1.5   Overview of User Interfaces

EMS provides two user interfaces:

- A windows-based graphical user interface, called the "Maintenance Interface," which is intended for use in most situations; and

- A character interface, called the NOC-NEM interface, which can be accessed remotely using a terminal or a computer with a terminal emulator program.

NOTE: For convenience, the character interface is also available within the Maintenance Interface using a user-selectable character window.

1.5.1   Maintenance Interface

The Maintenance Interface is a graphical user interface (GUI) with a menu toolbar and "dashboard" displays containing indicators. Figure 8 shows an example, a display with alarm details for a host/remote pair connected to EMS.
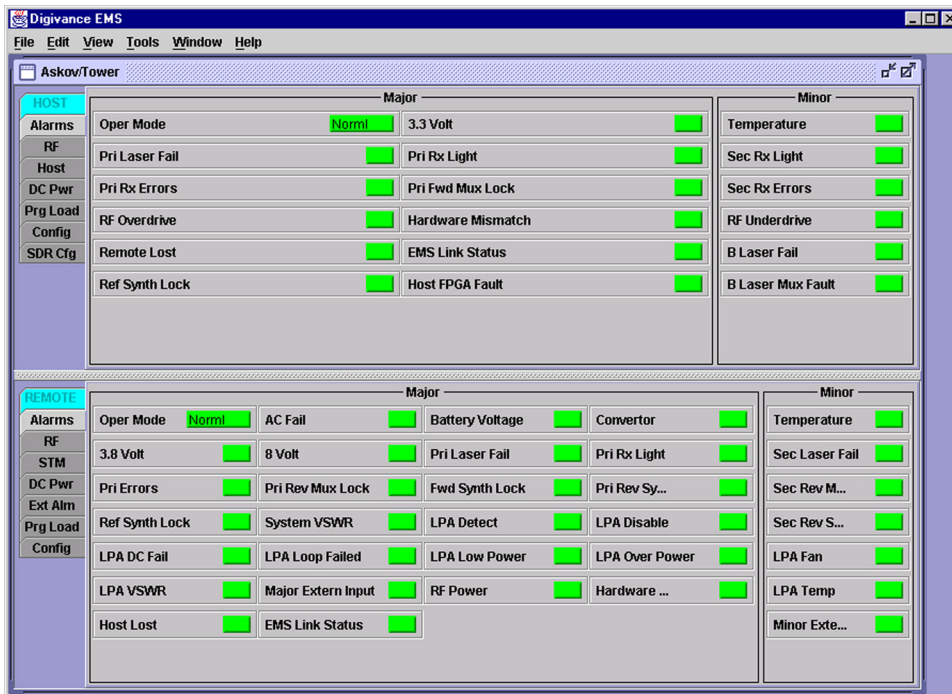

Figure 8. Maintenance Interface Example

The dashboard displays, refreshed about once every three seconds, allow you to quickly assess the status of host/remote pairs by checking the indicator colors. The color green indicates "okay." Red and yellow, respectively, indicate major and minor alarms. The Maintenance Interface also has dialogs used to set values such as remote forward attenuation as shown in Figure 9.

