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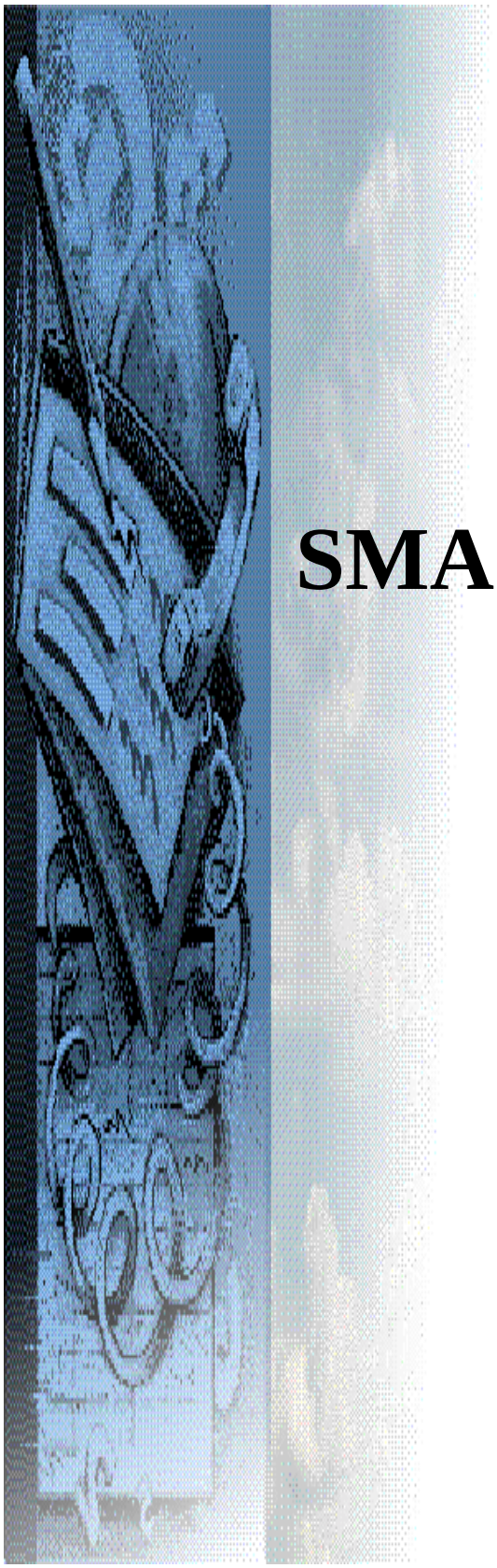

SMAS E1/T1 BOARD

User Guide

Comuniq ASA

Version 2.0 – March 2000

Statement of compliance

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Chapter 1 Introduction

Comuniq's Streaming Media Application Server (SMAS) E1/T1 resource board provides a powerful and flexible IP telecom platform for a variety of telecom functions. These include: interactive voice response, voice over IP, and unified messaging system applications. Powerful on-board CPU/DSP resources handle up to 60 channels of voice traffic, and allow extensive IP signal processing using a single PCI slot. The boards are 100% compliant with PMC specifications and fit both PCI and cPCI systems. The SMAS board draws a maximum power-load of 7.1319 volts +/- 5% and an average power load of 6.0672 volts.

This hardware is supported by an integrated software suite that offers easy access to all of the SMAS board's functions using Windows NT, Solaris, or Linux. The open Application Programmer's Interface (API) and extensible message interface facilitates efficient development and integration of third party software. Using the SMAS API, a programmer working with visual studio can develop a simple voice mail system with remarkably little code. Developers using the Microsoft COM environment can also access the board's functionality using the SMAS COM object or ActiveX control.

This document explains the installation and use of the E1/T1 interface board and software.

The target system for the SMAS board must comply with the following requirements:

Processor	Pentium 200MHz, minimum
HD space	100 MB of available hard-disk space, minimum
Memory	64 MB, minimum 128 MB, recommended when running more than 30 channels of IVR
Display	VGA, 800 x 600, 256-color video adapter
Operating System	Windows NT 4.0 (service pack 3 or later)
Development Environment	Visual Studio with service pack 3 or later
Motherboard	PCI ver 2.1 or later, 32 bit @ 33 MHz

Chapter 2 Installation

2.1 Hardware

2.1.1 Safety Notes

Before installation, please observe the following:

WARNING! Turn the computer off, disconnect the power source, and allow the internal components to cool before beginning installation. This will reduce the risk of personal injury from hot surfaces and electrical hazards.

The SMAS board is a static sensitive device and requires compliance with static precaution measures.

CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning this procedure. Proper packaging and grounding techniques are necessary precautions to prevent damage. To prevent electrostatic damage observe the following precautions:

- Transport products in static-safe containers such as conductive tubes, bags, or boxes.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free stations.
- Cover work areas with an approved static-dissipating material. Wear a grounding wrist strap that has been connected to the work surface, and make sure that all tools and equipment are properly grounded.
- Keep work area free of non-conductive materials including the plastic assembly aids and foam used in packing.
- Always wear a properly grounded wrist strap when touching a static-sensitive component or assembly.
- Avoid touching pins, leads, or circuitry.

2.1.2 Installation

Before beginning installation, turn off all power to the computer designated for the installation of the SMAS board. Failure to do so may damage the computer and/or SMAS board.

Insert the SMAS board into an available PCI or Compact PCI slot. Ensure that the board is securely held in place by either screws or clips.

