Maintenance Manual

Integrated EDACS® Alarm (IEA) System

Introduction/Operation/Configuration

ERICSSON

TABLE OF CONTENTS

NOTICE!

This manual covers Ericsson and General Electric products manufactured and sold by Ericsson Inc.

NOTICE!

Repairs to this equipment should be made only by an authorized service technician or facility designated by the supplier. Any repairs, alterations or substitution of recommended parts made by the user to this equipment not approved by the manufacturer could void the user's authority to operate the equipment in addition to the manufacturer's warranty.

NOTICE!

APPENDICES

IMPORTANT SAFETY INFORMATION

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Ericsson Inc. assumes no liability for the customer's failure to comply with these standards.

1. **SAVE THIS MANUAL** - It contains important safety and operating instructions.
2. Before using this equipment, please follow and adhere to all warnings, safety and operating instructions located on the product and in the manual.
3. **DO NOT** expose equipment to rain, snow or other type of moisture.
4. Care should be taken so objects do not fall or liquids do not spill into the equipment.
5. **DO NOT** expose equipment to extreme temperatures.
6. **DO NOT** use auxiliary equipment not recommended or sold by Ericsson. To do so may result in a risk of fire, electric shock or injury to persons.
7. **GROUND THE EQUIPMENT**-To minimize shock hazard, the station equipment cabinet must be connected to an electrical ground.

   The equipment supplied is equipped with three-conductor AC power cords. These power cords must be plugged into approved three-contact electrical outlets with the grounding wires firmly connected to an electrical ground (safety ground) at the power outlet. The power cords must also meet International Energy Commission (IEC) safety standards.
8. To reduce risk of damage to electrical cords, pull by plug rather than cord when disconnecting a unit.
9. Make sure all power cords are located so they will not be stepped on, tripped over or otherwise subjected to damage or stress.
10. An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, ensure:
    a. The pins on the plug of the extension cord are the same number, size, and shape as those of the plug on the power supply.
    b. The extension cord is properly wired, in good condition, and
    c. The wire size is large enough for the AC ampere rating of unit.
11. **DO NOT** operate equipment with damaged power cords or plugs - replace them immediately.
12. **DO NOT** operate this product in an explosive atmosphere unless it has been specifically certified for such operation.
13. To reduce risk of electric shock, unplug unit from outlet before attempting any maintenance or cleaning.
14. **DO NOT** operate this product with covers or panels removed. Refer all servicing to qualified service personnel.
15. Use only fuses of the correct type, voltage rating and current rating as specified in the parts list. Failure to do so can result in fire hazard.
16. **GROUNDING AND AC POWER CORD CONNECTION** - To reduce risk of electrical shock use only a properly grounded outlet. The system components are equipped with electric cords having an equipment grounding conductor and a grounding plug. Be sure all outlets are properly installed and grounded in accordance with all local codes and ordinances.
17. **DANGER** - Never alter the AC cord or plug. Plug into an outlet properly wired by a qualified electrician. Improper connection or loss of ground connection can result in risk of an electrical shock.
18. **ELECTROSTATIC DISCHARGE SENSITIVE COMPONENTS** - This station contains CMOS and other circuit components which may be damaged by electrostatic discharge. Proper precaution must be taken when handling circuit modules. As a minimum, grounded wrist straps should be used at all times when handling circuit modules.

INTRODUCTION

Ericsson's **I**ntegrated **E**DACS® **A**larm **(IEA)** system is a highly integrated and scaleable test and alarm system designed to support the GPS Simulcast system and meet a wide variety of customer requirements. The IEA uses a **G**raphical **U**ser **I**nterface **(GUI)** to allow easy, intuitive diagnosis of system status. This system provides significant improvements in fault detection, fault isolation and equipment monitoring by:

- Integrating test and alarm functionality into a single platform.
- Adding GUI capability.
- Putting a highly expandable hardware/software platform in place, providing a foundation for future expansion of features for all EDACS system and site options.
- Reporting test call failure detail to the operator
- Providing GPS receiver/multiplexers/base station remote control.

SYSTEM ARCHITECTURE

The IEA computer replaces the previous generation alarm system, **A**larm **C**ontrol **U**nit **(ACU)**, **M**aster **A**larm **S**ystem **(MAS)**, **R**emote **A**larm **S**ystem **(RAS)**, Laptop PC and **T**est **U**nit **A**larm **I**nterface **(TUAI)** and integrates those functions into a rack mounted Personal Computer. Figures 1 & 2 show Block Diagrams of the IEA system. Figure 1 shows the Block Diagram of the IEA computer as connected at the Control Point. Figure 2 shows the Block Diagram of the IEA computer as connected at a Transmit Site. An explanation of these sites is provided later.

EXTERNAL INTERFACES

Figures 1&2 show the IEA's external interfaces as covered in the following text. Refer to Appendix A for a definition of Digital and Analog interface signals. Refer to Appendix B for a definition of RS-232/RS-422 data interfaces.

Graphic User Interface (GUI)

A GUI is used to configure the test and alarm system, to display Simulcast equipment alarms and to remotely control GPS receivers, Intraplex multiplexers and MASTR III Base Stations. The GUI utilizes Windows NT™ and icon's to create an intuitive, user friendly **M**an-**M**achine-**I**nterface **(MMI)**. Status and alarm information is presented hierarchically and is accessed through point-and-click mouse operations. The GUI is available locally at all IEA computer locations *(Figures 6 & 7)*.

Event Log Interface

Alarm event logs are kept on the hard drive. These logs provide the user with a record of alarm activity for diagnostic purposes. The size of the event log is configurable through the event viewer menus. Filters can be configured to log and display only what the user needs. A hardcopy of the Event Log can be printed out as described in the next paragraph *(Figure 16)*.

Printer Interface

A printer interface produces hardcopy of material displayed on the monitor through the Windows ClipBoard. Performing a "Print Screen" places the displayed information in the ClipBoard. The information can then be printed as hardcopy from the ClipBoard.

Site Controller Interface

The Site Controller Interface processes general purpose, user defined, digital alarm inputs and outputs between the IEA computer and the Site Controller. The Site Controller forwards this information to the System Manager. The IEA provides information to the Site Controller to indicate the status of general purpose inputs (i.e. door open, lights on, etc.). These general purpose user defined inputs are expandable by the IEA to provide hundreds of digital I/O channels.

GETC Interface

The GETC interface consists of three signals, the Inhibit Request, Reset and Receiver Fault Lines. The Inhibit Request line *(Figure 1)* takes a channel out-of-service and is automatically activated by the IEA at the Control Point when a channel has failed a test call or has reported low RF power.

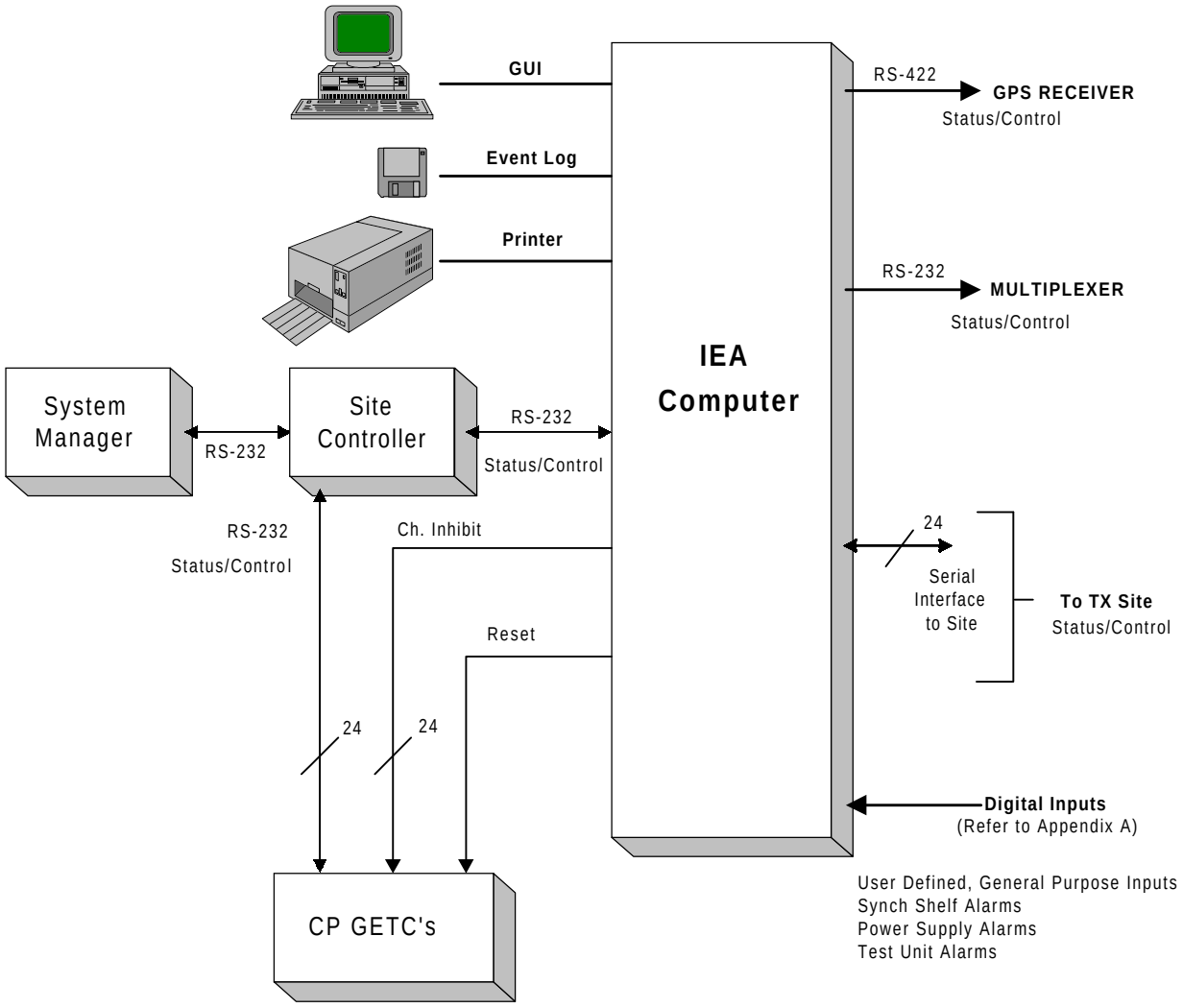


Figure 1 - IEA System Block Diagram (Simulcast Control Point)

The Reset Line is connected to the Control Point GETC's *(Figure 1).* The operator may reset Control Point GETC's from the GUI.

The Receiver Fault Line is monitored at the transmit site by the IEA during test calls *(Figure 2).* This line provides the IEA with an indication that the individual control channel and working channel base stations are operational during a test call.

Digital Input Interface

The digital input interface supports both EDACS specific and customer specific signal monitoring *(Figures 1 & 2).* The EDACS specific signals include PTT (active when the base station is transmitting and triggers RF power measurement), RX Fault (active during Test Calls) and Synchronizer (Synch) Shelf Alarms.

Customer specific signals are definable by the user and are triggered by relay closure to ground or TTL level digital voltage. They are polled by the IEA processor at a user definable rate from 10 seconds to 500 seconds.

Appendex A shows the allocation of digital and analog signals in the IEA.