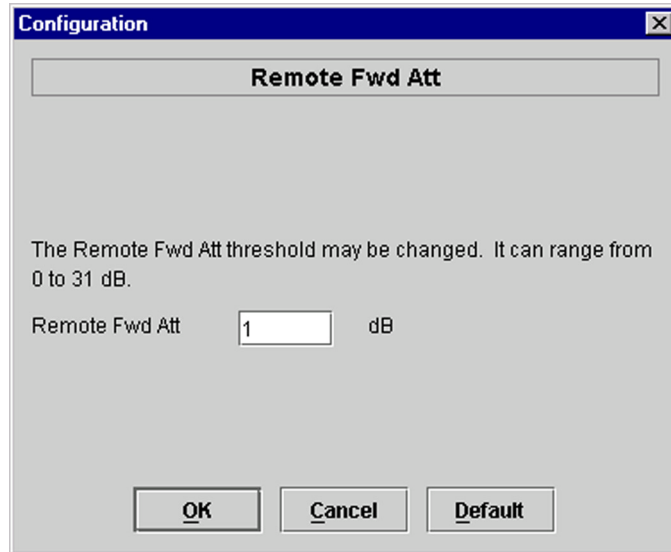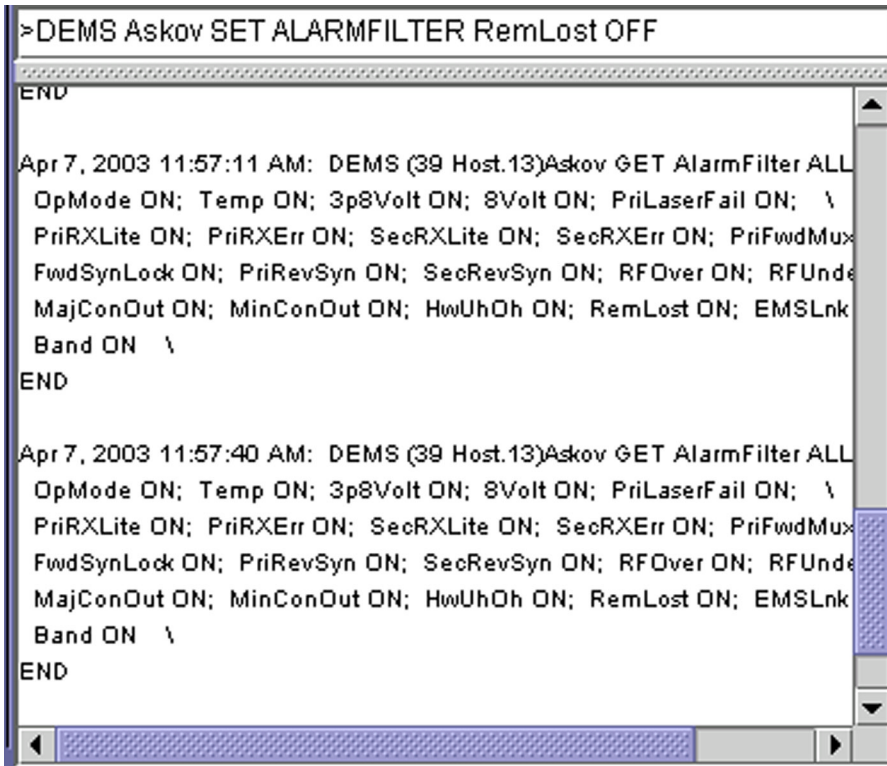**Figure 9. Dialog Example**

1.5.2   NOC-NEM Interface

The NOC-NEM interface is a "character interface" that can be accessed using a direct data link connection between a terminal, or a computer with a terminal emulator program, and a remote computer on which EMS is running. The NOC-NEM interface is also available as a window within the Maintenance Interface, in which case it provides a character, command line interface for the same host/remote pairs as are being reported in the graphical displays.

When used side by side with EMS graphical displays, the NOC-NEM interface augments system function through such features as automatic status updates, immediate alarm notification, easy retrieval of alarm and status history stored in the EMS log file, and ability to send ALL commands affecting multiple network elements at the same time.

Figure 10 shows an example of a NOC-NEM interface display. Appearance will vary depending on the terminal or terminal emulator program being used.

```
>DEMS Askov SET ALARMFILTER RemLost OFF

END

Apr 7, 2003 11:57:11 AM:  DEMS (39 Host.13)Askov GET AlarmFilter ALL
 OpMode ON;  Temp ON;  3p8Volt ON;  8Volt ON;  PriLaserFail ON;   \
 PriRXLite ON;  PriRXErr ON;  SecRXLite ON;  SecRXErr ON;  PriFwdMux
 FwdSynLock ON;  PriRevSyn ON;  SecRevSyn ON;  RFOver ON;  RFUnde
 MajConOut ON;  MinConOut ON;  HwUhOh ON;  RemLost ON;  EMSLnk
 Band ON   \
END

Apr 7, 2003 11:57:40 AM:  DEMS (39 Host.13)Askov GET AlarmFilter ALL
 OpMode ON;  Temp ON;  3p8Volt ON;  8Volt ON;  PriLaserFail ON;   \
 PriRXLite ON;  PriRXErr ON;  SecRXLite ON;  SecRXErr ON;  PriFwdMux
 FwdSynLock ON;  PriRevSyn ON;  SecRevSyn ON;  RFOver ON;  RFUnde
 MajConOut ON;  MinConOut ON;  HwUhOh ON;  RemLost ON;  EMSLnk
 Band ON   \
END
```

