist strap, and attach it to one of the ground lugs on the SDM-9600 chassis:
   - Front ground lug, located beneath the **POWER ON** LED. Refer to Figure 4-1.
   - Rear ground lug, located to the right of the dual power input modules. Refer to Figure 4-2.

   CAUTION: Electrostatic charges can damage system components. **Always use an ESD wrist strap when accessing internal components of the unit.**

   In countries where a 2-pin non-grounded power cord must be used, ensure that the SDM-9600 is independently grounded with a wire from Ground securely attached to one of the ground lugs on the SDM-9600 chassis.
2. Locate the blade on which you want to install the DSP module. If this blade is already installed in the SDM-9600 chassis, remove it as described in "Removing a Blade" on page 3-12.
3. Place the blade on a hard, flat surface. Skip to step **6** if the DSP socket is empty.
4. If you are upgrading a DSP module that has already been installed:

a. Locate the small metal clips that hold the DSP module into place at each side of the DSP socket

b. Push the clips apart with the tips of your fingers. The DSP module will spring to an angle of about 45°.

5. Holding the DSP module by its edge, carefully lift it up and out of its socket.

> **Caution:** Do not expose the DSP module or SDM-9606 blade to a magnetic field or electrostatic charge at any time. Damage to their components could result.

6. Carefully remove the new DSP module from its protective packaging.

7. Hold the DSP module over the DSP socket at an angle of about 45° with its **notched edge down**. Center the module over the socket.

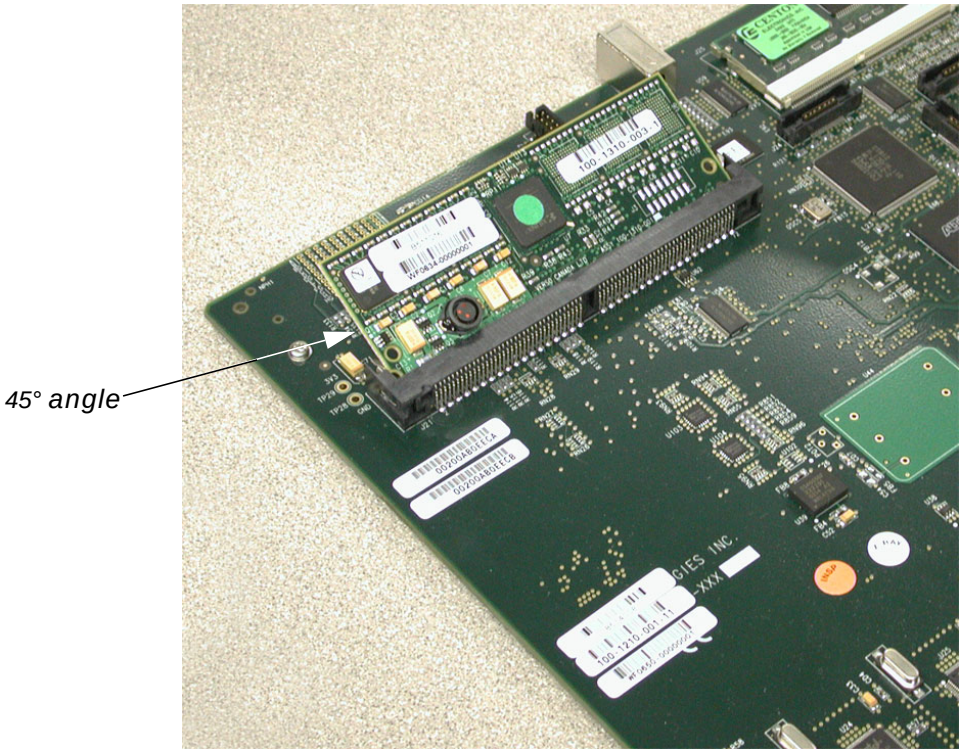

Figure 3-3: Inserting a DSP Module – Starting Position

8. Insert the DSP module into the DSP socket:

a. First push the bottom edge of the DSP module all the way into the socket. **Use enough pressure to ensure that the DSP module is properly aligned and fully inserted.**

b. Press the top edge down until the module snaps into place between the two metal clips at each end of the DSP socket.

NOTE: When properly installed, the DSP module should lie flat in its socket, **beneath the two metal clips**.

CAUTION: Do not force the DSP module into the DSP socket. If the DSP module does not snap into place easily or sit properly in the socket, make sure you have inserted it with the notched edge down.

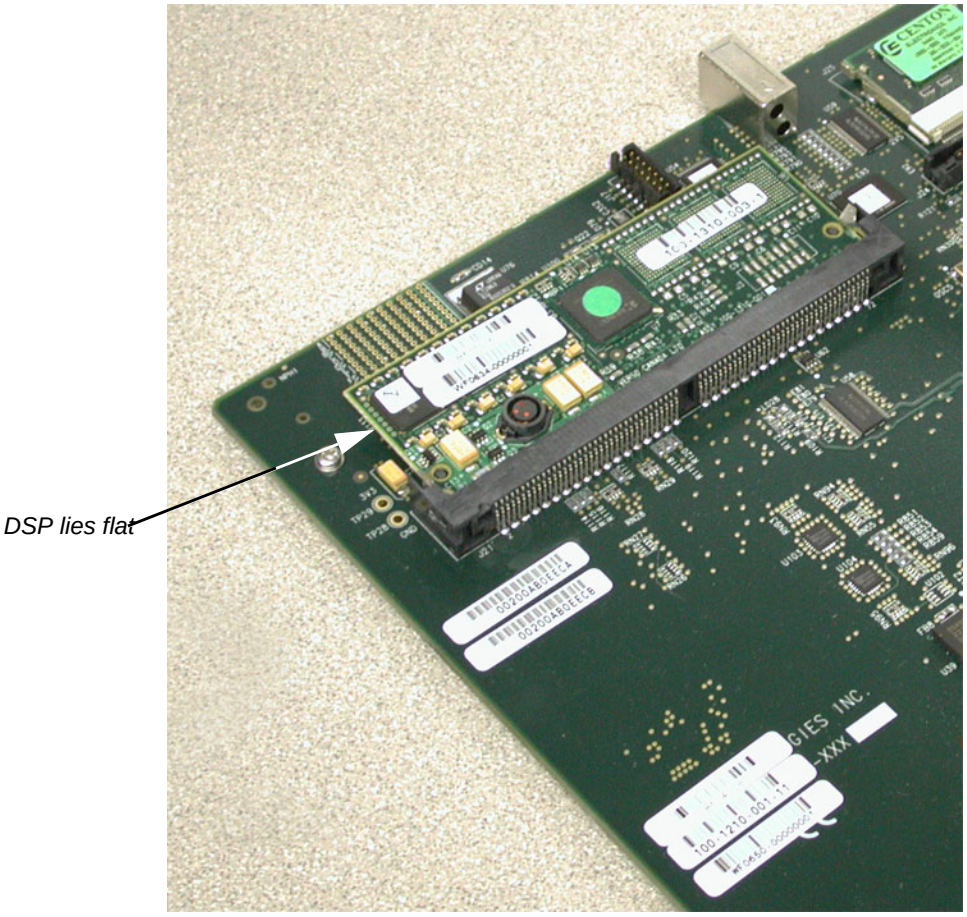

Figure 3-4: Inserting a DSP Module – Final Position

9. Reinstall the SDM-9606 blade into the SDM-9600 chassis. Refer to the procedure on "Installing a Blade" on page 3-9.

3.4 Hardware Strapping for E1 Ports

The E1/T1 interfaces on the SDM-9606 blade can be strapped for E1-75 operation (see next section).

> **NOTE:** **No hardware strapping is required for NT/TE mode on these interfaces. All E1/T1 interfaces are strapped at the factory as NT. If you need a TE connection, attach a crossover cable to the interface.**

For details about the E1/T1 ports, refer to "E1/T1 Digital Interfaces" on page 4-14.

3.4.1 Strapping for E1-75 Operation

An E1-75 connection is accomplished by installing an adaptor on the E1/T1 port (see "Supporting E1-75 on an E1/T1 Port" on page 4-15). The following adaptor is available: RJ-48 to E1-75 dual BNC (Part No. AG2CA0001).

No other hardware strapping is required.

To set an E1/T1 port to E1-75, connect an adaptor for E1-75 operations onto the digital port using an RJ-48 to E1-75 dual BNC adaptor cable (Part No. AG2CA0001, see "Adaptor Cable" on page 4-16)

> **NOTE:** **Without an adaptor, the E1 port will *not* operate at 75 ohms.**

> **CAUTION:** The RJ-48 to E1-75 dual BNC adaptor cable and attached BNC cables require strain relief to ensure that they do not loosen from the digital port:
> -If the unit is mounted in a rack, **you must secure the cables to a side rail using tie-wraps, or support the weight of the cables on a tray**
> -If the unit is on a table, **you must support the weight of the cables on the table**.

The digital port can desynchronize and the unit reset if the full weight of the BNC cables is unsupported.

3.5 Installing a Blade

The SDM-9606 blades are installed in slots at the front of the SDM-9600 chassis. Up to 5 blades can be installed. Refer to Figure 3-5.

NOTE: For easier installation and configuration, install all blades required for your application **before** you power up and configure the unit. However, **blades for the SDM-9600 chassis are hot-swappable**. The chassis does not need to be powered down to insert another blade at a later time.