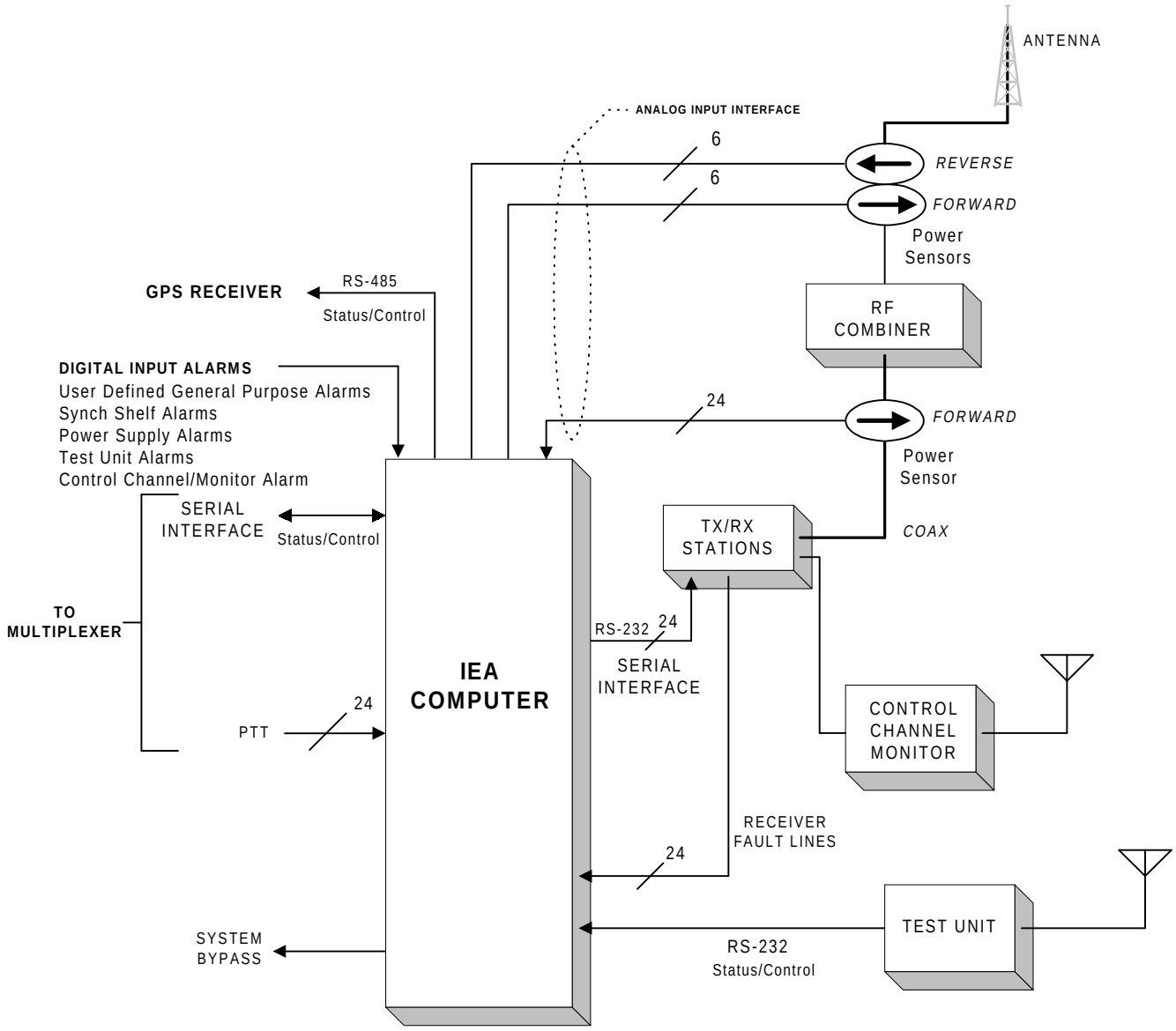


Figure 2 - IEA System Block Diagram (Simulcast Transmit Site)

Digital Output Interface

The digital output interface provides active TTL level output lines. They activate built-in fault tolerance signals (i.e., GETC inhibit request lines and GETC reset). Refer to the GETC Interface paragraph.

Analog Input Interface

Analog inputs are provided for RF power measurement purposes. Low base station RF power and low forward/high reverse antenna power failures are detected. Power levels are sampled continiously and station power (in watts) is displayed at the user interface. The RF power sensors are rated at 1000W, 5 Vdc.

Test Unit Interface

In order to perform deterministic simulcast test call processing, the Test Unit interface supports:

- Control Channel Failure
- Test Call Request
- Test Call Results

A test call failure is reported to the operator as alarms under the channel groups. Refer to Maintenance Manual AE/LZB 119 1885 for information on EDACS Test Call processing and features.

Base Station Receiver Fault Interface

The base station receiver fault interface is used by the test call processing software to determine whether or not the test call high speed data handshake took place correctly. The interface supports a single TTL level line from every channel base station (up to 24 stations).

Push-To-Talk (PTT) Interface

The PTT signal located at the simulcast transmit site is a TTL level input to the IEA. This signal is activated by the Control Point when a channel is transmitting RF power. The IEA uses this signal to trigger the station RF and antenna power monitoring. Refer to Analog Input.

GPS Receiver Interface

The GPS receiver interface provides remote control and status for multiple GPS receiver devices located at each transmit site and the Control Point. The interface is 4-wire, RS-485 running at 9600 bps. For more information on the GPS receiver refer to the appropriate vendor's maintenance manual.

Intraplex Multiplexer Interface

The Intraplex Multiplexer interface provides remote control and status for multiple multiplexer devices located at each transmit site and at the Control Point. Up to 24 multiplexers are possible at a simulcast Control Point. The interface is a single RS-232 serial interface running at 9600 bps to the first multiplexer. Messages are then bussed between multiplexers on a separate RS-485 Bus. For more information on the Intraplex Multiplexer refer to the appropriate vendor's maintenance manual.

MASTR III Base Station Interface

The MASTR III Base Station interface provides remote control for up to 24 base stations. Each station connects to the IEA through an RS-232 serial port. Status of the MASTR III Base Stations gain potentiometers is provided on the GUI. These potentiometer include:

- DSP Line Pot
- DSP Line Cancellation Pot
- DSP Comprssor Gain Pot
- Line In Pot
- Line Out Pot
- Transmit Pot
- Channel Guard Pot
- Voting Tone Gain Pot
- Compressor Threshold Pot

The "DSP line in pot" gain is used by an operator using the IEA to adjust transmit deviation during Simulcast system alignment. The remaining pots are not normally used by the IEA. For more alignment information refer to GPS System Alignment Manual LBI-39210.

Control Point to Transmit Site Interface

The Control Point IEA is the system master controller. All transmit site IEA's initialize (boot) from the Control Point. If communication is lost to a site, the IEA continues to operate and log alarms locally. When communication is restored, the site IEA reboots from the Control Point. **Note:** any configuration changes made at a transmit site must be made while connected to the Control Point or will be overwritten.

Up to 24 IEA computers, located at 24 individual site locations, may be connected to a central IEA computer located at the simulcast Control Point. Each site link is a 19.2k bps data channel through the Intraplex Multiplexer on the inter-site T1/E1 interface. As an option, the IEA will operate at 9600 bps.

Hardware User Interface

Display Terminal, Keyboard, Mouse

A display terminal, keyboard and mouse are available for each IEA computer for a user interface. These items are always available at the Control Point and optional at the TX Site.

Racking

The rackup drawing for the simulcast Control Point and Transmit Site locations are shown in Overview Maintenance Manual *LBI-39194*. The IEA and associated peripherals are allocated the space designated as "Test & Alarm Computer."

OPERATION

ALARM SYSTEM START/STOP

Automatic On At Power Up

When the personal computer of the **I**ntegrated **E**DACS **A**larm (IEA) system is turned on or rebooted the IEA **M**an **M**achine **I**nterface **(MMI)** program automatically starts. The following introductory screen *(Figure 3)* is displayed.

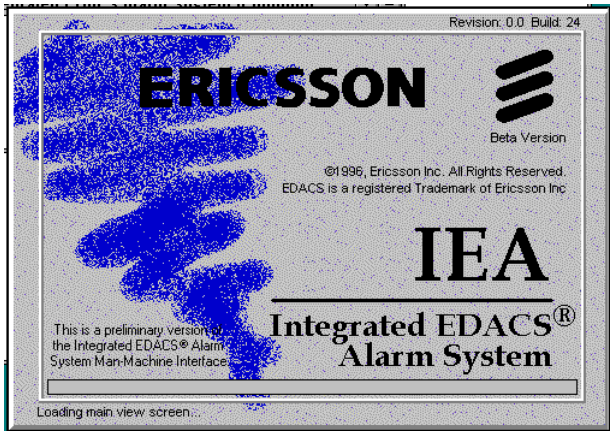


Figure 3 - Introduction Screen

Manual Shut Down

WARNING

NEVER arbitrarily shut off the power to the IEA Computer without first going through the SHUT DOWN procedure. Doing so can corrupt the hard drive and the computer may not boot correctly.

To shut the IEA computer down it is necessary to first exit the IEA Alarm System. To exit the system, select File from the pull down menus located at the top of the screen (See Figure 4 and refer to Pull Down Menus). Select "Exit IEA Alarm System". The computer terminates all processes until there is only the program manager. From the program manager, again select the File pull down menu, then select "Shut Down". A message **"It is now safe to shut down the computer"** is displayed. Turn the computer off.

A sudden lost of power for any reason can cause corruption of the IEA Data. For this reason an Uninterruptable Power Supply is used with this application.

Restart

To restart the IEA system, turn the computer on and the IEA System will automatically restart and display the introductory screen *(Figure 3)*. If the IEA System has been exited and the computer has not been shut down, the system can be restarted by double clicking on the IEA icon *(Figure 4)*. This icon is located in the program manager in the Startup program group.

Figure 4 - IEA Icon

Reboot

To reboot the computer, select the File menu from the Main window. Then, select **"Shut Down and Restart Computer"** then **"Local Machine".** This automatically exits the IEA system, shuts down the computer and then restarts. After the bar at the bottom of the introductory screen shown in Figure 3 has filled the main MMI Window will appear.

MAIN MMI WINDOW

After the introductory screen has been displayed for a short time, the Main MMI Window then appears (Refer to Figures 5&6).

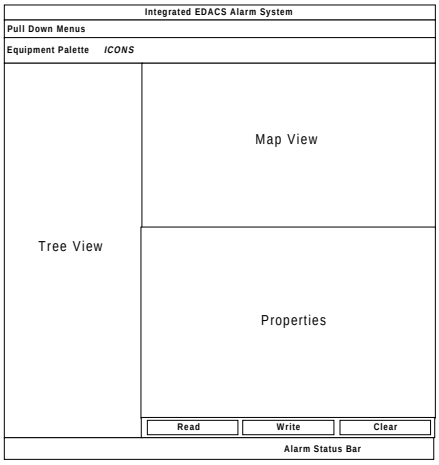


Figure 5 - Main MMI Screen Sections

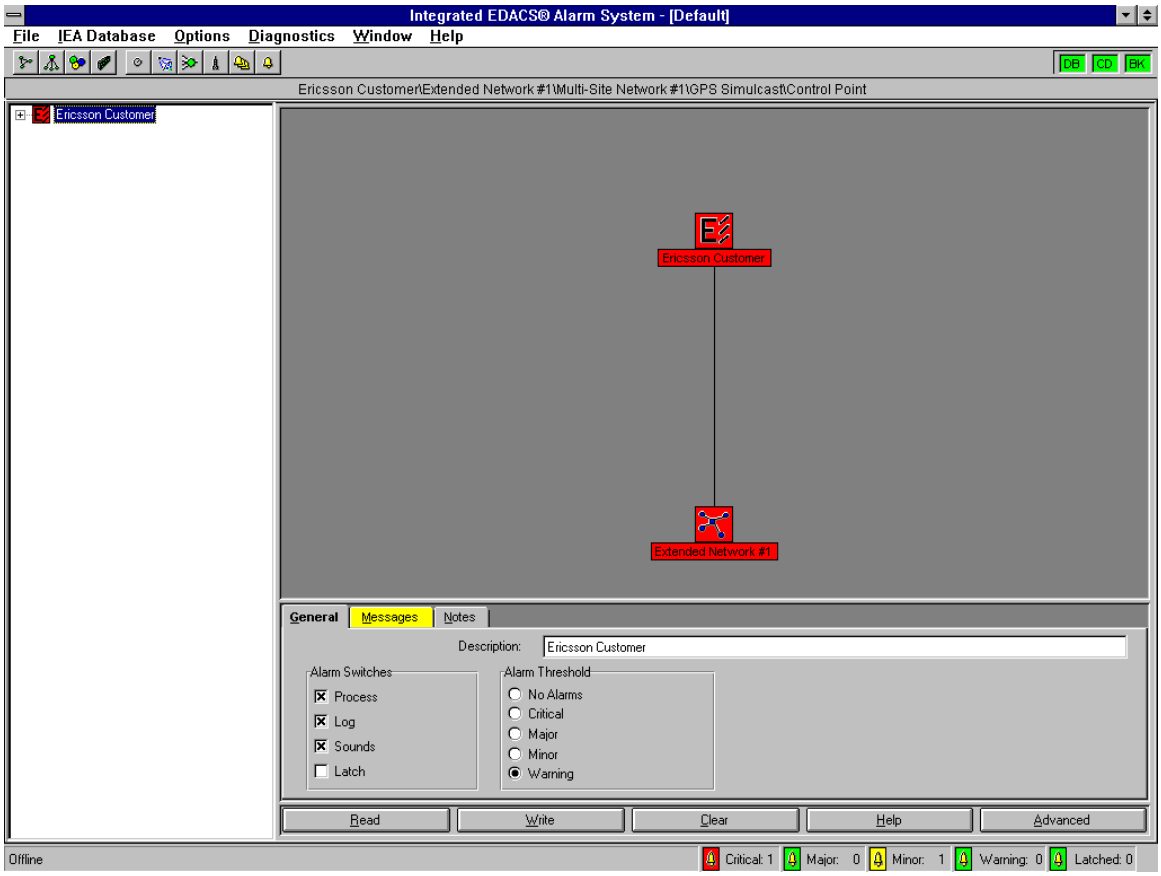


Figure 6 - Man-Machine Interface Main Screen

Pull Down Menus

This screen has pull down menus along the top. These menus are File, IEA Database, Options, Diagnostics, Window and Help. Clicking once on a menu activates that menu. Another method of selecting these menu items is using **<ALT>** and the underline letter.