Figure 10. NOC-NEM Interface Example

Using NOC-NEM, you can perform most of the tasks done using the Maintenance Interface. Below is an example of a command and response message.

```
Apr 7, 2003 12:17:21 PM: DEMS (39 Host.13)Askov GET Alarm
3p8Volt \

  3p8Volt Ok  \

END
```

1.6   Overview of EMS Tasks

Table 1 summarizes the tasks done using EMS.

Table 1: Summary of EMS Tasks

TASK	DESCRIPTION
Determine which network elements are currently connected	You can do this inside the Maintenance Interface by using a menu item to refresh the "catalog" of host/remote pairs. If using the NOC-NEM interface, you can enter a command to do this.
Enter site name and site number	When turning up a host/remote pair and "introducing" the units to EMS, you can give them a site name and (host only) site number. If using the NOC-NEM interface, you can enter a command to do this.
Check for alarms	You can check an alarm overview window to determine if any network element has an alarm. If so, you can view an alarm detail window to check individual alarm indicators in the alarmed network element. Any new alarm also causes the NOC–NEM window, if open, to scroll down with new text as the alarm is reported.
Acknowledge alarms	Using the alarm overview window, you can also determine which alarms, if any, remain to be investigated. Every alarm, when it first occurs, is flagged with an alarm history indicator (red or yellow). The indicator remains in the window until someone clicks on it to acknowledge that the alarm has been noticed.
Determine current status	You can check the current status of any network element using seven function-related windows (for example, there are separate windows for optics functions and DC power). In addition, the NOC–NEM window displays periodic messages summarizing the current status of all connected pairs.
Obtain status history and alarm history text	Using the NOC–NEM window, you can retrieve status and alarm messages written to the EMS log file. You can also scroll back in the NOC-NEM window to see which events preceded an error condition.

Table 1: Summary of EMS Tasks (Continued)

TASK	DESCRIPTION
Define RF logical channels	For each logical RF channel, you can select modulation type and FCC channel number.
Check RF signal levels	You can check signal levels of RF forward and reverse path signals as measured on the PCIx card. Alarm indicators provide details on any states preventing normal signal transport.
Enter RF signal gain and forward path attenuation	You can enter signal gain settings for RF forward path, reverse path, and diversity path (if present) for any logical RF channel. You can adjust forward path attenuation affecting the strength of the RF analog signal transmitted from the remote unit antenna.
Download controller and FPGA files	Using the Prg Load window, you can download program files to the host unit or remote unit. For each unit, these files include a control program and a Field Programmable Gate Array (FPGA).

1.7   Use of Ports

EMS uses a DB-9 port with an RS-232 DCE interface, identified in the software as the "EMS/Host/Remote Comm Port," to communicate with LRCS network elements. This port is used by the Maintenance Interface. It also provides the information available in the NOC-NEM window within the Maintenance Interface. A second serial port, identified in the software as the "NOC Comm Port," can optionally be used to provide NOC-NEM access to a remote terminal or to a remote computer running a terminal emulator program. Figure 11 provides a schematic of the ports from the perspective of the EMS software.