Figure 3-5: Installing an SDM-9606Blade in the SDM-9600 Chassis

To install a blade:

1. Wear an ESD (Electrostatic Sensitive Devices) wrist strap, and attach it to one of the ground lugs on the SDM-9600 chassis:
   - Front ground lug, located beneath the **POWER ON** LED. Refer to Figure 4-1.
   - Rear ground lug, located to the right of the dual power input modules. Refer to Figure 4-2.

CAUTION: Electrostatic charges can damage system components. **Always use an ESD wrist strap when accessing internal components of the unit.**

In countries where a two-pin non-grounded power cord must be used, ensure that the SDM-9600 is independently grounded with a wire from Ground securely attached to

one of the ground lugs on the SDM-9600 chassis.

2. Select an available blade slot on the front of the SDM-9600 chassis. These are the wide slots labelled from **1** to **5** down the left side.

   There is no loading sequence; any slot can be chosen. You do not need to disconnect any cables connected to the ports on other blades.

3. If a filler panel is installed in the blade slot, remove it as follows:

   a. Unscrew the 2 knurled M3 retention screws that hold the filler panel into place on both sides

   These screws can be loosened, but not removed.

   b. Slide the filler panel out of the chassis, and set it aside.

   Important: Keep the filler panel for possible reuse at a later time. To limit electromagnetic interference and ensure optimum ventilation, there should be no large openings in the SDM-9600 chassis. If you decide to remove a blade at a later time, you will need to replace the filler panel for that slot.

4. Carefully remove the SDM-9606 blade from its protective packaging.

CAUTION: Do not expose the blade to a magnetic field or electrostatic charge at any time. Damage to its components could result. Use ESD procedure at all times.

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5. Hold the blade so that the printing on its front panel is right side up, and slide it into the slot from the front of the chassis.

CAUTION: **Do not force the blade into the slot.** If the blade is properly aligned, it should slide easily all the way in along the guide rails provided.

---

6. Press the blade firmly into place, so that the two alignment holes at the rear of the blade connect with the pins at the rear of the chassis slot.

   When the front face of the blade is flush with the front of the chassis, the card handles will close toward the center.

CAUTION: Carefully insert each blade fully into the unit. If a blade is not correctly installed, proper contact cannot be made with the power source.

---

7. To secure the blade in place, press the 2 retention screws in and tighten them clockwise.

8. Ensure that both card handles are pressed flat against the blade:

   - Push the small lever into its housing on the card handle, then

- Press the handle back toward the front face of the blade.

NOTE: The right card handle is equipped with a microswitch that senses whether the blade is fully inserted. **It is very important that the card handles be fully closed.**

3.6 Removing a Blade

Caution: Blades must be removed with care. Use ESD procedure at all times.

NOTE: Blades for the SDM-9600 chassis are hot-swappable, so the chassis does not need to be powered down to remove a blade.

To remove a blade:

1. (Optional) Disconnect any cables that may be connected to the ports at the front of the blade that you wish to remove.
2. Open both card handles slightly by pushing the lever in and opening the handle toward you.

   The blue H/S LED will blink, indicating that the blade is NOT READY to be removed.

   Caution: Do not remove the blade until the H/S LED has turned off.
3. When the **H/S** LED has turned off, unscrew the two knurled M3 retention screws that hold the blade into place on both sides.

   These screws can be loosened, but not removed.
4. Pull the two card handles outward from the chassis, toward you.

   The blade disengages from the pins at the rear.

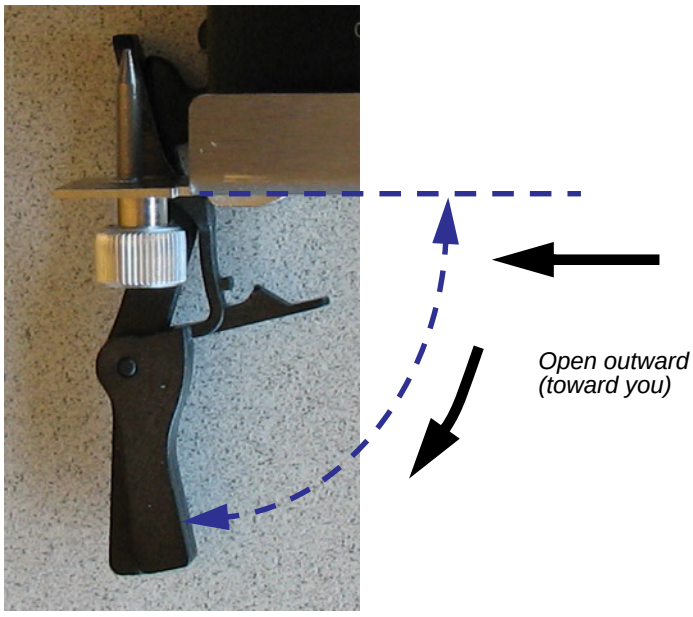

Figure 3-6: Blade Handle Operation

5. Slide the blade the rest of the way out of the chassis.

   Caution: Do not expose the blade to a magnetic field or electrostatic charge at any time. Damage to its components could result.

6. Install a filler panel to cover the empty slot. Refer to the next section.

3.7 Installing the Filler Panels

To limit electromagnetic interference and ensure optimum ventilation inside the SDM-9600 chassis, there should be **no large openings in the chassis**. Each unused slot on both the front and rear of the chassis requires a filler panel (Part No. 161-1140-000) to control the air flow.

Example:

An SDM-9600 installed with a single SDM-9606 blade requires 9 filler panels, 4 in the empty front slots and 5 in the empty rear slots. See Figure 3-7.

To install a filler panel:

1. Slide the filler panel through the slot opening, along the guide rails provided.
2. To secure the filler panel in place, press the 2 knurled M3 retention screws into the panel, and tighten them by turning clockwise.

Figure 3-7: Rear View of the SDM-9600 Chassis with Filler Panels

3.8 Powering Up the Unit

3.8.1 Connecting to the Power Source

NOTE: Information about the power input modules is provided on "Power Input Modules" on page 4-4.

CAUTION: This procedure must be carried out by a qualified electrical technician only.

WARNING: A 20A circuit breaker must be provided as part of the building installation for the -48VDC power connection.

To connect the SDM-9600 chassis to the power source:

1. Turn off the circuit breakers to the -48 volt DC power supply.

WARNING: To avoid electrical shock and possible damage to the unit, **ensure that the -48 VDC power supply is shut OFF before you connect the SDM-9600 DC unit**.

2. Ensure that all blades and filler panels are fully inserted into their slots and secured in place.
3. Ensure that all wires of the -48 VDC connection harness have an appropriate connector for installation onto a DC inlet.

CAUTION: Select a harness with a wire gauge capable of supporting a maximum of 20 Amps.

4. Remove the clear plastic protector from one of the DC inlets located at the rear of the SDM-9600 chassis, either **INPUT A** or **INPUT B**, by removing the screws from the two spacers on either side of the inlet lugs. Refer to Figure 4-2.
5. Install the harness to the DC inlet, terminating the wire connectors on the lugs labelled **-48V** and **RTN**.

6. Connect the strip terminations of the harness wires to the -48 volt DC power supply.
7. Reinstall the clear plastic protector, ensuring that the harness wires come through the hole in the bottom without obstruction. Tighten the two screws onto the spacers.
8. Turn on the circuit breakers to the -48 volt DC power supply.
9. Locate the power switch for the DC inlet you have selected, and turn the power switch **ON** by pushing it to **1**. The unit will begin power-up and system check immediately.

Warning: If at a later time you need to access internal components, turn OFF the unit and the -48 VDC power supply, and disconnect the harness from the DC inlet on the SDM-9600 DC chassis to avoid electrical shock and damage to the unit.

3.8.2 System Status on Power-up

On power-up the SDM-9606 blades execute program decompression, Signaling Engine software load and system test.

You can follow the system status from the console (see next section), or by watching the LEDs on the front of the blades. Table 3-1 shows the various LED states that occur during SDM-9606 initialization sequence (after a power-on or software reset).

NOTE: The entire startup sequence is executed within 30 seconds. Some of its stages are brief, and may be difficult to distinguish from the rest..

Stage	OOS	ST	ALM	H/S	Current Status of the Unit
1	Amber	Blink	Blink	Blink	Quick hardware test by the boot-strap; lamp test on all LEDs. Blink-ing and frequent color changes occur during this stage
2	Green	Red	Green	Off	Hardware initialization by the boot-strap
3	Green	Red	Off	Off	Bootstrap is running. Preparing to start the boot sector
4	Green	Amber	Off	Off	Boot sector is running. Validating the application
5	Green	Amber	Amber	Off	Boot sector is running. Decom-pressing the application

Table 3-1: SDM-9606 Front Panel LED States During Normal Initialization Sequence

Stage	OOS	ST	ALM	H/S	Current Status of the Unit
6	Green	Off	Off	Off	Application has started from a power-on
			Red	Off	Application has started from a software reset
7	Green	Green	Off	Off	Application has started from a power-on; at least one link is up
			Red	Off	Application has started from a software reset; at least one link is up

Table 3-1: SDM-9606 Front Panel LED States During Normal Initialization Sequence

NOTE: If the **OOS** LED on the SDM-9606 blade stays amber, the unit may be faulty. Contact Technical Support for assistance ("Technical Support" on page 1-8). See also "Troubleshooting Tips" on page 5-1 for other critical error situations.