Selecting **File** drops:

- **Load Workspace** - Provides a space to recall settings for individual preferences such as background colors, window sizes, etc. This is helpful when more than one individual uses the system. Workspace settings that are saved/restored are:
  1. Main Window Size
  2. Equipment Palette On/Off
  3. Width of tree
  4. Line style of tree
  5. Tree boldface or not
  6. Map boldface or not
  7. Map background color
  8. Map line width
  9. Graph color
- **Save Work Space** - This selection allows work space settings to be saved as the present workspace.
- **Save Work Space As ...** - Allows a new work space to be named and saved
- **Remove Work Space** - Deletes a previously defined workspace. **CAUTION:** Do not delete the "Default" workspace.
- **Exit IEA System On ➢** - Shuts down the IEA software on a specific machine in the system, leaving Windows NT running.
- **Exit IEA Alarm System (All Sites)** - Shuts down all IEA software at all sites.

NOTE

Using the **"Exit IEA Alarm System (All Sites)"** or **"Exit IEA System On.. ➢"**, and selecting a remote machine will require that the sites be restarted manually by rebooting the remote machine. It is recommended that these options not be used unless the operator is experienced with the IEA system and Microsoft Windows NT.

- **Shut Down and Restart IEA Computer (Machine Name)** - Allows any IEA computer in the Database to be shut down and completely restarted.
- **Shut Down and Restart IEA Computers (All Sites)** - Completely shuts down and restarts all IEA computers in the database. **Note:** If a site is not connected (shown as gray in tree) it cannot receive the command to restart and will not restart.
- **Resume Operation** - Resumes operation of all IEA Alarm System. When items are added to the database, the IEA System is suspended. This command resumes operation of the system using the new database items.
- **Exit** - The MMI is shut down and all other processes in the Alarm System remain operational. **Note:** The MMI will be restarted by the boot process if it is running. If the desire is to turn the MMI off until the system is restarted, it should be shut off by selecting the BOOT.EXE process and pressing "M".

Selecting **IEA Data Base** drops:

- **Connect** - Connects IEA to Data Base
- **Connect To** - another machine. Will ask for the address of the other machine.
- **Disconnect** - Disconnects IEA from Data Base
- **View Connection Info** - Provides information about internal software connections.
- **Print** - Prints a detail summary of the database structure and contents in the window labeled ROUTER.EXE.
- **Write To Disk** - Forces the current database contents to be stored on the hard disk of all IEA computers. Each time a property is changed and the "Write" button is pressed the database is also saved to disk.

Selecting **Options** drops:

- **Tree View** - Allows selection of bold face font and line style
- **Map View** - Allows arrangement of icons, selection of bold face font, background color, line thickness and line color.
- **Properties View** - Allows setting of maximum number of error messages when in diagnostics mode. Should Not be adjusted by the customer.
- **Graphs** - Allows selection of the graph type (2D or 3D) and data color. **Note:** Some information is not displayed when in 3D mode.

Selecting **Diagnostics** drops:

- **CI Flags** - CI's or **C**onfiguration **I**tem's brings up IEA Software Control Options:
  1. Router
  2. Test Call
  3. RF Power
  4. Fault Processing
  5. MUX
  6. GPS
  7. MASTR III
  8. Data Base
  9. Logging
  10. Boot
  11. ACU
  12. Digital Interrupt
  13. GP Alarms

  The CI Flags control what is printed to the screen of each CI. From here the user can turn on debug messages from any running CI.

- **CI Status** - This allows remote starting/stopping of CI's. This is not used in normal operation.
- **Router** - Allows pinging of router, printing of client table and showing of ping/pong messages.
- **Clear All Alarms in Database** - Clears all alarms in the database
- **Clear Alarms in Tree Branch** - Clears any alarms in the database at or below the currently selected item in the Tree View.
- **Set Alarm State** - For diagnostics only, allows setting of alarm state:
  Critical
  Major
  Minor
  Warning
  Normal

NOTE

This changes two properties in the database: the object's severity and the state of the alarm.

Selecting **VIEW** drops:

- **Equipment Palette** - Displays palette when checked. Hides palette when un-checked.

- **Latched Alarm Tree** - Displays the Latched Alarm Tree
- **Alarm History** - Displays history log, which typically includes the last 50 alarm events.
- **System Event Log** - Displays the System Event Log

Selecting **Help** drops:

- **About** - Displays the **"About"** screen as shown in Figure 3.

Equipment Palette

The **"Equipment Palette"**, is a row of icons arranged according to system hierarchy. This is important to know when building the system since this arrangement establishes the order of construction. Selection of any one of these icon's starts a **"wizard"** which facilitates system configuration. Icon's are from left to right:

1.  **Add An Extended Network** - The Extended Network links Multisite Networks to cover very large areas, such as a state or country. This icon starts a **"wizard"** which adds an extended network, and is only valid when the current tree item is a customer.

2.  **Add A Multisite Network** - A Multisite Network links systems together through an Integrated Multisite and Console Controller (IMC). This icon starts a **"wizard"** which adds multisites into the system and is only valid when the current tree item is an Extended Network.

3.  **Add An EDACS System** - An EDACS system provides coordinated communication between agencies and integrates all services such as Dispatch, Secure Voice, telephone and Data with a single common communication system. This icon starts a **"wizard"** which adds an EDACS System and is only valid when the currently selected item in the tree view is a Multisite Network.

4.  **Add An EDACS Site** - An EDACS site can be designated as a GPS Simulcast Control Point, Transmit/Receive Site or a Receive only site. This icon starts a **"wizard"** which adds a site to the alarm system and is only valid when the currently selected item in the tree view is an EDACS system.

The first four icon's establish the communication system with the IEA. The next six (6) icons add characteristics or equipment of the communication system to the IEA.

5.  **Add A Channel** - This icon activates a wizard which adds a channel to the selected site. Channels can be added to either a site object or a channels group object in the tree.

6.  **Add A GPS Receiver** - This icon activates a wizard which adds a GPS Receiver(s) to the selected site (typically 2). GPS Receivers may be added to either a site or a GPS Receivers group in the tree.

7.  **Add A Multiplexer** - This icon activates a wizard which adds Multiplexer(s) to the selected site for a maximum of 24. Multiplexers may be added to either a site or a Multiplexer group in the tree.

8.  **Add An Antenna** - This icon activates a wizard which adds an antenna(s) to the selected site for a maximum of 6. Antennas may be added to either side or an Antennas group in the tree.

9.  **Add A Digital Alarm Group** - This icon activates a wizard which adds a General Purpose Digital I/O Function Group to the Alarm System. Digital Alarm Groups are used to group functionally similar digital inputs, such as door and window alarms, temperature alarms, etc., into organized branches in the tree. This organization reduces screen redraw times, keeps the number of inputs to a manageable level, and keeps the large number of possible inputs organized into groups that serve a similar purpose. Digital Alarm Groups may only be added when the currently selected item in the tree is the "DIGITAL ALARMS" item below a site.

10.  **Add A Digital Input Alarm** - This icon activates a wizard which adds a General Purpose Digital Input Point to the selected site for a maximum of 168 (refer to Appendix A). Digital Input Points may only be added when the currently selected item in the tree view is a Digital Alarm Function Group.

Tree View

The Tree View is effective in seeing an expanded view of the system, quickly locating the source of an alarm and seeing specific equipment status.

The Tree View shows all equipment connections in the order of hierarchy. Figure 7 shows an example of a system tree view.

The following explains how the tree presents information. The actual adding of equipment is covered later in the under the title: **CONFIGURATION**.

The beginning of the example tree starts with the Ericsson Customer. This is the top of the equipment hierarchy. To the Ericsson Customer is added an Extended System. This is the next level of hierarchy. To the Extended System is added a Multisite Network. To the Multisite Network is added a GPS Simulcast. To the GPS Simulcast is added a transmit site 1 (TX 1), to the TX 1 is added an IEA Computer, etc.

If the tree is collapsed a small box with a plus (+) is shown to the left of Ericsson Customer (See Figure 8). **Note:** The (+) is only shown when there are sub-items. Clicking with the mouse on this plus (+) causes the next lower level of equipment in the hierarchy to be displayed in the tree (See Figure 9), and the (+) toggles to a minus (-). Clicking with the mouse expands and collapses the tree (see Figure 8).

Map View

The Map View section of the MMI screen provides a map of the system starting from the location selected in the Tree View. Clicking with the mouse at a location in the Tree View automatically updates the map view to any changes made in the Tree View. A location can also be selected from the Map View by double clicking at that point.

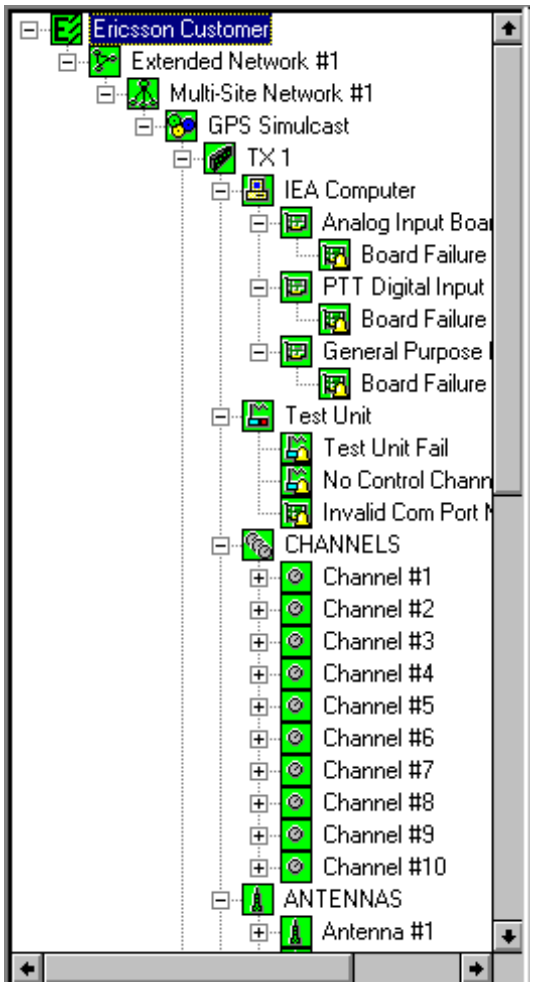


Figure 7 - Tree View

Figure 8 - Ericsson Customer

Figure 9 - Extended Network

As an example, refer to Figure 10. The Tree View with the Transmit Site Number 1 (TX 1) selected is shown on the left of the MMI screen and the Map View with TX 1 in the center is shown on the right of the MMI screen. All the next level of equipment in the hierarchy shown in the Tree View associated with TX 1 are also shown in the Map View associated with TX 1.