Physically the ports have the following requirements:

- **EMS/Host/Remote Comm Port**—This port connects to the PC-compatible receptor on one end of the straight-through RS-232 cable provided with the Digivance system. The DB-9 plug on the other end of the cable, in a working system, connects to a DB-9 receptor either on a Host Network Card (in a BTS server) or on an ADC remote unit. When connected directly to a remote unit, the EMS system is used for a single, collocated host/remote pair.

• **NOC Comm Port**—This port may be used to connect to a direct data link with the remote terminal or terminal emulator computer. Cables and equipment, not provided, must support the RS-232 ASCII data flow between the EMS computer and the remote terminal or terminal emulator computer.
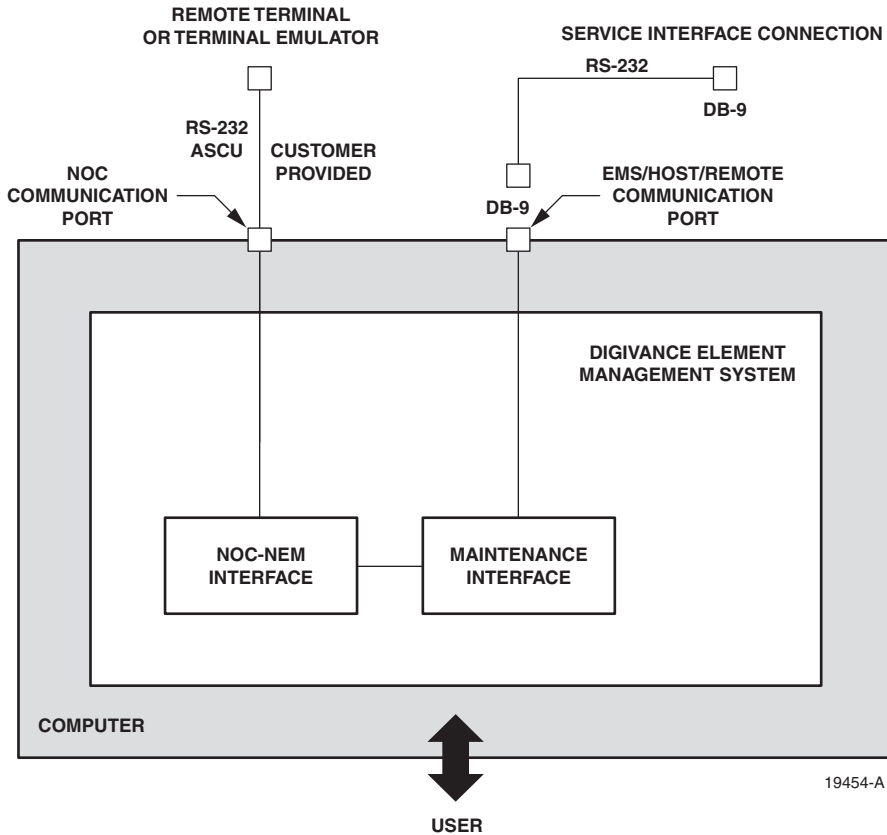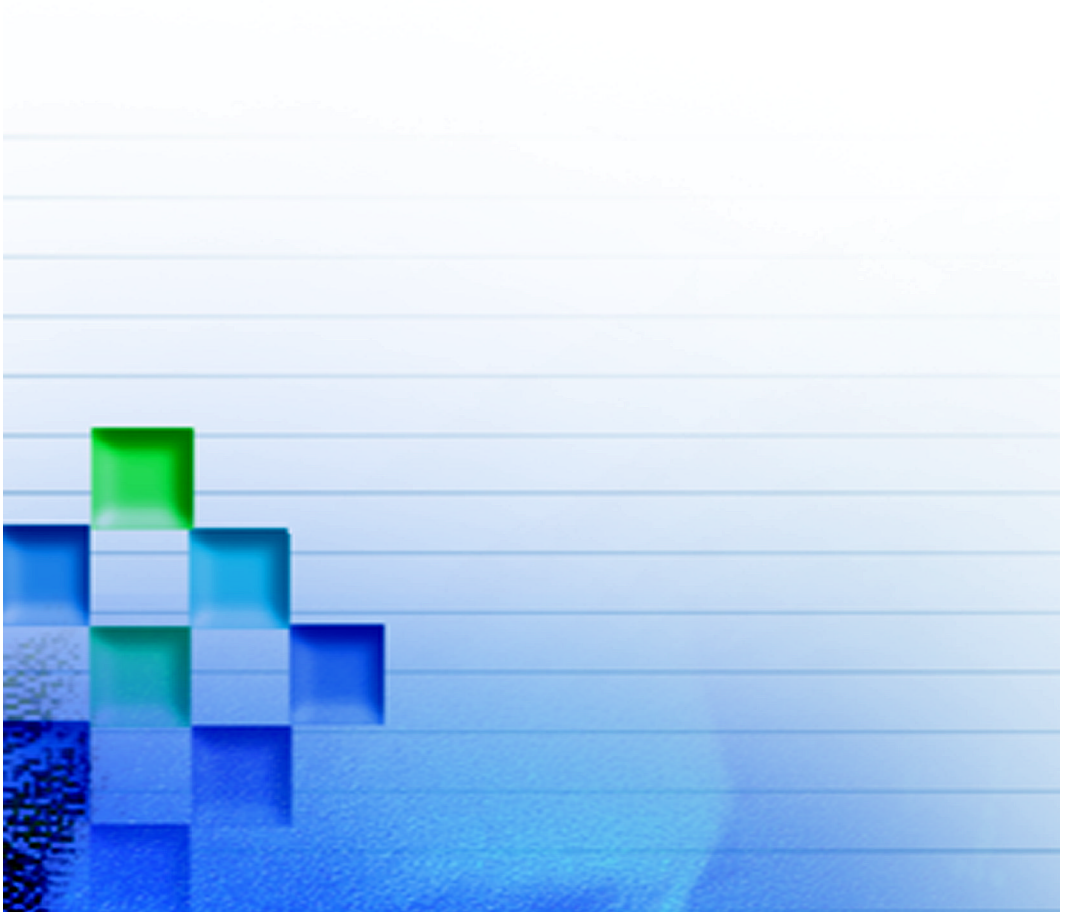