3.9 Connecting the Console Terminal

A console cable kit is provided with the SDM-9606 product package to connect your console terminal to the blade. This kit includes:

- A 14-ft. (4.25 m) console cable with RJ-45 male connectors at both ends (Part no. 502-0808-014), ***and***
- A TIA-232 (V.24) terminal adaptor, RJ-45 female to DB-9 female (Part no. 502-0635-001).

NOTE: You can order an extra console cable kit from Memotec Inc. or your NetPerformer distributor. Refer to "Sales Contacts" on page 1-11.

To connect the console terminal to the blade:

1. Install one end of the console cable onto the console port on the blade, labelled **CSL**. Refer to Figure 4-5.
2. Connect the other end of the console cable to the RJ-45 female side of the terminal adaptor.
3. Plug the DB-9 female side of the terminal adaptor into a COM port on the console terminal or PC, or to a modem for dialup connection to a remote console.

3.9.1 Important Console and Modem Settings for Startup

The console port performs autobaud detection when in auto-sensing mode. The SDM-9606 blade will set the speed of the console port as soon as it detects an active connection.

CAUTION: For trouble-free startup, you must set the console terminal and modem as follows:

- **Console terminal:** The default console speed is 9600 bps during bootstrap initialization, boot sector validation and system initialization. **Set your console terminal emulator to 9600 bps** to view all NetPerformer system status messages on-screen during the startup sequence.
- **Modem:** Configure your modem with the following AT commands:
  - **at&d0** to ignore DTR. The SDM-9606 blade cannot supply DTR to the modem when in auto-sensing mode (the default setting).
  - **ats0=1** for Auto Answer mode
  - **at&w0** to save the modem configuration.

Once system startup has completed successfully, the SDM-9606 blade enters auto-sensing mode automatically. At that point, you can change your console speed, if desired.

- Available console speeds are 1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600 and 115200 bps. **The equipment you connect to the console port must operate at one of these speeds.**

3.9.2 Activating the Console Connection

To activate the console connection:

1. Ensure that all SDM-9606 blades have successfully powered up with no system status errors (see "System Status on Power-up" on page 3-16).
2. Power the console terminal on or start your console terminal emulation program.

   Take note of:

   - "Important Console and Modem Settings for Startup" on page 3-18
   - "Notice Concerning HyperTerminal Connections" on page 8-1.
3. When you see the prompt **Type <ENTER> to connect**, press the **<Enter>** key on the console terminal keyboard several times, until the NetPerformer responds with a prompt for the user login.
4. Enter the administrator login: **ADMIN**.

   This is the default login. Additional user logins can be defined. For details, refer to the chapter *Controlling Access to the NetPerformer* in the *Quick Configuration* fascicle of the *NetPerformer System Reference*.
5. Enter the password for this login. The default password for the administrator login is **SETUP**.

   When the password is entered correctly, the SDM-9606 blade sends the product banner to the console screen, as in this example:

```
LOGIN:ADMIN
PASSWORD:*****

ACCEPTED
SDM-9606 vx.x.x Memotec Technologies, Inc. (c) 2007
DSP QCxxx.BIZ code version: x.x.x
Console connected through TELNET
Voice transport method:  PowerCell
Display commands, type HE
B3046082>
```

6. Enter the Display Alarms (**DA**) command at the NetPerformer console command line to verify that your unit is problem free. In particular, look for any alarm messages that indicate **Call Technical Support**.

3.9.3 Concerning HyperTerminal Connections

The HyperTerminal™ communications program comes with Microsoft™ Windows™ products, and can be used for very basic NetPerformer console functions if no terminal emulation program is available.

Caution: HyperTerminal is *not* recommended for adjusting the NetPerformer configuration or monitoring its operations. Known problems include the following:

- The arrow keys cannot be used to view channel status on all slots
- The console speed cannot be changed once the console connection is up and running
- On some computers, the default *Emulation* setting of the HyperTerminal™ communications program can potentially cause problems for console operations.

If you **must** use HyperTerminal for your console connection, you should change the *Emulation* setting from **Auto detect** to **ANSI**, as follows:

1. Access HyperTerminal using the Windows Start button and drop-down menus:

   Start > Programs > Accessories > Communications > HyperTerminal

2. If you have already defined the connection to the NetPerformer console port, open that connection:

   File > Open > your_filename.ht

3. If you have not yet defined the connection to the NetPerformer console port, create a new connection:

   File > New Connection > your_filename

4. Open the *Properties* window for the connection:

   File > Properties

5. Click on the *Settings* tab to view the current value of the *Emulation* parameter.
6. Select the value **ANSI** from the list box for the *Emulation* parameter.
7. Click **OK**.

NOTE: The above procedure does *not* resolve the problems with arrow key functionality or console speed, and should be considered a temporary solution only. You should procure a more robust terminal emulation software program for configuration and monitoring purposes. Contact Technical Support if you need further assistance.

3.10 Installing the Licensed Software Options

Execute the Product License Status (**PLS**) command at the NetPerformer console command line to install all licensed software options you have purchased for your SDM-9606 blade.

Each licensed option includes a Software Licensing Agreement, which can be found in the product package. **You must agree to the terms and conditions of this agreement before loading the software. Each NetPerformer unit or blade participating in the software application must be installed with a separate software license.**

3.10.1 Software License Key

The Memotec Software License Key is a traceable number that is used to activate the licensed software option.

- This number is printed on an adhesive label on the cover of the licensed software option product package
- Enter this number during execution of the **PLS** command to activate the software license
- You must then execute Reset Unit (**RU**) command to apply the new license.

For details concerning installation of licensed software options, refer to the *Software Installation and Licensing* module of the *NetPerformer System Reference*, which is included on the *NetPerformer Documentation CD* in the product package.

3.11 Connecting the LAN Hub

You must provide a standard straight through Ethernet 802.3 LAN cable (10/100/1000BaseT, RJ-45M to RJ-45M) for connection to each LAN port.

NOTE: LAN cables are *not* provided with the SDM-9606 product package.

To connect the SDM-9606 blade to a LAN hub:

1. Connect one end of the LAN cable to one of the Ethernet LAN ports on the blade, labelled **ETH 1** and **ETH 2**. Refer to Figure 4-5.
2. Connect the other end of the LAN cable to one of the 10/100/1000BaseT ports on your local LAN hub.
3. The link is up when the **LNK** LED is on. The LED color indicates the speed of the LAN connection:
   - **Amber:** 100 Mbps
   - **Green:** 10 Mbps.

3.12 Cleaning the Air Filter

The air filter in the SDM-9600 chassis should be verified on a regular basis and cleaned when required.

To clean the air filter:

1. Unscrew the M2.5 screw located near the center of the fan unit front panel. Refer to Figure 3-8.

NOTE: This screw can be loosened, but not removed.

CAUTION: Do not unscrew the knurled M3 retention screw at the bottom of the fan unit, which hold the fans in place.

2. Slide the air filter tray out of the SDM-9600 chassis.

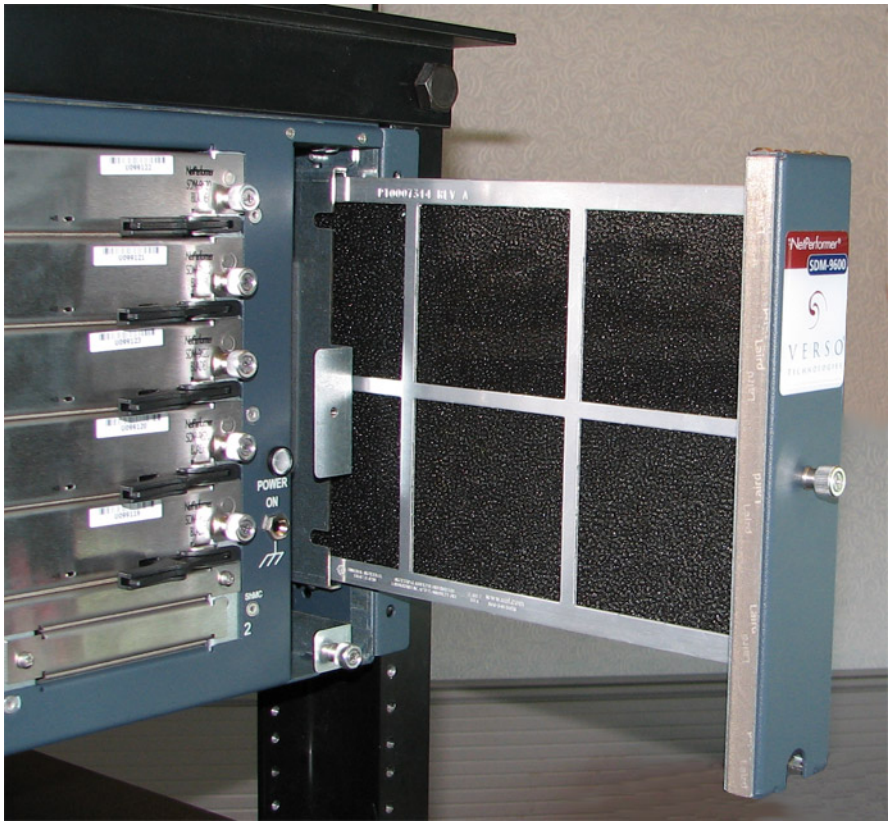

Figure 3-8: Accessing the Air Filter Tray

NOTE: If the air filter tray is difficult to remove, you can use the M3 retention screw at the bottom of the fan unit as a gripping point.