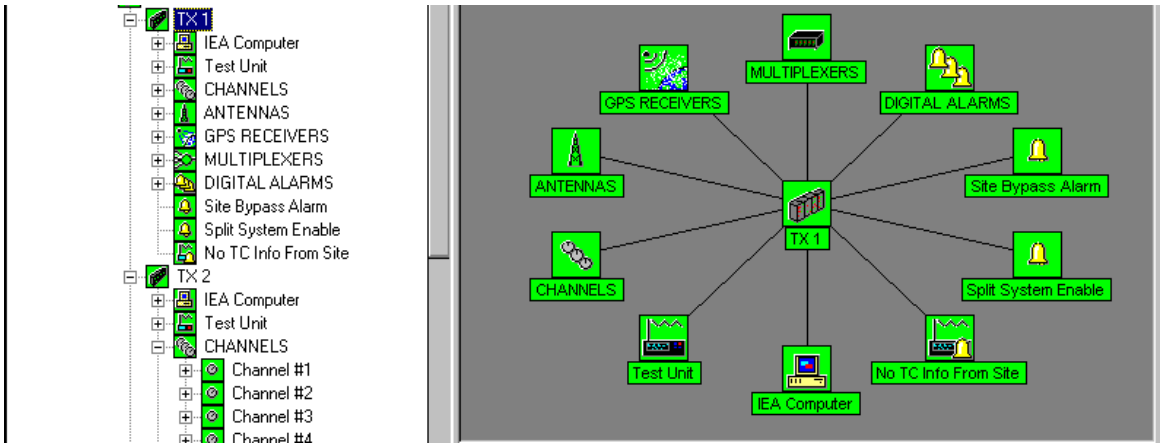


Figure 10 - Map View

Properties View

The properties view of the MMI provides information about the status and configuration of the currently selected item in the tree view. Depending upon the type of item that is selected, a different set of tabs and properties are displayed.

The Properties View section of the MMI screen provides tabs labeled:

- General
- Power Meas.
- RF Power Summary
- RF Power
- FWD Power
- REV Power
- DSP/Line/Out
- TX/CG/VT/CT/MID
- Severity
- Time-outs
- Receiver
- Time/Date/ Position
- Timing Param's
- Notes

Depending on what object is selected in the tree view, the property view displays a General tab, a Notes tab, and any tabs associated with properties of the selected object. Tabs are related to specific equipment in a specific Map View. For example, when the Map View is active the tabs shown in Figure 11 are active.

Following Figure 11 is a brief description of each tab and the properties that may be found.

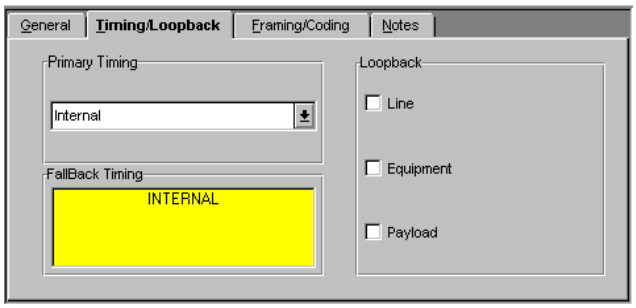


Figure 11 - Example of Properties View Showing Tabs

General Tab

This tab is present for all objects in the database, although different types of objects will have different combinations of properties present on the tab. The general tab displays a combination of the following object properties:

Description - This property determines the text used to identify the object in the map and tree views of the database. The description for any object in the database can be changed by the user, although care should be taken when renaming alarm items, since the alarm's function is indicated by its name.

To change the description of an object in the database, select the item in the tree view and wait for the properties view to update. Next, change the text in the description field and press the Write button. When the text returns to black, the new description has been written to the database and all subsequent operation will use the new description.

Alarm Threshold - This controls which alarm indications are allowed to pass up the tree hierarchy to the next level. In other words, if this property is set to Major, then only Major and higher severity alarms below this object in the tree affect the object's color.

The current setting of this property is indicated by a shaded circle. To change this setting, select the desired value by clicking on it and press the Write button. When the color of the text returns to black it has been written to the database, and all further operation will use the new value.

Alarm Switches - These switches control how the alarm system reacts when an "Active" condition is detected for the currently selected object in the tree. A brief description of each is provided below:

- Log - Controls the logging of the alarm in the system application event log. When this property has an "X" next to it, a SET or CLEAR event will be logged to the Application event log.
- Sounds - Controls the generation of sounds when an "Active" condition is detected for the selected object in the tree. When the alarm is SET, a series of beeps is produced on the PC speaker. These beeps progress from a single, low pitch for a Warning level alarm to four high pitched beeps for a Critical level alarm.
- Latch - Controls storing of an alarm SET event in the Latched Alarm window. When this property has an "X" next to it and the alarm is SET, the item will appear in its respective color in both the Tree view and the Latched Alarm window. When the alarm condition clears, the object color will revert back to green in the tree view, and stay "Latched" at the same color in the Latched alarm window.

System Type - This read-only property indicates the type of system that is selected in the tree view. Possible values are Trunked Simulcast System, Trunked Single Site, Single Channel Trunked (SCAT), Conventional Simulcast, and Conventional Single Site.

Site Type - This read-only property indicates the type of site that is selected in the tree view. Possible values are GPS Simulcast Control Point and Transmit/Receive Site.

Analog IO Point Number - This property indicates the channel on the analog IO board that corresponds to the object selected in the tree. It can be adjusted by clicking the spin button on the right either up or down, and will cycle through the available analog IO points. Care should be used when adjusting this property, since setting it to the wrong value will cause invalid alarm indications for the object.

IO Point Number - This read-only property indicates the channel on the general purpose digital I/O board that corresponds to the object selected in the tree. For information on how this relates to the Alarm Cross-Connect panel, refer to Appendix A.

System Manager Alarm - For backwards compatibility with the System Manager, any alarm object can be assigned to one of 32 System Manager inputs. This property controls two items: Whether a SET event of the object is reported to the System Manager, and which of the 32 System Manager inputs it is reported on.

When multiple alarm object are set to the same System Manager input, the input to the System Manager is SET if any of the alarms is SET. In other words, an OR function is used to combine the alarm inputs to the System Manager.

WIN RT Device Number - Used for diagnostics purposes. This read-only property indicates an internal setting of the IEA system software, and is generally not of use to the user.

Number of IO Points - This read-only property is fixed for each board in the system. The IEA System software uses this property as part of its internal configuration process. It is generally not of use to the user.

Inhibit GETC's On - This is actually a group of properties that are used to determine when a GETC inhibit request line is SET. Any combination of the following may be used to determine if the inhibit request line(s) should be SET:

- Test Call Failure - Any failure of a test call, as reported by the test units at transmit sites.
- Low RF Power - A power measurement at a site did not equal or exceed the Low RF Power Threshold set for the base station.
- Control Channel Failure - The IEA System detected a failure of the control channel at a site.

Isolation Board Installed - This property signifies the presence of IO isolation boards in the system. When IO Isolation boards are present, (this is the typical situation) the polarity of the GETC Inhibit Request Lines and GETC Reset lines must be reversed in the IEA system software. This property should be checked when isolation boards are installed.

Enter / Leave Bypass Button - For Transmit/ Receive sites, this button will put the site into bypass

or remove it from bypass, depending on the current state of the site.

Reset GETC's Button - Available only at a control point, this button will toggle the GETC Reset line at the site, resetting all GETC's at the site.

Severity Tab

The Severities Tab is available for all alarm and status (On/Off) items in the database. The following properties can be found on the severity tab:

Alarm Severity - This controls the severity level that is used when reporting an "In alarm" state for the selected object in the tree view. This property is not present for status items (Those with values of On/Off).

Present Status - This read-only property displays the current status of the item in the database. The background of the text corresponds to the severity that the alarm has been configured to.

Alarm Polarity - This determines the polarity that the IEA System uses to determine if an alarm is SET or CLEARED. Note that this is hardware dependent, and should not be changed arbitrarily.

Reason For Last - Read-Only text field is present for boards under the IEA computer object in the database. When an IO board failure alarm is SET, this field contains information describing the reason for the failure.

Alarm if Less Than (Watts) - This property is only available for Antenna Low Forward Power and Station Low RF Power alarms. It controls the threshold at which an alarm is SET. When the measured power level is less than this setting, the corresponding alarm is SET.

Alarm if More Than (Watts) - This property is only available for Antenna High Reverse Power. It controls the threshold at which an alarm is SET. When the measured power level is greater than this setting, the corresponding alarm is SET.

Power Meas. Tab

This tab is only visible when a Site is selected in the tree view. It controls internal software parameters for the IEA System's power measurement reporting algorithm. At each site, power is measured and packaged into "reports", which are sent to the user interface at a predetermined time. By varying the values of these parameters, one can adjust the balance of system loading vs. real-time updates of the power measurement graphs.

Max Measuremnt's Per Report - This property controls the maximum number of measurements per report sent to the user interface. On very active systems, this forces power measurement reports every *n* measurements, and measurements are not lost.

Max Seconds Between Reports - This property controls the maximum time between reports. On systems with very little activity, this forces an update at the user interface at timed intervals.

Max Samples Per Calc. - This property is used internally by the IEA software. It controls the maximum number of analog samples that are used for a power calculation. When the number of analog samples specified by this property are taken, a power measurement value is calculated and placed in the report for transmission to the user interface.

This property forces reporting on the power level of the control channel. Since the PTT signal on the control channel never resets, without this property a measurement would not be calculated.

Delay After PTT - This property is used to set the delay following an active PTT signal before analog power samples are taken. Since base stations take some time to reach full steady-state power, this property ensures an accurate power measurement.

Delay Between Samples - This property controls the sampling frequency of the power sensors, and should not be adjusted by the user.

RF Power Summary Tab

This tab is only visible when the CHANNELS object at a site is selected in the tree view, and contains a graph that displays the last measured power value for each channel or station at the site *(Figure 12).* It is updated each time a power report is received from the site (See Power Measurement Tab description above for more detail regarding when reports are sent).

Important features of the graph include:

- Power bar for each Channel - A bar is plotted for each channel or antenna at the site.
- Numeric indication of measured value - At the top of the bar, the numerical value of the measurement is printed. This is only available when the graph style is set to 2D Bar.
- Threshold settings for each Channel - A line indicates the threshold setting for a Low RF Power alarm for each station at the site.

- Indication of Control Channel - A (CC) is printed next to the numerical value of the control channel, and the bar is shaded with a hatch pattern to indicate the channel currently being used as the control channel.
- Indication of channel under test - A (TST) is printed next to the numerical value of the channel under test (If any), and the bar is shaded with a cross-hatch pattern to indicate that the channel is currently being used to make a test call. This indication is performed in real-time as the test call is performed.
- Red bar for alarm - If at any time the measured power value drops below the Low RF Power alarm threshold, the bar for that channel will be displayed in red to indicate that it is in alarm.

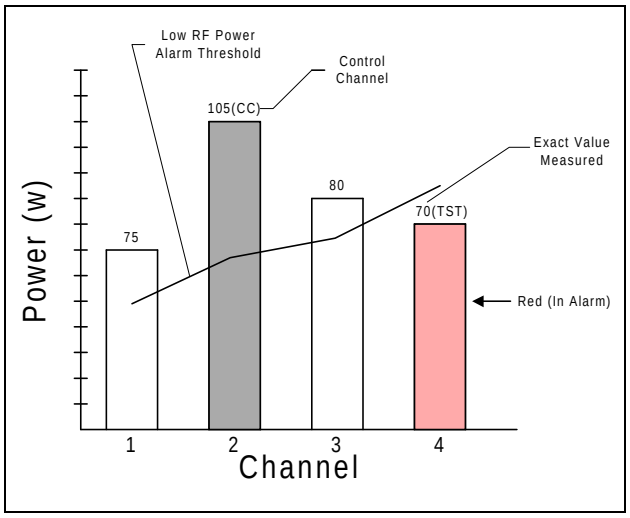


Figure 12 - Station RF Power Summary

Antenna Power Summary Tab

This tab is only visible when the ANTENNAS object at a site is selected in the tree view, and contains two graphs side-by-side *(Figure 13).* The first graph displays the last measured value of forward antenna power for each antenna at the site, and the second displays the last measured value of reverse antenna power for each antenna at the site. Graph features include the following:

- Power bar for each antenna - A bar is plotted for each antenna at the site.
- Numeric indication of measured value - At the top of the bar, the numerical value of the measurement is printed. This is only available when the graph style is set to 2D Bar.
- Threshold settings for each antenna - A line indicates the threshold setting for Low Forward Antenna Power Alarm, or a High Reverse Antenna Power Alarm.
- Red bar for alarm - If at any time the measured power value drops below the Low Forward Antenna Power Alarm or High Reverse Antenna Power Alarm threshold, the bar for that antenna will be displayed in red to indicate that it is in alarm.