Figure 11. EMS Ports

2 INSTALLATION AND SYSTEM CHECK

2 INSTALLATION AND SYSTEM CHECK

Installation of EMS is an easy task involving downloading and running several files provided on the installation CD-ROM. You can install EMS on either a PC or laptop, as shown in Figure 12.
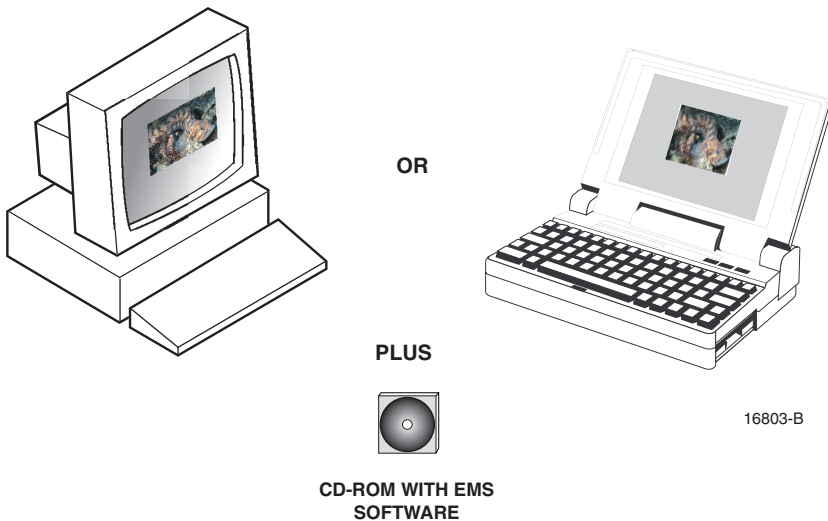
OR

PLUS

CD-ROM WITH EMS SOFTWARE

16803-B

Figure 12. Basic Installation Components

2.1 System Requirements

For EMS to be loaded, the computer must have:

- Pentium® class processor or better
- 256 Meg RAM
- Serial port
- 30 Mb available hard disk space
- CD-ROM drive to install the software
- Windows® operating system (95, 98, NT, or 2000)

2.2 Installation CD Contents

The Element Management System consists of software files supplied on a CD. These files include:

- The Java™ Runtime Environment from Sun MicroSystems and the appropriate licensing agreements required for its use.