3. The air filter is a black, washable fabric that adheres to the outer grill. Carefully peel the air filter away from the outer grill.

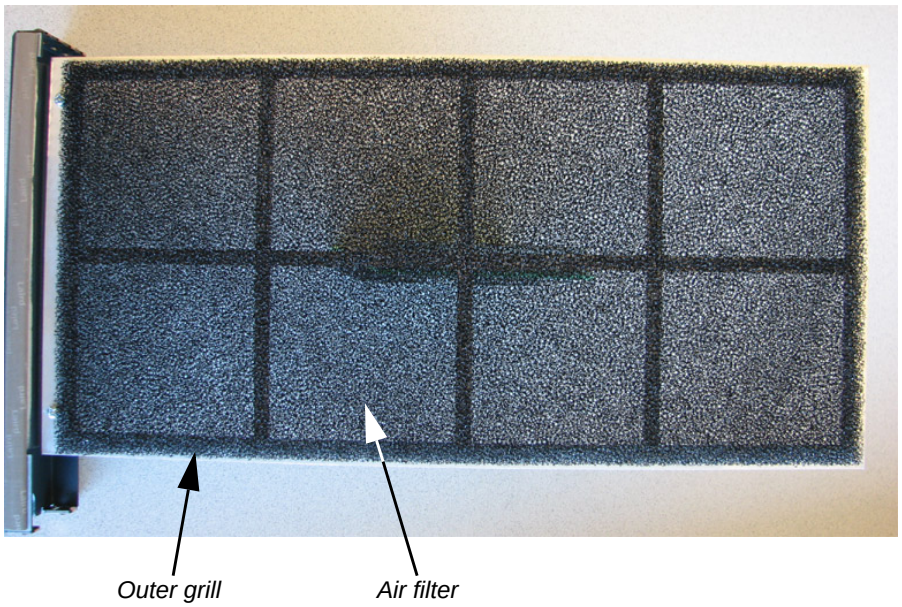

Figure 3-9: Air Filter and Outer Grill

4. Wash the filter in a solution of warm water and mild detergent.
5. Rinse thoroughly in water and **allow to dry completely before replacing the filter in the fan unit**.

WARNING: **To prevent electrical shock and damage to the unit, *do not install a wet air filter* into the SDM-9600 chassis.**

6. When the air filter is dry, press it back into place on the outer grill of the air filter tray.
7. Slide the air filter tray into the SDM-9600 chassis, along the guide rail provided.
8. Push the air filter tray all the way back into place, so that its front face is flush with the right rack bracket of the SDM-9600 chassis.

Product Description

4.1 SDM-9600 Chassis

Item	Details
Base unit chassis with 5 front slots for SDM-9606 blades	“Base Unit Chassis” on page 4-3
2 redundant -48VDC power input modules	“Power Input Modules” on page 4-4
Fan unit, with removable air filter	“Fan Unit” on page 4-5

Table 4-1: Feature items for the SDM-9600 chassis

4.2 SDM-9606 Blade

Item	Details
1 console port, with console cable	“Console Port” on page 4-12
2 Ethernet ports (require customer-supplied LAN cables and snap-on ferrites)	“Ethernet Ports” on page 4-9
6 built-in E1/T1 interfaces (require customer-supplied RJ-48 cables and snap-on ferrites)	“E1/T1 Digital Interfaces” on page 4-14

Table 4-2: Feature items for the SDM-9606 blade

4.3 Optional Hardware

Item	Details
DSP modules: high-density	“DSP Modules” on page 4-11

Table 4-3: Feature items for optional hardware

4.4 Base Unit Chassis

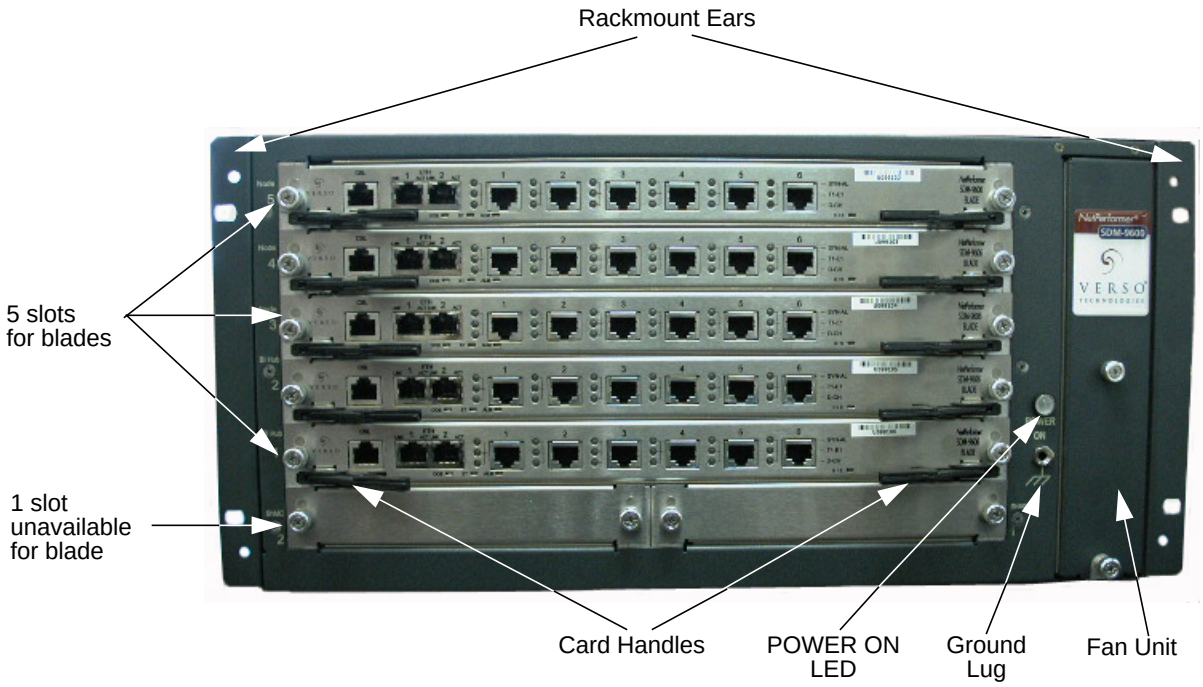

Figure 4-1: Front View of the SDM-9600 Chassis Equipped with SDM-9606 Blades

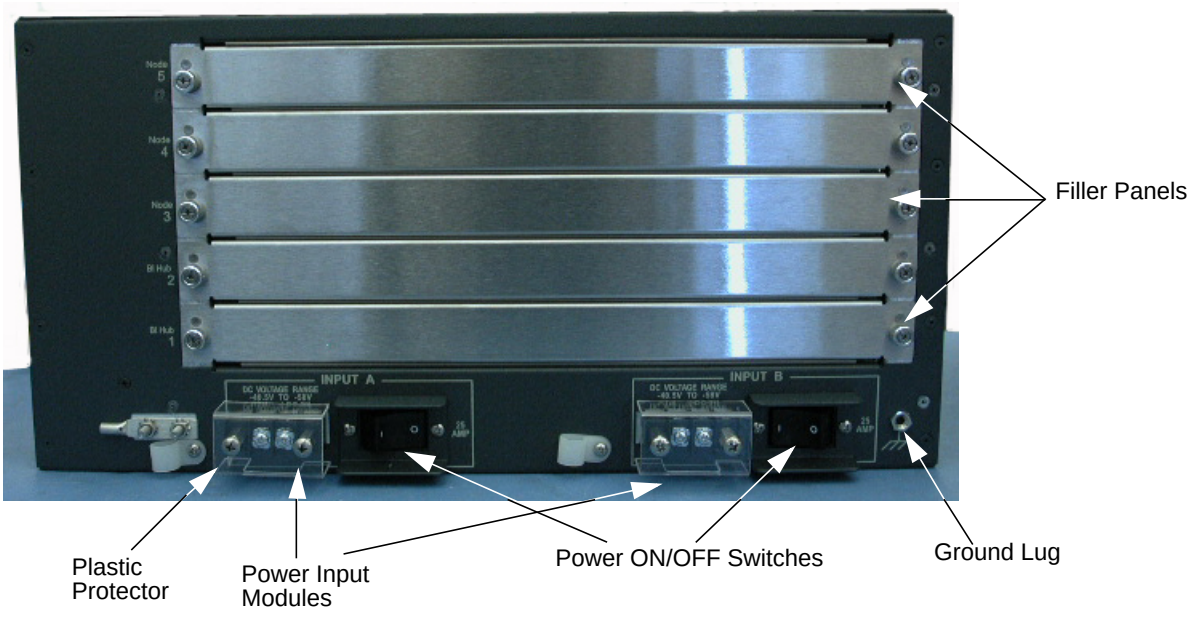

Figure 4-2: Rear View of the SDM-9600 Chassis

4.4.1 Physical Dimensions

- Width (chassis only): 43.58 cm (17.16")
- Width (with brackets): 48.26 cm (19.0")
- Depth (chassis only): 38.55 cm (15.18")
- Depth (including power input shields): 41.42 cm (16.31")
- Height: 22.48 cm (8.72")
- Weight (chassis only): 12.7 kg (28 lb)
- Typical weight (fully loaded): 15 kg (33 lb).