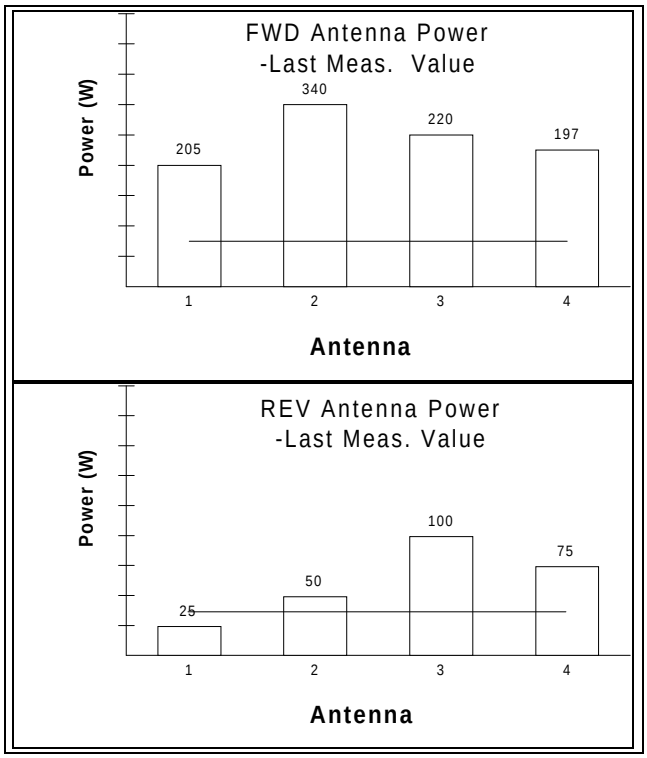


Figure 13- Antenna Forward/Reverse Power Summary

RF Power Tab

This tab is only present for a Channel or Station object. It contains a graph that displays the last 50 measurements of power and the current Low RF Power Alarm Threshold for the selected corresponding base station. The measurements progress in time from left to right, with the most recent measurement on the right. As new measurements are received, the graph scrolls to the left and the new value is plotted. Note that the graph is only updated once for every power report, not once for every measurement. Refer to the section on the Power Measurement Tab for more details on power reports.

Forward Power Tab

This tab is only present for an Antenna. It contains a graph that displays the last 50 measurements of Forward Antenna Power and the current Low Forward Antenna Power Alarm Threshold for the selected Antenna. The measurements progress in time from left to right, with the most recent measurement on the right. As new measurements are received, the graph scrolls to the left and the new value is plotted. Note that the graph is only updated once for every power report, not once for every measurement. Refer to the section on the Power Measurement Tab for more details on power reports.

Reverse Power Tab

This tab is only present for an Antenna. It contains a graph that displays the last 50 measurements of Reverse Antenna Power and the current High Reverse Antenna Power Alarm Threshold for the selected Antenna. The measurements progress in time from left to right, with the most recent measurement on the right. As new measurements are received, the graph scrolls to the left and the new value is plotted. **Note:** the graph is only updated once for every power report, not once for every measurement. Refer to the section on the Power Measurement Tab for more details on power reports.

Receiver Tab

This tab is only visible for GPS Receivers, and provides general information about the receiver. The following properties are provided:

Manufacturer's Info - These properties are read-only, and are read from the internal ROM of the receiver. They include:

- Vendor - The name of the receiver vendor.
- Model - The model number of the receiver.
- Serial No. - The serial number of the receiver (if implemented).
- Firmware Revision - The revision of the internal firmware of the receiver.

Receiver Status - These read-only properties indicate information measured by the receiver.

- Internal Temperature - The internal temperature of the GPS receiver, measured in degrees C.
- Satellites Tracked - The number of satellites currently tracked. Note that when this number drops below 4 the receiver is considered to have lost Lock status and begins timing out on the GPS Lock Alarm.

Time/Date/Pos Tab

This tab is only present for GPS Receivers, and indicates the time, date, and position measurements as reported by the receiver. While values can be set by the user, they will be overwritten by the IEA software once a locked status is reported by the receiver.

Time and Date - The time, date, and Time Zone, as determined by the GPS Receiver.

Position - The position of the receiver, including Latitude, Longitude, and Altitude.

Timing Param's Tab

This tab is only present for GPS Receivers, and provides control of the two GPS Receiver timing properties as described below:

One Pulse per Second Offset - This controls the amount of delay to place on the One Pulse Per Second output of the Receiver. This is typically only adjusted during system alignment.

Antenna Cable Delay - This controls the amount of delay with which to compensate for antenna cable length. This is typically only adjusted during system alignment.

Time-outs Tab

This tab is only present for the following three GPS Receiver alarms: 9.6kHz Alarm 10MHz Output Alarm, and GPS Lock Alarm. The tab will contain a combination of the following properties:

Timeout Value - This property controls the amount of time that the GPS Receiver is allowed to run without a locked timing signal before the alarm is SET. Individual settings are available for each of the three outputs of the receiver; 9.6 kHz, 10 MHz, and GPS Locked status.

The value is entered in days, hours, minutes and seconds.

Time Remaining - This read-only property indicates the time remaining before the corresponding alarm is SET. If the GPS Receiver is locked to 4 or more satellites this value should be the same as the Timeout Value property (See above). When the receiver loses lock with the satellites, the value of this parameter decreases to zero and the alarm is SET.

Note: The value of this parameter does not update on the tab in real-time, and must be explicitly "Read" using the read button at the bottom of the window.

DSP / Line In / Line Out Tab

This tab is only visible for base stations. It contains properties which adjust internal base station potentiometer settings, and, with the exception of the DSP Line In property, should not be adjusted by the user. The following is a brief description of what each property does within the base station:

DSP Line In Pot (0-255) - Used to adjust the level of the audio input to the station as "remote audio". In Simulcast this is used to fine tune/match the station audio deviation. The nominal level input is -10 dBm.

DSP Line Cancellation Pot (0-255) - Used in a 2-wire system to "subtract"/cancel the line out audio from the line input audio. Not used in Simulcast.

DSP Compressor Gain Pot (0-32767) - Sets the gain of the MASTR III station compressor. In simulcast set to 1023 (off).

Line In Pot (0-255) - Sets the remote audio drive level. In simulcast it sets the audio level sent to the voter, nominal -10 dBm.

Line Out Pot (0-255) - Sets the remote audio drive level. In simulcast it sets the audio level sent to the voter, nominal -10 dBm.

TX/CG/VT/CT/MID Tab

Like the DSP Line In/ Line Out tab, this contains properties that control internal base station potentiometer settings. Under normal operating conditions, none of these properties should be adjusted by the user. Below is a brief description of what each property controls:

Transmit Pot (0-255) - Sets the Maximum. Tx deviation (Limiter) w/o channel Guard (LSD). This must be set appropriately for the band limits. The setting also must be closely matched to the other sites in simulcast.

Channel Guard Pot (0-255) - Sets the Channel Guard or Low Speed Data deviation appropriate for the band. In Simulcast this setting must be matched to the other sites.

Voting Tone Gain Pot (0-127) - Sets the level of the 1950 Voter tone. Nominal -10 dBm.

Compressor Thresh. Pot (0-32767) - Sets the threshold for the MASTR III station compressor to start actively compressing the audio. In Simulcast set to max. - 32767, so it will not "compress".

Morse ID Transmit Pot (0-255) - Sets the TX deviation level for Morse code in standard station applications. Not used in simulcast.

Repeater gain - Sets the gain of the "in cabinet" repeater path. Set to 1023 (unity gain) for simulcast.

Timing/Loopback Tab

This tab is only visible when a multiplexer Common Module is selected in the tree. It contains properties that control the timing of the multiplxer as explained below:

Primary Timing - This property controls the source for the primary timing signal of the Common Module. It may be set to Internal (Fallback), External (Normal), or Loopback sources.

Fallback Timing - This read-only property displays the fallback timing mode of the common module. This property is factory set to Internal at the factory.

Loopback - The multiplexer offers three loopback options, Line, Equipment, and Payload. Each of these may be turned on or off through the check boxes in the Loopback frame. In general, care should be taken to not enable multiple loopback modes simultaneously.

- Line Loopback - The line loopback mode is useful for testing the integrity of the transmission path and the T1 connections to the multiplexer. In this mode, the decoded T1 receive signal is looped back into the T1 Line Driver input. Receive data also passes on to the demultiplexer. Refer to the vendor literature for additional information on using the line loopback mode.
- Equipment Loopback - Equipment loopback is useful for testing individual channel modules in the multiplexer. It loops the transmit signals at the multiplexer output back to the demultiplexer input. During equipment loopback, the T1 output of the Common Module is an All Ones signal. Refer to the vendor literature for additional information on using the equipment loopback mode.
- Payload Loopback - Payload Loopback is useful for verifying the operation of the Common Module up to the bus interface of the channel modules. Data also passes on to the receive side of the channel modules. Refer to the vendor literature for additional information on using the Payload loopback mode.

Framing/Coding Tab

This tab is only visible when a Common Module is selected in the tree view. It provides control of the framing and coding modes of the common module as described below:

Framing - The framing format of the Common module can be set to either SF (Super Frame) or ESF (Extended Super Frame). ESF is the preferred format, unless the network or channel service unit cannot support it. Refer to the vendor literature for additional details on setting the framing format.

Coding - Line coding can be set to either B8ZS (Bipolar with 8 Zero Substitution) or AMI (Alternate Mark Inversion). B8ZS is the preferred format, and should always be used unless the network or Channel Service unit cannot support it. Refer to the vendor literature for additional details on setting the line coding.

Settings Tab

This tab is present when a Multiplexer T1 Module is selected in the tree view. It contains properties that control the T1 Module. Normal operation of the Multiplexer requires the T1 Module to be placed in Local control, during which many of the properties are read-only and cannot be adjusted. If an attempt is made to adjust on of these properties, the user will receive a message indicating that the parameter cannot be adjusted. Below is a brief description of the properties on this tab:

Requested Delay - This controls the T1 Delay setting in the multiplexer. When this value is set, the multiplexer will either immediately change the delay setting internally (Step Transition, or Smooth Transition Mode OFF), or begin a slow transition to the new value (Smooth Transition Mode).

Actual Delay - The T1 Module has discrete values that the delay can be set to. If a value is requested that does not match one of these discrete values, the delay is set to the nearest one. This property indicates the actual value that the delay is set to. In addition, if the module is making a transition to a new value, this property displays the current value of the delay parameter. Note that this is not updated in real-time and must be updated using the Read Button at the bottom of the main window.

Control Mode - This read-only property indicates the current control mode of the T1 Module. The module can operate in either Local (Default) or remote modes. The current operating mode can only be set by physically changing switch settings on the module.

Settings - The T1 module has several settings that can be adjusted by the user. This properties group allows control of these settings. The following is a brief description of each setting. For more information, refer to the multiplexer vendor's documentation.

- In Service - This property indicates that the selected T1 Module is in use at the present time.
- Smooth Trans. - This property indicates whether smooth transition mode (Hitless) is enabled (Default value) or not. When enabled, any change to the T1 delay is made gradually, allowing the delay to change without losing T1 synchronization. When disabled, a step change is made to the T1 Delay, causing a momentary loss of synchronization until the module can establish lock again.
- Ext. Timing On - This property indicates whether an external timing signal is being used for transmit timing. When this property is checked, the module is using an external RS-422 clock at 1.544 MHz. When it is not checked, the module is using an internal CM-3A timing source (Internal or Loop/Thru timing) for transmit timing.
- 422 Inverted - This property controls whether the RS-422 control signal is inverted or not. When this property is checked, the signal is inverted.

Port Directions Tab

This tab is only visible for a General Purpose Digital IO Board. It provides read-only status of the board's IO port configuration. The input/output pins on each board are divided into groups of eight, and each group (Port) can be configured as either inputs or outputs. This tab provides a tabular display of each available port, and the direction that it is configured in.

Notes Tab

The notes tab is visible for every object in the IEA System. It provides a place where up to 500 bytes of information may be entered and stored in the database. Several points should be considered when using the notes field of the IEA System:

Database Size - The notes are stored within the database itself, which will directly effect its size, and hence the time to load and transfer it into the computer. Some tips to remember:

- Keep notes brief.
- Place notes at the highest applicable level in the hierarchy.