- The executable files necessary for the Element Management System software to run on a Windows based personal computer.

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The version of the software contained on the CD is listed on the label and can be verified as the correct version by calling the ADC Technical Assistance Center (1-800-366-3891 extension 73475, in U.S.A. and Canada; 1-952-917-3475, outside U.S.A. and Canada).

2.3 Installation Procedure

Installation involves three procedures: installing the Java Runtime System, installing the EMS software, and completing the installation.

2.3.1 Installing the Java Runtime System

The Java Runtime System contains several files required for the NOC-NEM interface.

To install the Java Runtime System

1. Exit all Windows programs.

2. Insert the CD-ROM.

3. Select **Start**⇒**Run** and browse to select the following program:

        j2re-1_3_1-win.exe

4. Allow the program to complete running.

This will create several items in the folder, `c\Program Files\javasoft`.

2.3.2   Installing the EMS Software

The EMS software contains the ADC application files that provide the system interfaces and functions.

To install the EMS software

Perform the following steps:

1. Copy the following files from the CD-ROM to the folder
   `c:\My Documents` on your computer:

   <div align="center">

   `ReadMe_<band>.txt`

   `DEMSINS.exe`

   </div>

   where `<band>` is the bandwidth of the system being installed (800, 1099, smr, etc.).

2. Use **Start⇒Run** to extract and execute the `DEMSINS.exe` program.

This will create several items in the folders `c:\ADC\DEMS`.

2.3.3   Completing the Installation

This procedure updates some system files on the computer with EMS parameters and provides an icon on the desktop for use in starting the system.

To complete the installation

Perform the following steps:

1. Restart the computer.

2. Create a shortcut to DEMS.bat located in `c:\ADC\DEMS` and drag the shortcut to the desktop.

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2.4   Connecting to the Host/Remote Pair

The EMS software is now presumed to be correctly installed on the computer, and can be run alone, but to function as intended it must be connected to one or more Digivance System host/remote pairs.

For the physical connection between the EMS PC and the host/remote pair, use the RS-232 serial cable provided with the Digivance hardware.

Connect the cable on the PC to the serial port identified in the software as the EMS/Host/Remote Comm Port (by default this port is COM1). Connect the other (DB-9) end of the cable to the SERVICE port on either the host unit or the remote unit. On both the host unit and the remote unit, the SERVICE port is located on the front console.

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NOTE: When EMS is connected directly to a remote unit, only that remote unit and the corresponding host unit are visible in EMS. When EMS is connected to a host unit, however, all LRCS system pairs that are presently on the Controller Area Network (CAN) bus are visible.

NOTE: For information on how the EMS/Host/Remote Comm port is defined, see Topic 3.3, Defining EMS Ports, on page 29.

NOTE: Multiple host units can be daisy-chained together in a CAN. For information, refer to the user manual for the host unit.

Most of the information contained in the LRCS system can be obtained from either the host or remote unit ports; however, to update some program files, you must be connected to the host unit port.

2.5   Checking the System

After installing the software and (if possible at this time) connecting your computer to one or more Digivance host/remote pairs, do the following procedure to check if the system is running correctly

To check the system

1. Doubleclick on the EMS icon.

2. Watch for the EMS banner to come up.

3. Watch for the initial menu bar to come up.

4. Look for the **Alarm Summary** window which should identify the host/remote pairs that are currently connected.

5. If the host/remote pairs are not listed, check your port settings and the serial cable between the EMS computer and the host/remote pair.

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