4.4.2 Chassis System Status LEDs

A **POWER ON** LED is provided on the front panel of the SDM-9600 chassis. This LED is located on the right side of the unit when viewed from the front. Refer to Figure 4-1 on page 3.

POWER ON (green) goes on when the unit is powered on.

NOTE: Other system status LEDs are located on the SDM-9606 blades (**OOS**, **ST**, **ALM** and **H/S**). See page 8.

4.4.3 Power Input Modules

Dual power input modules are located at the rear of the SDM-9600 chassis (see Figure 4-2):

- 2 redundant power input modules
- DC power connectors
- 1 power switch on each power input module (**1** = **ON**, **0** = **OFF**)
- Voltage: -48 VDC ± 5%, reverse polarity protected.
- Current: 6 Amps maximum
- SDM-9606 card maximum power consumption: 60 Watts.

NOTE: A harness with 2 m. (approx. 6 feet) of triple wire is required to connect the unit to the power source. **Connection should be carried out by a qualified technician only.** Refer to "Connecting to the Power Source" on page 3-15 for instructions.

4.4.4 Fan Unit

The fan unit, including fans and an air filter module, is located on the right side of the SDM-9600 chassis when viewed from the front.

Figure 4-3: Location of Fan Unit

- 2 fans, 290 cubic feet per minute, 24 VDC
- Provides cooling for up to 200 W per board

4.4.5 Air Filter

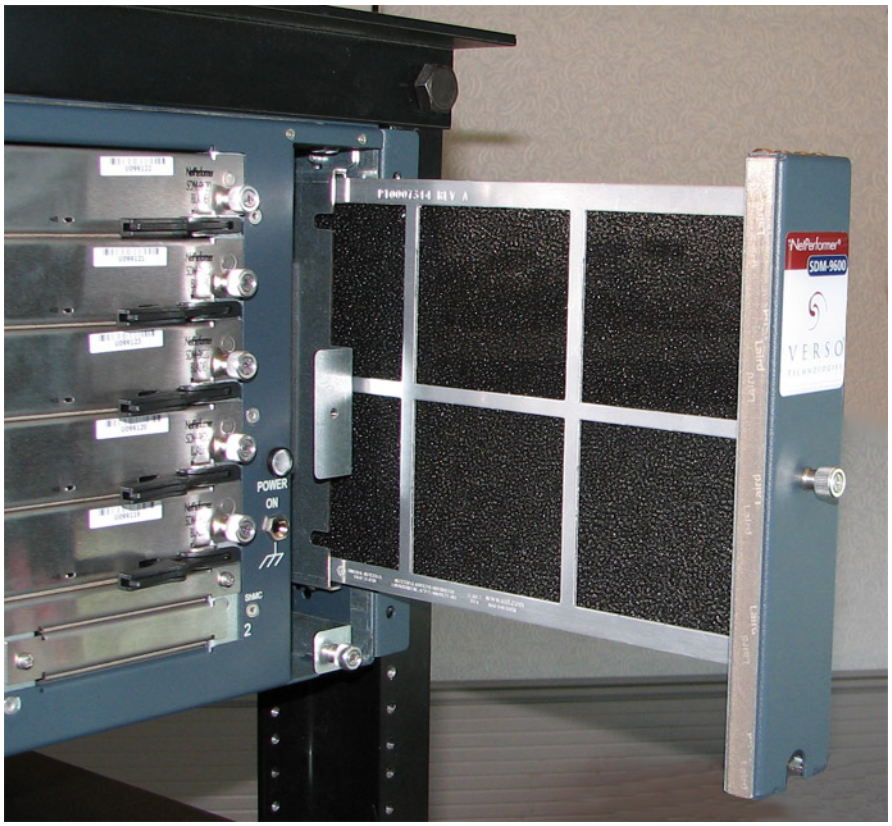

Figure 4-4: Location of Air Filter

The air filter is:

- Washable fabric
- Velcro™-type adherence to outer grill
- Maintenance or replacement possible after opening the 1 U fan tray (refer to "Cleaning the Air Filter" on page 3-23)
- No tools required for reassembly onto the fan tray.

4.5 Blades for SDM-9600 Chassis

4.5.1 SDM-9606 Blade

The SDM-9606 blade provides IP connectivity, E1/T1 universal digital ports, voice traffic processing through an optional DSP module, and connection to the NetPerformer command line interface.

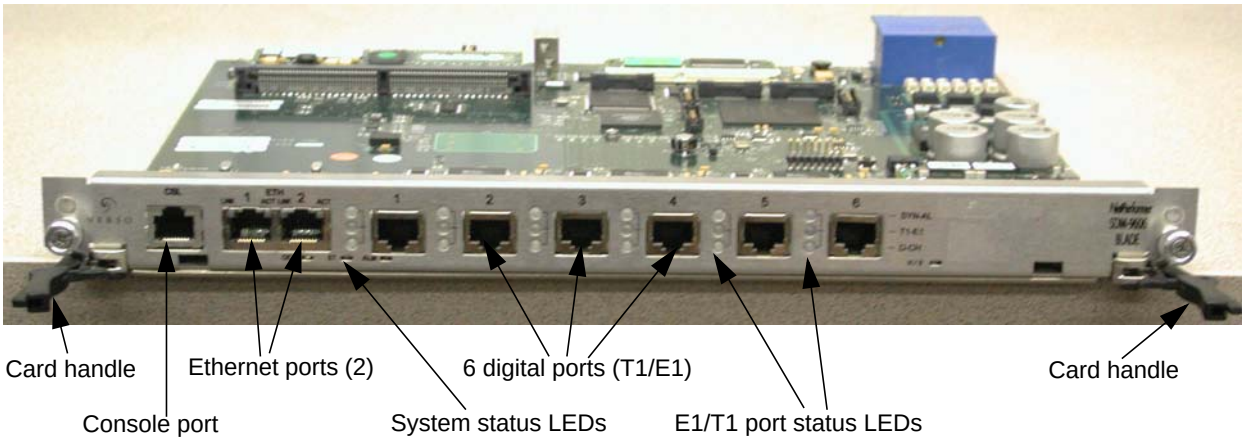

Figure 4-5: The SDM-9606 Blade

NOTE: On the NetPerformer console, SDM-9606 ports are identified as follows:

Physical Port	Port Number on Console (LINK)
CONSOLE	CSL
ETH 1 (left)	ETH1
ETH 2 (right)	ETH2
1 (E1/T1 link)	100
2 (E1/T1 link)	200
3 (E1/T1 link)	300
4 (E1/T1 link)	400
5 (E1/T1 link)	500
6 (E1/T1 link)	600

Table 4-4: SDM-9606 ports

4.5.2 System Status LEDs

The following system status LEDs are located on the front face of the SDM-9606 blade:

- **OOS** (Out Of Service; green/amber) goes on (green) when the blade is powered on; turns amber when the card has failed in a chassis that has been powered on
- **ST** (Status, red/amber/green) indicates the current program status on the blade, as shown in Table 4-5
- **ALM** (Alarm; red/amber/green) indicates several alarm states, including a system alarm when a software reset occurs. See Table 4-6
- **H/S** (Hot Swap: blue), located on the right side of the blade, goes on and blinks when the card handles are opened, indicating that the blade is **NOT READY** for removal. The blade can be removed when this LED turns off. Refer to "Removing a Blade" on page 3-12.

The E1/T1 port status LEDS are described on "E1/T1 Port Status LEDs" on page 4-15.

State	Interpretation
Red	Early stages of system startup, when the **bootstrap program** is running
Amber	Later stages of system startup, when the **boot sector** is running **Note:** The exact function that is taking place can be determined in conjunction with the **ALM** LED. Refer to Table 3-1
Off	System startup complete. The **application** is running but no link is up
Green	The **application** is running and at least one link is up (specified by the **T1/E1 PORT** LEDs)

Table 4-5: ST LED states

State	Interpretation
Green	Hardware initialization is in progress
Amber	A *Write* operation to Flash memory is in progress, e.g. decompressing the application during startup, saving the application after a download
Red	A software reset has occurred **Note:** To turn the **ALM** LED off, enter the **CE** (Clear ERR/DIAG LED) command at the console command line.
Off	No alarm has occurred on the unit since the alarms were last cleared

Table 4-6: ALM LED states

4.6 Ethernet Ports

4.6.1 Ports

- 2 fully routed Ethernet IEEE 802.3 LAN interfaces
- RJ-45 10/100BaseT connectors
- Each port can be configured with 2 IP addresses
- Auto-detect speed, 10 or 100 Mbps
- Frame types: Ethernet II, IEEE 802.2, 802.3, SNAP
- Ethernet interface: Ethernet II and IEEE 802.2, 802.3
- Standards: IP RIP V1/V2 or Static, OSPF, NAT, IP Multicast IGMP V1/V2 PIM-DM, BOOTP/DHCP Relay, DHCP client, IPX RIP and SAP, LLC2, 802.1p/q prioritization and VLAN, 802.1D Spanning Tree Protocol (STP), MAC Layer
- Filter Criteria: Based on protocol, address (source, destination or SAP) or custom filtering.