Persistence - The notes entered into this tab are persistent - That is, they remain in the database until they are explicitly erased or the database is rebuilt. The notes section, therefore, remains present even if the power to the system is shut off or the system reboots.

System Wide - Notes are present in the database *at all sites* while the sites are connected. Notes entered while the sites are connected will be present at a site that is no longer connected to the control point. In this condition, remember that when the site re-connects to the control point the *Control Point's* database will overwrite the database at the site, so any changes to the notes field while the site is disconnected *will be lost.*

USING THE SYSTEM

Alarms

Alarm indications (normal/alarm) are represented by the background color of the item, in the hierarchy tree and map view, according to the severity of the alarm condition. The actual color of the item follows the Network Manager standard for Critical, Major, Minor, Warning and Normal level of severity. Disabled/Off/Active and Not Active indications are also available for some alarms and equipment in the hierarchy tree. The highest severity of an alarm climbs the tree to the highest level. The colors normally representing the severity of an alarm are:

- **Green** - Normal Operation
- **Red** - Critical
- **Orange** - Major
- **Yellow** - Minor
- **Cyan** (light blue) - Warning
- **Gray** - OFF

To set the severity of a particular alarm, click on the alarm in the Tree View and then select the Severity Tab from the Properties View. Select the desired severity level by clicking on it with the left mouse button, and write it to the database by pushing the Write button. When the color of the severity text returns to black, the value has been stored to the database:

An alarm threshold can be established by going to the Properties section, General tab and Alarm Threshold of the MMI screen and selecting:

- **No Alarms**
- **Critical**
- **Major**
- **Minor**
- **Warning**

These affect the propagation of the alarm indications up the tree. As an example, “Major” means that only major or higher severity alarms are reflected in the item’s tree and map views.

“No Alarm” means that no alarms below that item are displayed in the Tree View. “Critical” means only critical alarms are displayed. “Major” mean major and critical alarms are displayed. “Minor” means minor, major and critical alarms are displayed. “Warning” means warning, minor, major and critical alarms are displayed.

When the alarm threshold has been selected, all of the conditions are displayed in blue. This means that they have been selected but not written to the database. Pressing the **Write** button at the bottom of the screen writes the information to the database. The conditions are then displayed in black.

At the bottom of the Properties screen is an alarm status bar which provides a tally of all alarms currently present: Critical, Major, Minor and Warning, and the number of alarms that have been “latched” in the database. These counts include alarms that are at disconnected sites and are displayed in Gray.

Another feature of the alarm tally icon’s is that double clicking on the icon activates an **Alarm History Log** (See Figure 14). This log provides a running history of the selected alarm. This is a short cut for the menu item **View/Alarm History**. **Note:** The most recent alarm is displayed at the top of the list.

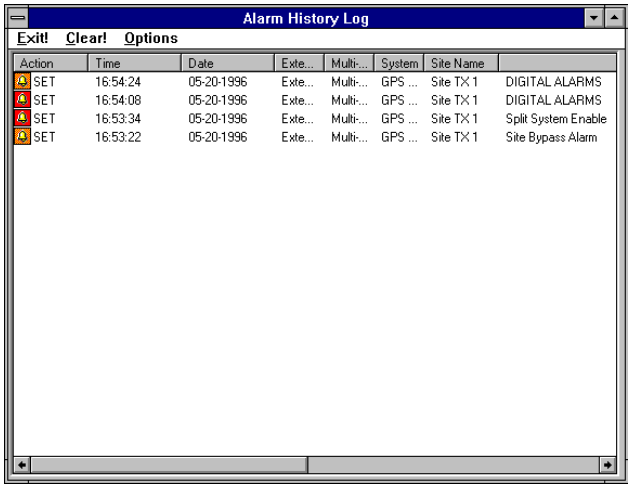


Figure 14 - Alarm History Log

Latched Alarm Status

The latched alarm status is displayed from **View/Latch Alarm** in the main menu. Double clicking with the left mouse button on the **“latched”** icon in the bottom right-hand corner of the MMI screen is a shortcut to this screen. The Latch Alarms status is displayed (refer to Figure 15).

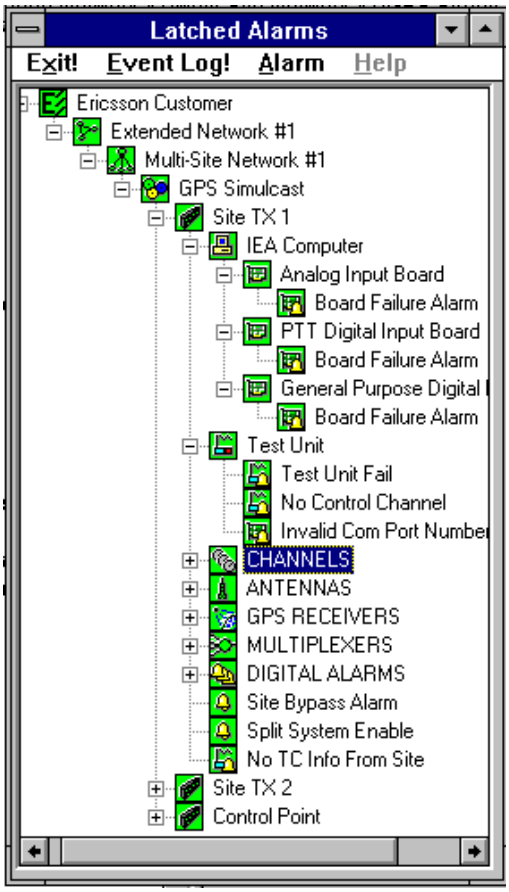


Figure 15 - Latched Alarms

Selecting **Alarm** from the Alarm Status Tree screen drop down menu, then **Acknowledge** will clear an alarm. Selecting **Acknowledge All** will clear all alarms.

This Latched Alarm Tree display is identical to the Tree View but shows alarm conditions that have occurred during a time frame and have been latched in the database. Selecting **Event Log** displays the system event log (Refer to example in Figure 16). Double Clicking on an event in the log, with the left mouse key, will display all the details pertaining to the event.

Event Log

The Event Log can also be accessed by selecting the pull down menu **View**, then **System Event Log**. The IEA system stores (logs) all alarm data (latched or not) in event log until it is full. When the Event Log is full, the system writes over the oldest data first. Under no circumstances will the system stop recording data. The operating system generates an alarm when the event log utilization has reached a user-defined limit.

The Event Log records the date and time an alarm occurred, the source of the alarm, the category, event number, user if applicable, and the computer *(Figure 16)*. By selecting **View**, then **Filter Events**, the user can opt to show events occurring between dates and times, types of events, information, warnings, errors, success audits and failure audits. The source and the category can also be selected. The **Newest** and **Oldest** event can be selected and displayed.

Selecting and double clicking with the left mouse button displays all **Event Details** pertaining to the selected event.

Date	Time	Source	Category	Event	User	Computer
2/26/96	6:48:46 PM	EventLog	None	6005	N/A	XMIT2
2/26/96	6:57:17 PM	aic78xx	None	11	N/A	XMIT2
2/26/96	6:58:49 PM	EventLog	None	6005	N/A	XMIT2
2/26/96	6:58:51 PM	RocketPort	None	2	N/A	XMIT2
2/26/96	7:02:29 PM	aic78xx	None	11	N/A	XMIT2
2/26/96	7:07:17 PM	EventLog	None	6005	N/A	XMIT2
2/26/96	7:07:22 PM	RocketPort	None	2	N/A	XMIT2
2/26/96	8:08:05 PM	BROWSER	None	8033	N/A	XMIT2
2/26/96	8:08:05 PM	BROWSER	None	8033	N/A	XMIT2

Figure 16 - Event Log *(Example)*

RF Power

The Properties View provides tabs for a power summary of each channel and for measuring real time forward and reverse RF power to the antenna. These measurements are used to monitor if the MASTR III Base Station and its associated antenna. While transmitting, the power output from the station and antenna is measured and compared against a threshold to determine if a low RF power alarm should be generated. The power measurements are also collected to provide trend analysis and other statistics.

When a **TX Site** is selected from the Tree View, the Properties View provides a **Power Meas.** tab *(Figure 17).* This tab allows the operator to set:

- Maximum measurements per report
- Maximum seconds between reports
- Maximum samples per calculation
- Delay after PTT in milliseconds
- Delay between samples

Additional information about these settings is avaliable in the Operation Section titled **Power Meas.** Tab.

Selecting CHANNELS from the Tree View, then the **Power Summary** tab from the Properties View, displays graphs as shown in Figure 18. These graphs provides a continuous indication of the power level (in watts) of each channel in the system. The line indicate the threshold level. When the power falls below this level, the IEA system initiates an alarm.

Selecting **ANTENNAS** from the Tree View, then the **Power Summary** tab from the Properties View, displays graphs as shown in Figure 19. These graphs provide a continuous indication of the forward and reverse power (in watts) going to the antenna(s) collectively.

Selecting an individual antenna, such as **Antenna #1,** from the Tree View, then the **Fwd Power** tab from the Properties View, displays a graph as shown in Figure 20. This graph provides a continuous indication of the forward power (in watts) for the selected antenna. Selecting the **Rev Power** tab from the Properties View, displays a graph as shown in Figure 21. This graph provides a continuous indication of the reverse power (in watts) for the selected antenna.