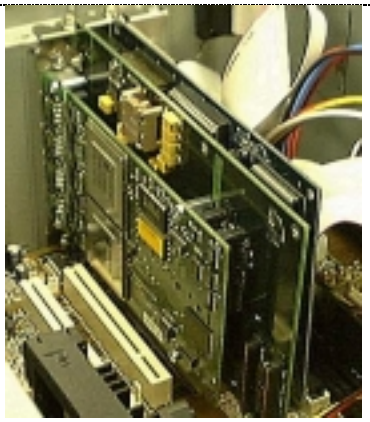

Figure 2-1 This photograph shows the SMAS board installed into a standard PCI slot.

When installing the hardware into a standard PCI configuration system, insert the SMAS board into the PCI slot as shown in Figure 2-1.

Figure 2-2 The SMAS board may be installed into a cPCI slot as shown.

For systems that with a compact PCI configuration, insert the SMAS board into the compact PCI slot as shown in Figure 2-2.

After you have secured the SMAS board in the appropriate slot, install the auxiliary cooling fan so that it blows on the SMAS board. **Failure to install a cooling fan will adversely affect performance**.

After you have installed the cooling fan, remember to fully reassemble the computer before restoring power to the system. Once power is restored, you may start the computer and log on as you normally would.

2.1.3 The RJ-48C Connectors

The SMAS card has four RJ-48-C connectors, which can be connected to four T1/E1 trunks. Trunks 1 and 3 are currently used for debugging; thus, **only trunks 0 & 2 should be used to handle traffic**. The RJ-45-C connector is the D-mark for a T1/E1 connection. Figure 2-3 shows the pin-out for a standard RJ-48-C connector.

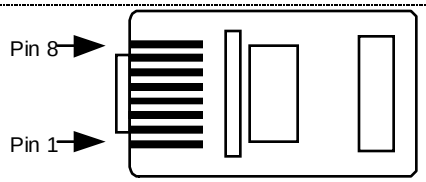

Figure 2-3 The pin-out configuration for a standard RJ-48-C connector is shown here. A description of each pin is contained in Table 2-1.

Table 2-1 shows the pin configuration for the RJ-48-C connector. Pins 1 and 2 are applied to the twisted pair which is the receive channel. Pins 4 and 5 are applied to the twisted pair which is the transmit channel for the T1/E1 connection.

Table 2-1 A description of each pin in the RJ-48C connector is shown here.

Pin Number	Description
1	Receive from PSTN network, B wire
2	Receive from PSTN network, A wire
3	No connection
4	Transmit to PSTN network, B wire
5	Transmit to PSTN network, A wire
6	No connection
7	Optional Shield
8	Optional Shield

The four trunks are numbered from 0 to 3 in ascending order starting with 0 at the left edge of the card. This assumes that the card is held with the Intel i960 processor face-up and the E1/T1 trunks pointed away from the viewer. Each trunk has one ITU-T LED indicator on the left-hand side of the connector. The use of these LEDs is described in Section 3.

2.2 Software

To install the SMAS SW you must have administrator rights on the target machine.

The software can be installed from a CD or the Comuniq web site. For those with web access, go to http//www.comuniq.com and locate the link to the most recent software version. You may download the self-extracting file to any directory you choose. Similarly, if you received the software on a CD, copy the self-extracting file to whatever directory you prefer. To start the installation double-click on the file icon.

To ensure trouble-free installation and operation, please be sure that the target system complies with all minimum requirements.

After clicking **Next>**, you must decide which components you would like to install. Once you have chosen these options, click **Next>**. You may choose a custom name for the program folder that appears on the start menu, or you may elect to use the default folder.

You have the option of selecting a destination folder for the program files. If you do not specify an alternate directory, the software will be loaded into the folder "C:\Comuniq." If you choose the default installation, these subfolders will be created:

\Comuniq\BIN	- contains all SMAPI binary
\Comuniq\Samples\Monitor	- contains Monitor source code
\Comuniq\Doc	- contains all documentation
\Comuniq\Firmware	- Copy of Firmware upgrades
\Comuniq\Redist\	- Redistributable files
\Comuniq\Include\	- Include files for SMAPI applications
\Comuniq\Lib\	- Library files for SMAPI application

As soon as you have selected the destination and program folders, all of the necessary files will be copied to your hard drive. When all of the files have been copied, a dialog box with the words, "installation complete" will appear. Now, you must reboot your system so that Windows will recognize the new drivers you have installed.

After rebooting, you are finished installing the software and drivers on your system. However, if you are running the SMAS board for the first time, you must still update the firmware.

2.3 Updating the firmware on the SMAS board

<u>You must update the firmware stored on the SMAS board before using the software in release 2.0.</u> (This one-time procedure is only necessary the first time you use the board.)

To update the firmware on the SMAS board, first run the program, psh.exe, found in the firmware directory of the Comuniq folder. This program will allow you to choose which code to download to the board. Always download ixworks.ddm before the altera.ddm. A command will appear on the screen.

Press the 'd' key to issue the download command. The computer will ask for the name of a file to download. Type 'ixworks.ddm' and press 'enter'. The screen will indicate when the download is complete. Quit the program by pressing 'q'. Reboot the computer and run 'psh.exe' again, using the same procedure to download 'altera.ddm'.

Once you have downloaded altera.ddm, you must reboot your system one last time. This will ensure that the proper code is started on the SMAS board. The SMAS board is now ready for use. You will not need to repeat this procedure for a given board unless an updated version of the firmware becomes available.