For information on connecting to the LAN hub, refer to "Connecting the LAN Hub" on page 3-22.

4.6.2 LAN Port Status LEDs

Two LAN status indicators are located above each Ethernet port on the SDM-9606 blade (refer to Table 4-5). These LEDs indicate the following:

- **LNK:** Indicates the LAN speed:
  - **Off:** 10 Mbps
  - **Static green:** 100 Mbps.
- **ACT:** Blinks (green) when there is activity on the corresponding LAN port (LAN traffic transmitted or received).

4.6.3 LAN Cables

Each Ethernet LAN port has an RJ-45 female connector to attach a LAN cable. Select a standard LAN cable with RJ-45 connectors at both ends.

NOTE: Install a ferrite on each cable that connects to an Ethernet port: Steward ferrite 28A2029-0A0, Part No. 332-0003-000.

4.6.4 RJ-45 Connector for Ethernet LAN Port

The RJ-45 female connectors marked **ETH** on the SDM-9606 blade provide two physical LAN ports for attachment to the local LAN hub (10/100/1000Base-T, MDI connection).

The following table describes the RJ-45 pinout for a LAN port.

Pin No.	Usage	Description
1	TX+	Transmit (+) Output
2	TX-	Transmit (-) Output
3	RX+	Receive (+) Input
4	–	(not used)
5	–	(not used)
6	RX-	Receive (-) Input
7	–	(not used)
8	–	(not used)

Table 4-7: RJ-45 pinout for Ethernet LAN port

4.7 DSP Modules

On the SDM-9606 blade the DSP processors digitize, process and compress voice signals and handle fax/modem emulation.

- The SDM-9606 blade can be installed with either a synchronous low-density DSP module (see next section) or a synchronous high-density DSP module (see "High-density DSP Modules" on page 4-11). 1 DSP socket is provided on the blade.

Refer to "Installing or Upgrading the DSP Modules" on page 3-4 for instructions on installing the DSP modules. For ordering information, refer to "Sales Contacts" on page 1-11.

NOTE: To determine whether any DSP modules are currently installed on the SDM-9606 blade, power up the unit as described on "Powering Up the Unit" on page 3-15. The DSP type is displayed with the product banner that appears after boot-up is complete.

4.7.1 High-density DSP Modules

The synchronous high-density DSP module (HD-DSP), which is the one type of DSP supported on the SDM-9606 blade, can be installed on either the SDM-9606 blade to support a greater number voice calls.

Figure 4-6: Synchronous High-density DSP Module

A single synchronous high-density DSP module supports 60, 80, 100 or 120 timeslots. Maximum 120 voice channels per DSP.

CAUTION: The synchronous high-density DSP module is intended for the SDM-9220, SDM-9230 and SDM-9606 only. **DO NOT replace this DSP module with a DSP intended for legacy NetPerformer products (SDM-9360, SDM-9380 and SDM-9585).**

4.8 Console Port

4.8.1 Port

One PC-compatible console port:

- RJ-45 female connector
- TIA-232 (V.24) serial interface
- Autobaud asynchronous transmission, 1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600 and 115200 bps

  The equipment you connect to the console port **must operate at 9600 bps when you first power up the SDM-9606 blade**. Also, if you are connecting to the console terminal via a modem, **you must set the modem to ignore DTR.** See "Important Console and Modem Settings for Startup" on page 3-18.
- Autosensing gender, DTE/DCE
- Protocol: VT-100 or PPP
- Reverse console function also available for satellite applications (SkyPerformer).

4.8.2 Console Cable

A console cable kit for the console port is included with the SDM-9606 product package. This kit includes:

- 1 14-ft. (4.25 m) standard TIA-232 (V.24) straight-through cable with RJ-45 male connectors at both ends (Part no. 502-0808-014), ***and***
- 1 TIA-232 (V.24) adaptor for console terminal connection, RJ-45 female to DB-9 female (Part no. 502-0635-0001)

The console port (labelled **CSL**) has an RJ-45 female connector to attach the factory-supplied console cable. Use the RJ-45 to DB-9 adaptor to connect the console cable to the workstation that will serve as the console terminal. Refer to "Connecting the Console Terminal" on page 3-18.

4.8.3 RJ-45 Connector for Console Port

The RJ-45 female connector marked **CSL** provides a physical port for attachment of the console cable. It is a dedicated port with autosensing DTE/DCE mode and autobaud.

The following table describes the RJ-45 pinout for the console port.

Pin No.	Usage	Description
1	RTS	Request To Send
2	DTR	DTE Ready
3	TXD	Transmitted Data
4	SGND	Signal Ground
5	DCD	Carrier Detect
6	RXD	Received Data
7	DSR	DCE Ready
8	CTS	Clear To Send

Table 4-8: RJ-45 pinout for console port

4.9 E1/T1 Digital Interfaces

4.9.1 Ports

6 digital ports are built into front of the SDM-9606 blade.

Each port has:

- E1/T1 channelized digital interface, RJ-48 female connector
- Supports from 15 to 120 channels (timeslots), depending on the number of DSPs installed. These channels support voice connections on a base unit in PowerCell mode. Refer to "Installing or Upgrading the DSP Modules" on page 3-4 for the installation procedure.
- Two independent software configurable transceivers:
  - T1 (DS1)/ISDN-PRI: Provides a 1.544 Mbps channelized digital connection at 100 Ohms with up to 24 timeslots
  - E1 (CEPT) PCM-30/ISDN-PRI: Provides a 2.048 Mbps channelized digital connection with up to 32 timeslots, software selectable at 75 or 120 Ohms

  For hardware strapping of an E1-75 port, refer to "Hardware Strapping for E1 Ports" on page 3-8.
- Framing and line coding:
  - T1: D4 or ESF framing and B8ZS, B7ZS or AMI line coding
  - E1: G.704 framing and HDB3 line coding
- All ports are hard strapped as **NT** by default for connection to **TE** equipment. Use a crossover cable where **TE** mode is required for connection to **NT** equipment.
- Add/drop capability with cross-connect: any incoming timeslot on any digital port can be connected to any other timeslot on the same port, or any timeslot on another digital port on the same blade or another blade installed in the same SDM-9600 chassis.

4.9.2 E1/T1 Port Status LEDs

Three LEDs are located to the left of each digital interface on the front face of the SDM-9606 blade: **SYN-AL** (top), **T1-E1** (middle) and **D-CH** (bottom). Table 4-9 explains how these LEDs should be interpreted.

LED	Color	Indication
SYN-AL	Off	Either the port is not configured (State = **DISABLED**) or it did not pass the power-up self test and is not functional
	Green	The digital link is synchronized
	Amber	One or more *Yellow Alarms* have occurred on the link. **Note:** The NetPerformer assumes that the physical link is out of sync when a yellow alarm is detected, and brings down any active channels on that link
	Red	A fatal error has occurred, for example, loss of synchronization on the digital link
T1-E1	Off	Either the port is not configured or it did not pass the power-up self test and is not functional
	Amber	The port has been configured for T1 operation
	Green	The port has been configured for E1 operation
D-CH	Off	The D-channel is DOWN
	Green	The D-channel is UP

Table 4-9: Status LED indicators on SDM-9606 digital interfaces

4.9.3 Supporting E1-75 on an E1/T1 Port

An E1-75 connection requires an adaptor for E1-75 operations, as described in the next section). You must provide strain relief for the cables to ensure that they do not loosen from the digital port. See “Hardware Strapping for E1 Ports” on page 3-8.

4.9.4 Adaptor Cable

- RJ-48M to E1-75 dual BNC adaptor cable (Ordering part number: AG2CA0001)
- Installed between the digital port and the BNC coaxial cable. Refer to page 8.

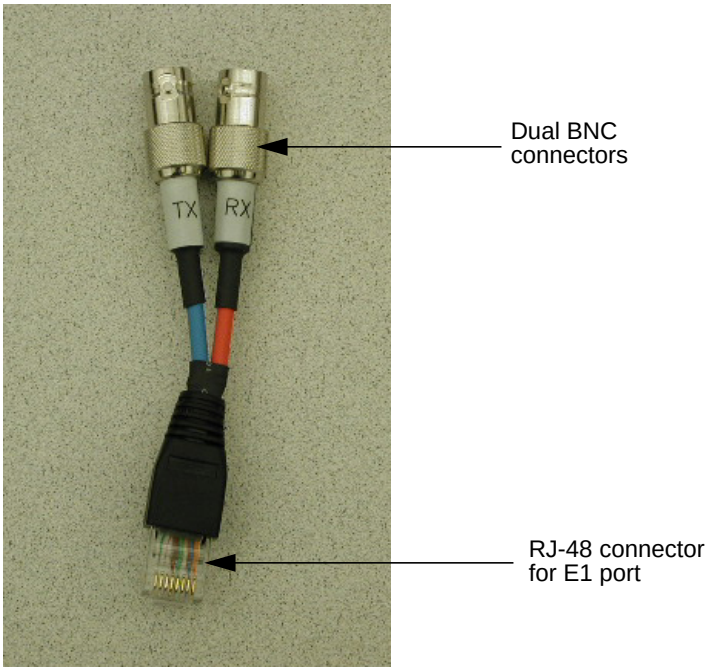

Figure 4-7: RJ-48 to E1-75 Dual BNC Adaptor Cable

4.9.5 E1/T1 Cables

You must provide an RJ-48 cable for each E1/T1 connection. Select a standard unshielded twisted pair (UTP) male-male cable with RJ-48 connectors, **at least 26AWG, or 0.4mm**.