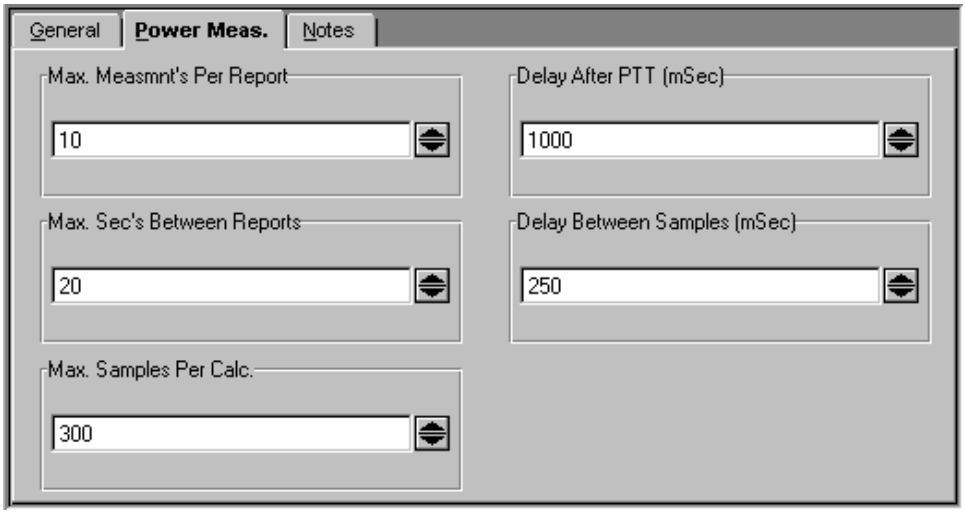


Figure 17 - Power Measurements Data

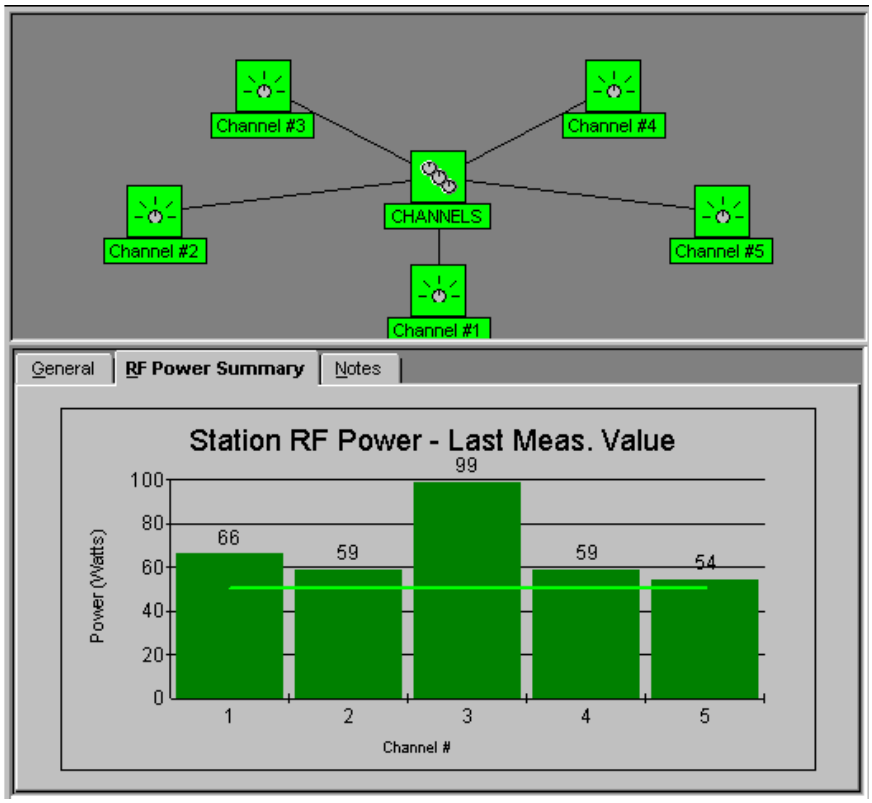


Figure 18 - Channel Power Summary

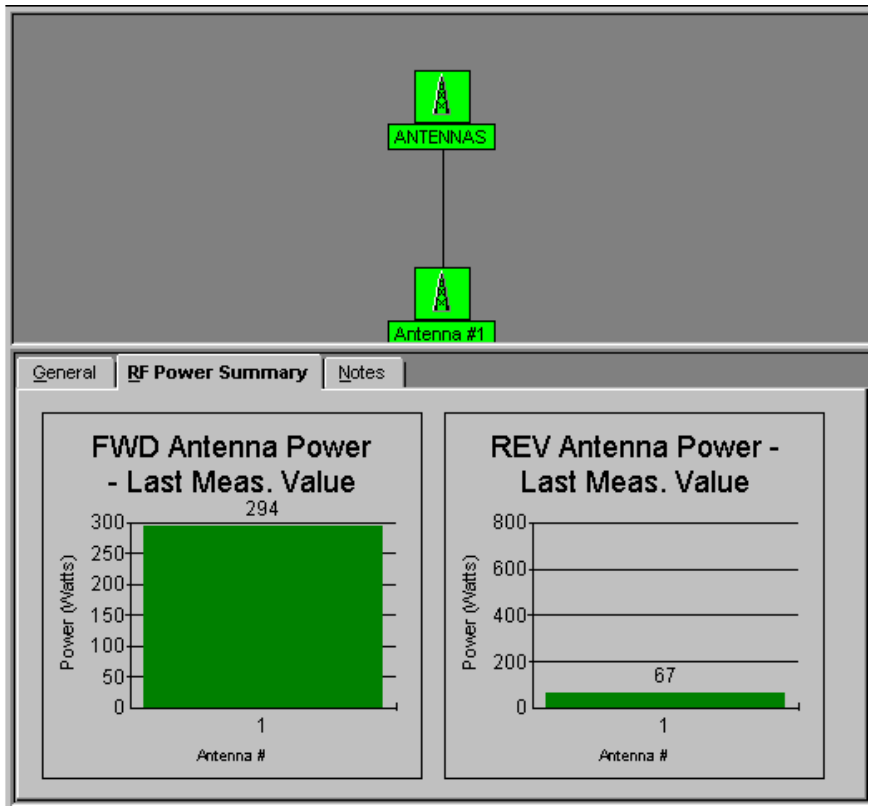


Figure 19 - RF Power Summary to Antennas

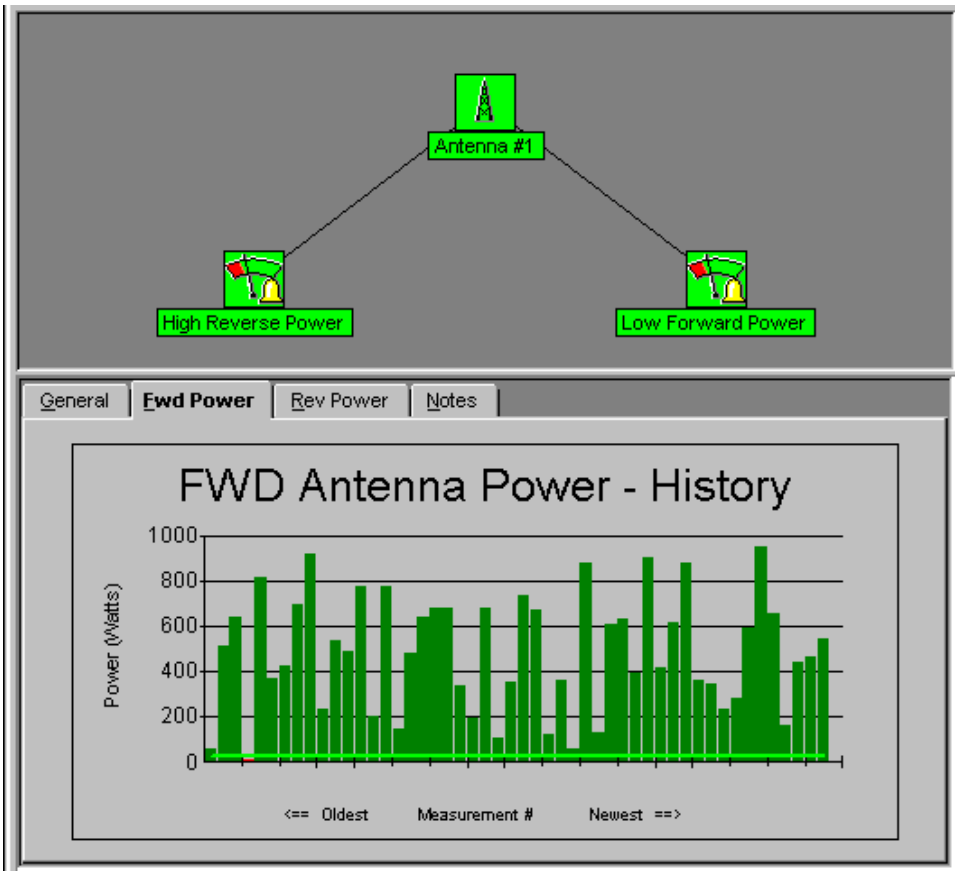


Figure 20 - Real Time Forward Antenna Power

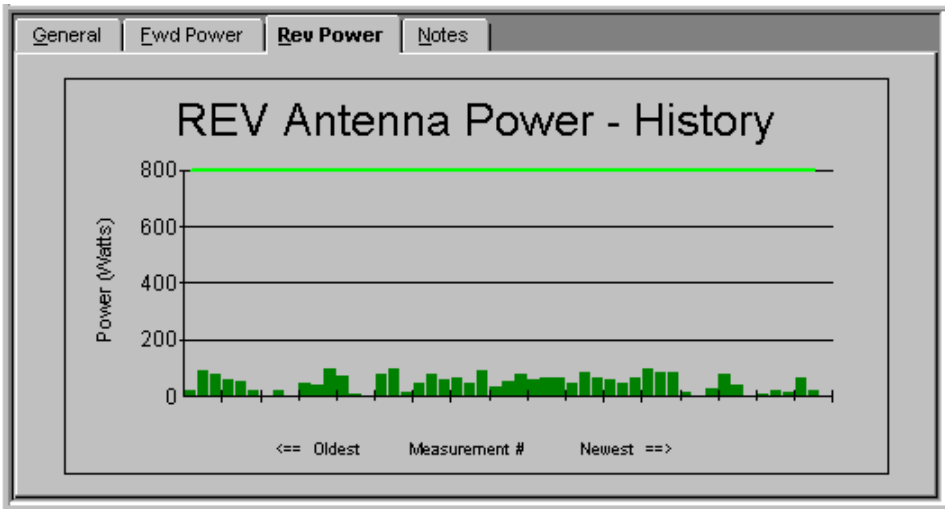


Figure 21 - Real Time Reverse Antenna Power

Site Links

> **NOTE**
>
> The Control Point IEA owns the system configuration and all sites are slaved to it. When a remote site which has been disconnected, is reconnected to the Control Point IEA the configuration of the Control Point IEA overrides everything else.

The Control Point IEA connects to the transmit site IEA's through a multiplexer T1/E1 connection, which is the primary link. If for some reason this link is broken, the transmit site IEA's will continue to operate and log events. The MMI will display all sites to which communication has been lost in gray. A telephone line connection through modems can be used for a backup (secondary) link. If the primary link is lost, the transmit site(s) will try to link back up to the Control Point through the secondary link. As soon as the primary link is restored the transmit site(s) will reboot from the Control Point IEA.

CONFIGURATION

Before configuring the IEA, consult the appropriate documentation to determine the radio system configuration.

NOTE

This section assumes the operator has mastered basic computer skills and terminology.

EXTENDED NETWORK

To add an Extended Network, with the mouse, click on the appropriate button in the Equipment Palette for Add Extended Network. This starts the Add Hardware Wizard (See Figure 22). Continue as directed in Step 1 through Step 5 (Figures 22 through 26). Figure 27 shows an MMI screen with an Extended Network added.

Step 1 - Identifies an Extended Network is what is being added to the IEA.

Step 2- Asks how many Extended Network are to be added (1-99).

Step 3 - Asks for a description of the network. User enters name of Extended Network in the Description box (i.e. Extended Network #1).

Step 4 - Asks for a confirmation of the information entered.

Step 5 - Finishes the process.

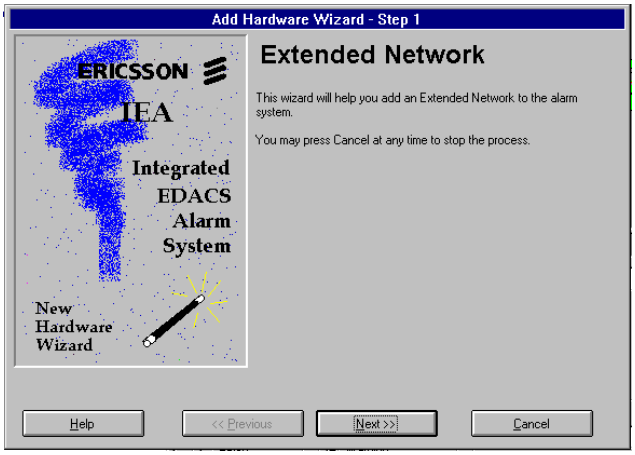


Figure 22 - Add Hardware Wizard (Step 1)

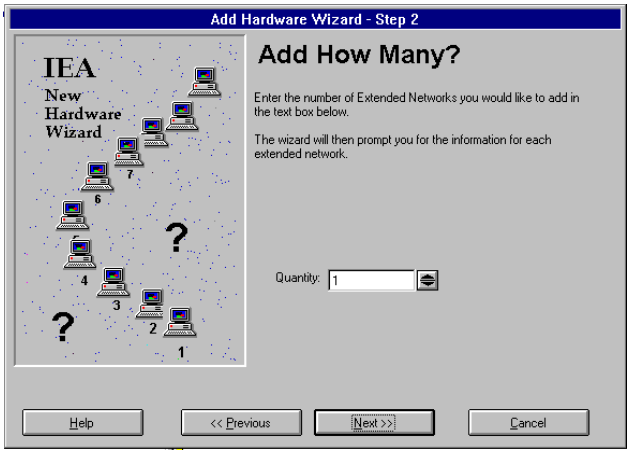


Figure 23 - Add Hardware Wizard (Step 2)

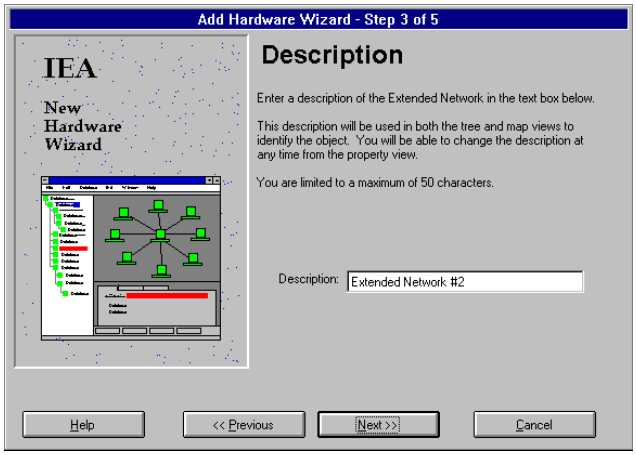


Figure 24 - Description (Step 3)