NOTE: Install a ferrite on each cable that connects to an E1/T1 port when installed and operated in the European Union: Steward ferrite 28A2024-0A0, Part No. 332-0003-000.

The following table describes the RJ-48 pinout required for E1/T1 ports.

TE Mode		NT Mode	
Pin No.	**Signal**	**Pin No.**	**Signal**
1	Receive (+)	1	Transmit
2	Receive (-)	2	Transmit
3	(not used)	3	(not used)
4	Transmit (+)	4	Receive
5	Transmit (-)	5	Receive
6	(not used)	6	(not used)
7	(not used)	7	(not used)
8	(not used)	8	(not used)

Table 4-10: RJ-48 pinout for E1/T1 ports

NOTE: An E1/T1 interface is hard-strapped as **NT** by default for connection to **TE** equipment. Use a crossover cable where **TE** mode is required for connection to **NT** equipment.

Troubleshooting Tips

5.1 Symptoms, Problems, and Solutions

Symptom	Possible Problem	Solution
Unit does not start, with: **OOS** LED off **ST** LED off **ALM** LED off	No power to unit	Make sure the power harness is properly attached to the power inlet on the uni.t, and to the DC power supply Check power harness and replace immediately if damaged. Make sure the DC power inlet has power.
Unit does not start, with: **OOS** LED amber **ST** LED any state **ALM** LED any state	Critical error. Unit may be faulty	Contact Technical Support for assistance (see "Technical Support" on page 1-8).
Unit starts, with: **OOS** LED green **ST** LED any state **ALM** LED red	A software reset occurred	Enter **DA** at the console command line to view the alarms. If a **soft start (rst)** alarm has been logged with the notation **M=xx A=xx D=xx**, enter **ER** to dump the Exit Record. Send to Technical Support. Enter **CE** (Clear ERR/DIAG LED) to turn the **ALM** LED off.
Unit starts, with an alarm message of the type: **An error has occurred (0x00100000 0xC0000002), please call the technical support.**	A hardware error occurred	Enter **DA** at the console command line to view the alarms. Contact Technical Support and provide alarm codes.
Console connection does not work	Incorrect cable connection	Make sure you are using the factory-supplied console cable and RJ-45 to DB-9 terminal adaptor Make sure the cable is properly plugged into the **CSL** port and the console terminal COM port
	HyperTerminal communications program	Change *Emulation* parameter setting from **Auto detect** to **ANSI** (see "Notice Concerning HyperTerminal Connections" on page 8-1).
	Incorrect modem setting	Set the modem to ignore DTR by executing the AT command **at&d0** Set the modem to Auto Answer mode: execute **ats0=1**

Symptom	Possible Problem	Solution
Console terminal displays unreadable characters	Console terminal was not set to the default console speed before startup	Set your console terminal emulator to 9600 bps, and start again
LAN connection does not work	No power to LAN hub	Make sure the DC power inlet has power Make sure the LAN hub is properly plugged in and switched on
	Incorrect cable connection	If **LNK** LED is off, check LAN cable and replace if damaged If **LNK** LED is on, make sure you are using the correct IP address for transmissions

Appendix A: Warranty Information

This appendix explains the conditions of the product warranty.

Memotec Standard Warranty Policy

This standard warranty policy sets out the sole obligation and liability of Memotec and the customer's exclusive remedies for claims based on defects in or failure of any product sold (including software) by Memotec. This standard warranty policy replaces all other warranties, expressed or implied with respect to Products sold or services rendered by Memotec Inc. No representative is authorized to assume for Memotec any other liability in connection with the sale of the Product.

IN NO EVENT SHALL MEMOTEC BE LIABLE, WHETHER IN CONTRACT OR IN TORT OR ON ANY OTHER BASIS, FOR ANY DAMAGES SUSTAINED BY THE DISTRIBUTOR/ BUSINESS PARTNER OR ANY OTHER PERSON (a "Customer") ARISING FROM OR RELATED TO LOSS OF USE, FAILURE OR INTERRUPTION IN OPERATION OF ANY PRODUCTS, OR DELAY IN MAINTENANCE OR FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT OR SPECIAL DAMAGES OR LIABILITIES, OR FOR LOSS OF REVENUE, LOSS OF BUSINESS OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, LEASE, MAINTENANCE, USE PERFORMANCE OR FAILURE OF A PRODUCT.

Hardware Warranty

Memotec warrants that each new Product sold by Memotec will be free from defective material and workmanship. Memotec agrees to remedy in accordance with terms specified below any such defect which is disclosed under conditions of normal installation, use and service. To exercise the warranty, the Customer must deliver the product intact for examination, with all transportation charges prepaid, to the facility designated by Memotec. Burden for all shipping costs back to Memotec are the responsibility of the Customer.

Returns for repair will NOT be accepted without prior authorization from Memotec. When a return is authorized, a Return Authorization number (RA number) is assigned. The RA number must be written on the outside of each returning package. An RA number may be obtained by sending an e-mail (including a description of the problem) to memotecrepair@memotec.com or a fax at: +1-514-738-4436.

The specific terms of the warranty are as follows:

1. The Standard Warranty Period commences on the date the title of property of the Product is transferred to the customer, which is equal to the delivery date of the Product as per the Incoterms 2010 applicable definition, as specified in the Purchase Order.

2. The warranty applies to the Customer, provided however, that when a Distributor/Business Partner resells any Products, pursuant to its rights hereunder, the said warranty shall apply to any end-users which purchase such Products

from Distributor/Business Partner.

3. Memotec will be responsible for both material and labor required to effect all repairs under terms of the warranty for the Standard Warranty Period (see section below for Standard Warranty Period for specific Memotec product lines), providing the Product is returned to Memotec as specified above.

4. During the Standard Warranty Period, the Distributor/Business Partner or end-user may return defective parts for replacement at no charge (except shipping to Memotec), in lieu of returning the complete Product.

5. The warranty does not apply if:

   a) Any part of a product that has been installed, altered, repaired, or misused in any way that, in the opinion of Memotec, would affect the reliability or detracts from the performance of any part of the product, or is damaged as the result of use in a way or with equipment that had not been previously approved by Memotec;

   b) The warranty seal has been broken or the Product has been opened without obtaining prior authorization in writing from Memotec. This excludes Product option upgrades as long as Memotec documented procedures for option upgrades are strictly adhered to;

   c) The Product has had the serial number altered, defaced or removed; or

   d) The Product has been damaged by accessories, peripherals, and/or other attachments not approved by Memotec.

6. The warranty does not cover replacement or repair necessitated by loss or damage from any cause beyond the control of Memotec, such as lightning (power surge or brown out) or other natural and weather related events, outbreak of hostilities or wartime environments.

7. The warranty does not cover damage or loss incurred in any transportation of the product.

8. The warranty does not cover any labor involved in the removal and or reinstallation of warranted equipment or parts on site, or any labor required to diagnose the nature of the problem and establish the necessity for repair or replacement of the Product.

9. The warranty excludes any responsibility by Memotec for incidental or consequential damages arising from the use of the Product, or for any inability to use them either separate from or in combination with any other equipment or products.

10. It is the Distributor/Business Partner's (or direct purchasers) responsibility to ensure all paperwork complies with customs requirements.

11. Memotec is not responsible for any storage fees that shipping companies may charge nor for any delay caused by lack of information on Product that is returned.

12. The Distributor/Business Partner (or direct purchaser) is responsible for all custom and shipping fees related to the returned Product.

A fixed charge established for each product will be imposed for all equipment returned for warranty repair where Memotec cannot identify the cause of the reported failure. The fee for this service is defined in the current “Memotec Service Programs” document, identified as “No Problem Found Fee”.

Memotec also offers a Warranty Extension Service for most products, providing yearly extensions to the Standard Warranty Period. All the terms of this Standard Warranty Policy apply for the warranty extension period for an additional price. The price and the additional benefits of the Warranty Extension Service are described in the “Memotec Service Programs” document.

Repaired units benefit from the standard guarantee for a period of 90 days, or until the end of the Standard Warranty Period, whichever is the later date.

Standard Warranty Period for Specific Memotec Product Lines (other than software)

CX-U, CX-UA, NP (Net performer), AG (AccessGate) – 24 months

FX, WX, Legacy CX – 12 months

NMS and Third Party Sourced Equipment – 12 months, or differently as specified in quotation.

Limited Software Warranty

Software is warranted to substantially conform to Memotec’s specifications for a limited period of ninety (90) days from the date of delivery. Memotec’s sole obligation under this warranty shall be limited to using its best commercial efforts to correct such Software as soon as practical after Distributor/Business Partner or end-user has notified Memotec of such defects. Memotec does not warrant that operation of any of the Software shall be uninterrupted or error-free or that functions contained in the licensed Software shall operate in combinations which may be selected for use by the Distributor’s/Business Partner or end-user or meet the Distributor’s/Business Partner’s or end-user’s requirements. No warranty shall apply to any Software that is modified without Memotec’s prior written consent.

Appendix B: Compliance Information

Regulatory – Compliance and Agency Approval

These products comply with or have obtained Regulatory Agency approval at least against the following standards:

• EMC – Emission – Class A	FCC Part 15 EN 55022:1998 + A1 + A2
• EMC – Immunity	EN 55024:1998 + A1 + A2
• Safety	EN 60950-1:2006 + A11
• Telecom – Digital	TBR4 TBR 12 + TBR 13

Compliance and Regulatory Statements

EU Directive 1999/5

MEMOTEC
redefining network efficiency

DECLARATION OF CONFORMITY

We MEMOTEC
declare under our sole responsibility that the NetPerformer product:

SDM-9600
Consisting of Model SDM-9600 DC

Equipped with the following blade:
- SDM 9606 blade (100-1210-501)

Equipped with the following cable
- RJ45 to Dual BNC (502-0459-001)

to which this declaration relates, is in conformity with all applicable essential requirements following the provisions of the European Directive 1999/5/EC.

The conformity assessment procedure used for this declaration is the Annex II of the Directive.
Product compliance has been demonstrated against the following standards:

EN 55022	1998 + Amendments 1 and 2
EN 55024	1998 + Amendments 1 and 2
EN 60950-1	2006 + Amendment 11

The technical file is kept at: *Memotec Inc*
7755 Blvd Henri Bourassa
Montreal, Quebec H4S 1P7
Canada

Montreal, 11 March 2011

Stéphane Caron
Hardware Manager

137-0026-001-B

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WWW.MEMOTEC.COM A SUBSIDIARY OF COMTECH EF DATA

- MEMOTEC vakuuttaa täten että NetPerformer tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
- Hierbij verklaart MEMOTEC dat het toestel NetPerformer in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
- Par la présente MEMOTEC déclare que l'appareil NetPerformer est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
- Härmed intygar MEMOTEC att denna NetPerformer står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
- Undertegnede MEMOTEC erklærer herved, at følgende udstyr NetPerformer overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
- Hiermit erklärt MEMOTEC, dass sich dieses NetPerformer in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet. (BMWi).
- ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ MEMOTEC ΔΗΛΩΝΕΙ ΟΤΙ NetPerformer ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
- Con la presente MEMOTEC dichiara che questo NetPerformer è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
- Por medio de la presente MEMOTEC declara que el NetPerformer cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
- MEMOTEC declara que este NetPerformer está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
- Hawnhekk, MEMOTEC, jiddikjara li dan NetPerformer jikkonforma mal-htigijiet essenzjali u ma provvedimenti ohrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
- Käesolevaga kinnitab MEMOTEC seadme NetPerformer vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
- Alulírott, MEMOTEC nyilatkozom, hogy a NetPerformer megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
- MEMOTEC týmto vyhlasuje, že NetPerformer spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
- MEMOTEC tímto prohlašuje, že tento NetPerformer je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.

- Šiuo MEMOTEC deklaruoja, kad šis NetPerformer atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
- Ar šo MEMOTEC deklarē, ka NetPerformer atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
- MEMOTEC izjavlja, da je ta NetPerformer skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
- Hér með lýsir MEMOTEC yfir því að NetPerformer er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.
- Niniejszym MEMOTEC oświadcza, że NetPerformer jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
- MEMOTEC erklærer herved at utstyret NetPerformer er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.
- Noi MEMOTEC declarăm că aparatul NetPerformer este în conformitate cu cerinţele esenţiale şi cu alte prevederi relevante ale Hotărârii Guvernuluinr.88/2003 şi Directivei 1999/5/EC
- MEMOTEC декларирам на своя отговорност, че далекосъобщително устройство NetPerformer съответства на съществените изисквания по 1999/5/EC

Marking

This Telecom equipment bears the following CE mark:

CE

Intent of Use and Network Compatibility

Item	Compatible Telecom Services
With SDM-9606 blade 100-1210-501	This telecom Equipment is intended to be connected to the following telecom services: • ISDN Primary rate access at 2048 kbps in all the countries listed below • G.703 Leased circuits at 2048 kbps structured and unstructured, using 120 Ohm interface, in all the countries listed below. List of countries: Austria, Belgium, Bulgaria, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Republic of Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK.

Table 0-1 Compatible Telecom Services

EN55022 and CISPR22 Warning

This is a Class A product that may cause radio interference. In this case, the user may be required to take adequate measures.

FERRITES (EMI Filters)

To ensure compliance in the European Union with the standard EN 55024:1998 + A1 + A2, Ferrites are required on each RJ48 cable connected to an E1 port and on each cable connected to an Ethernet port.

Simply clamp the ferrite onto the cable, approximately 1 inch away from the connector on the chassis.

FCC Part 15 Statement

This digital 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 when t he equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if n ot installed and used in accordanc e with the instruction manual, may cause harmful interference to radio communications.

Operation of **this equipment** in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense.

Industry Canada Statements

This digital equipment does not exceed Class A limits for radio noise emissions for digital apparatus, set out in Radio Interference Regulation of the Industry Canada. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps necessary to correct the interference.

This product meets the applicable Industry Canada technical specifications.

Notice d'Industrie Canada

Cet équipement ne dépasse pas les limites de Classe A d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique établi par l'Industrie Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions de radio et de télévision, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.

Environmental Information

Waste Electrical and Electronic Equipment – WEEE

The WEEE (Waste Electrical and Electronic Equipment) legislation aims to raise the level of recycling of electrical and electronic equipment and to encourage designers to create products with recycling in mind.

The NetPerformer equipment that you bought has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems. Those systems will reuse or recycle most of the materials of your end-of-life equipment in a sound way.

The crossed-out wheeled bin symbol invites you not to dispose of WEEE as unsorted municipal waste and to collect such WEEE separately.

If you need more information on the collection, reuse and recycling systems, please contact your local or regional waste administration.

You can also contact us for more information on the environmental performances of our products.

Restriction of Hazardous Substances - RoHS

MEMOTEC
redefining network efficiency

RoHS - DECLARATION OF COMPLIANCE

We MEMOTEC
declare that the NetPerformer product:

SDM-9600
Consisting of Model SDM-9600 DC

is in full compliance with the RoHS Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003, on the restriction of the use of the following substances in electrical and electronic equipment:

1- Mercury
2- Cadmium
3- Hexavalent chromium
4- Polybrominated biphenyls
5- Polybrominated diphenyl ethers

As permitted by item 7 of the Annex to the Directive 2002/95/EC, the SDM-9606 blades utilize the lead-in-solder exemption for Network Infrastructure Equipment.

The product bears the following label: RoHS-5/6

Montreal, 11 March 2011

Stéphane Caron
Hardware Manager

740-0504-001-C

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Compliance to China RoHS

符合中国 RoHS

(Compliance to China RoHS)

部件名称 (Parts)	有毒有害物质或元素 (Hazardous Substances)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CrV)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
接口卡 (Interface Cards)	X	O	O	O	O	O
电缆 (Cables)	O	O	O	O	O	O
开关 (Switch)	O	O	O	O	O	O
机箱 (Chassis)	O	O	O	O	O	O
风扇 (Fans)	O	O	O	O	O	O

O 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/T11363-2006 标准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/T11363-2006 standard.

X 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超出 SJ/T11363-2006 标准规定的限量要求。
Indicates that the concentration of the hazardous substance of at least one of all homogeneous materials in the parts is above the relevant threshold of the SJ/T11363-2006 standard.

Safety Warnings and Precautions

WARNING:
Warnung
Avertissement

Access to the interior of this unit shall be made only by a qualified technician.	Der Zugang ins Innere des Gerätes ist nur einem fachlich qualifizierten Techniker gestattet.	Seul un spécialiste doit avoir accès à l'appareil.
Remove power plug from the power socket before performing any service on the unit.	Vorm Öffnen des Gerätes muss der Netzstecker yom Stromnetz getrennt werden!	Débranchez l'appareil avant de l'ouvrir.
To ensure adequate cooling of the equipment, a 2-inch unobstructed space must be provided around all sides of the unit.	Um die Kühlung des Gerätes nicht zu beeinträchtigen, ist es notwendig, an allen Seiten des Gerätes ca 5 cm Raum zu lassen.	Afin de ne pas nuire au processus de refroidissement, il est nécessaire de laisser un espace d'environ 5 cm de chaque côté de l'appareil.
The Power Socket shall be installed near the equipment and shall be easily accessible.	Stellen Sie das Gerät in der Nähe eines geer- deten Schutzkontaktsteckers so auf, dass der Stecker leicht erreichbar und zugänglich ist.	Placez l'appareil près d'une prise de courant facilement accessible.
To prevent the risk of shock or fire hazard, replace fuse with same type and rating.	Zür Vermeidung der Stromschlag-und Feuergefahr beim Auswechseln Sicherungen des gleichen Typs und der gleichen Nennleistung einsetzen.	Afin d'éviter tout risque d'incendie ou d'électrocution, remplacez les fusibles par des fusibles de même type et de même ampérage.

Making Changes or Modifications

CAUTION: Any changes and modifications not expressly approved by Memotec Inc. will void any compliance and regulatory approval, and will void the user's authority to operate the equipment.

Index

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For local offices and sales representatives, please visit our website:

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