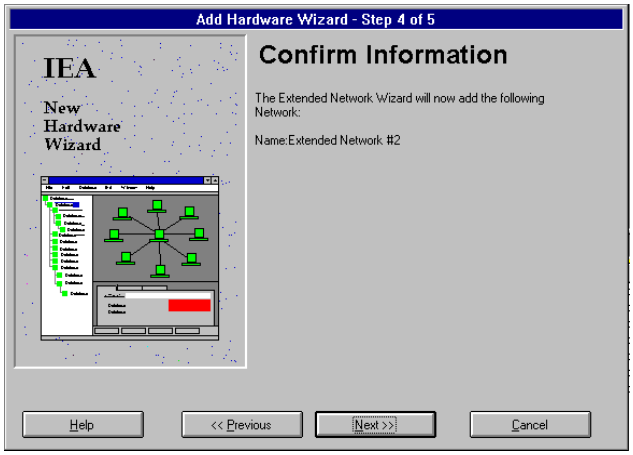


Figure 25 - Confirm (Step 4)

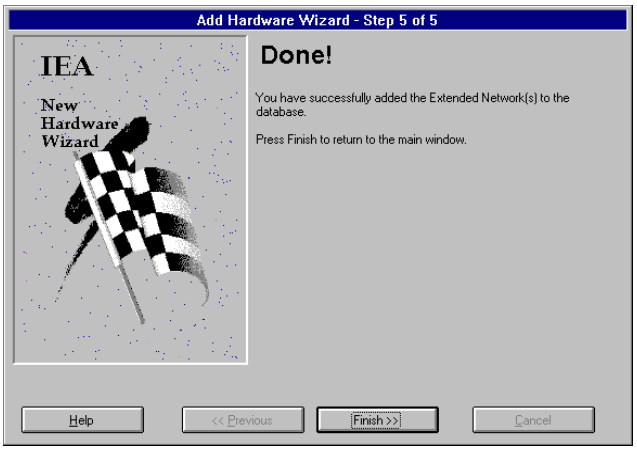


Figure 26 - Finish (Step 5)

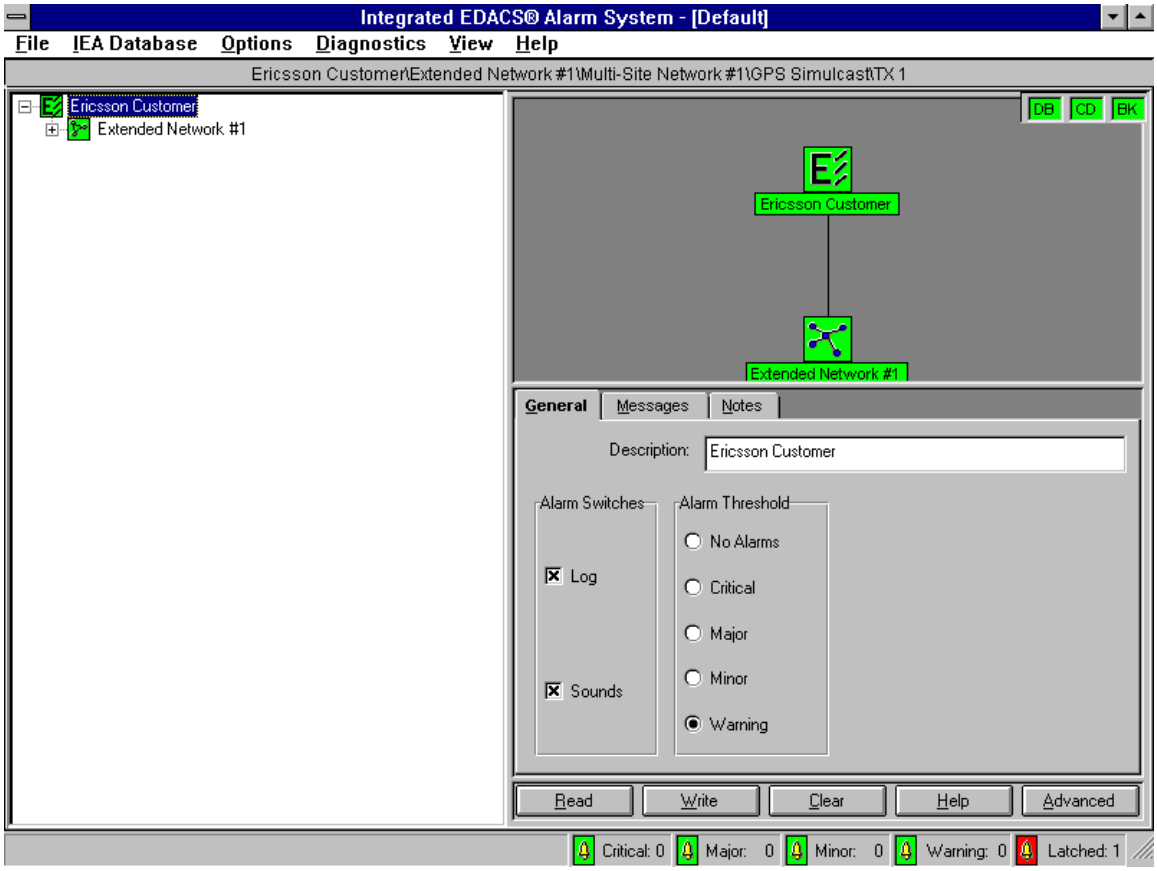


Figure 27 - MMI Screen with Extended Network Added

ADD A MULTISITE NETWORK

To add a Multisite Network, with the mouse, click on the Extended Network in the Tree View (Figure 27), then click on the appropriate button in the Equipment Palette for **Add A Multisite Network**. This starts the Add Hardware Wizard (See Figure 28). Continue as directed in Step 1 through Step 5 (Figures 28 through 35). Figure 36 shows an MMI screen with two multisites added in the system.

Step 1 - Identifies a Multisite Network is what is being added to the IEA.

Step 2- Ask how many multisite Networks are to be added (1-99). The computer will prompt for information about each network

Step 3 - Asks for a description of the network. User enters network name in the box (i.e. Network #1).

Step 4 - Asks for a confirmation of the information entered.

Step 5 - Asks for a description of the second network. User enters network name in the box (i.e. Network #2).

Step 6 - Asks for confirmation of the information entered

Step 7 - Finishes the process.

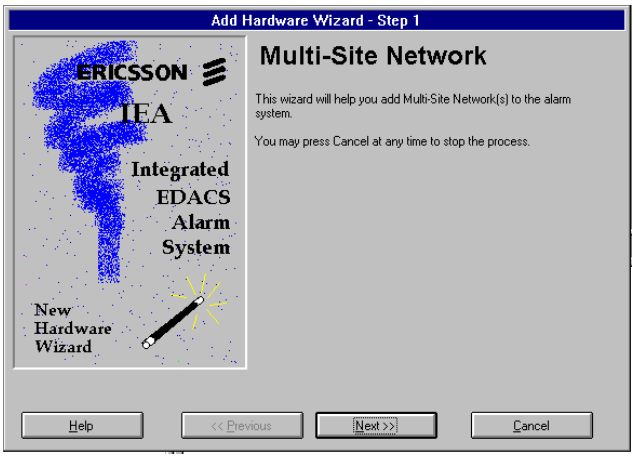


Figure 28 - Add Hardware Wizard (Step 1)

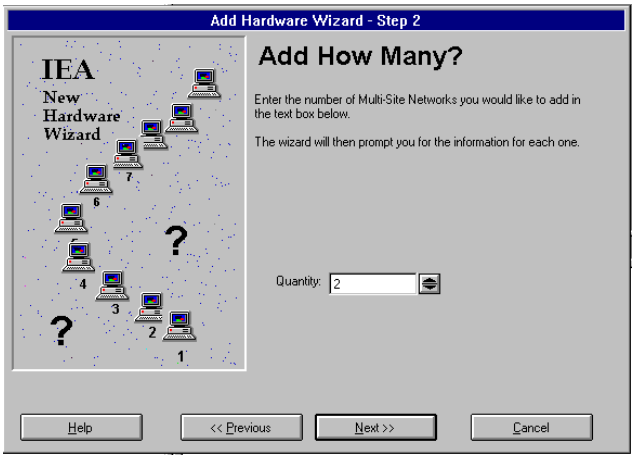


Figure 29 - How Many - Step 2

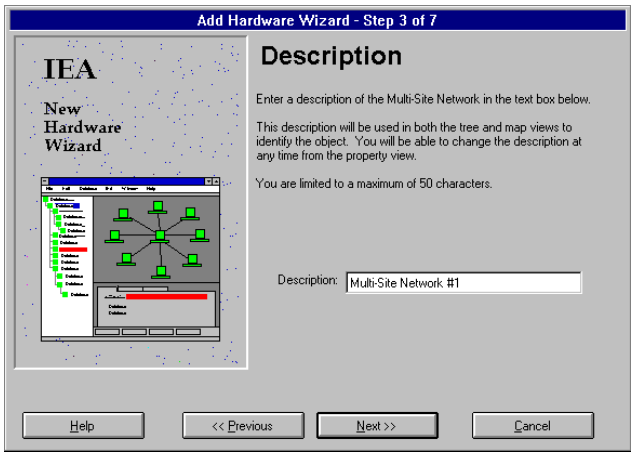


Figure 30 - Description Multisite 1 (Step 3)

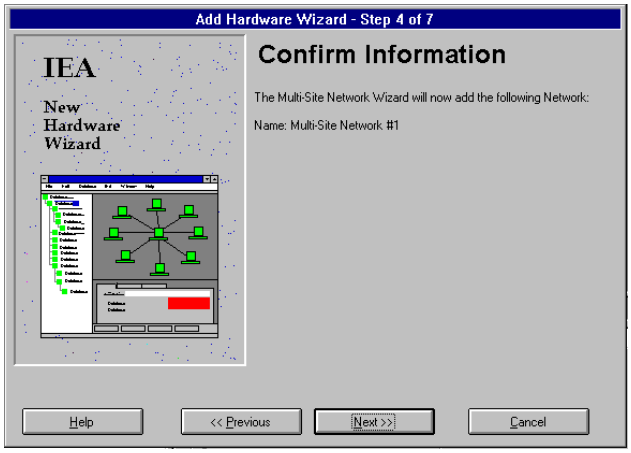


Figure 31 - Confirm Multisite 1 (Step 4)

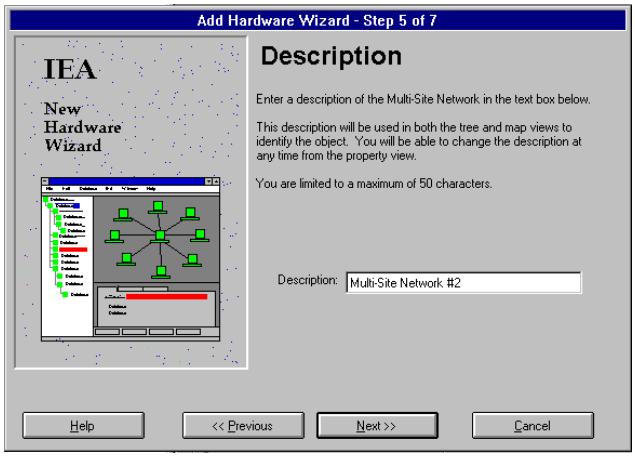


Figure 32- Description Multisite 2 (Step 5)

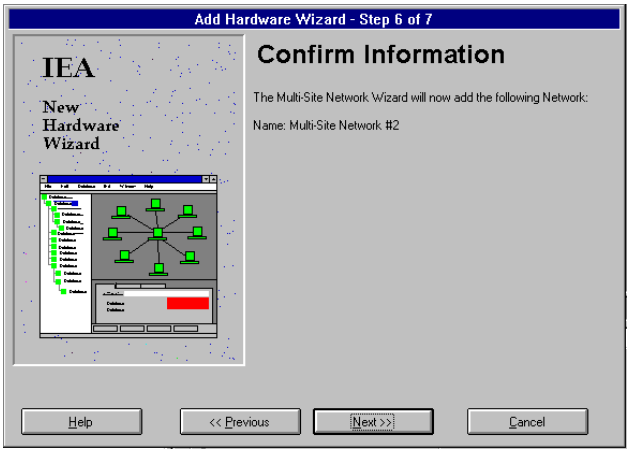


Figure 33- Confirm Multisite 2 (Step 6)

Figure 34 - Finish (Step 7)

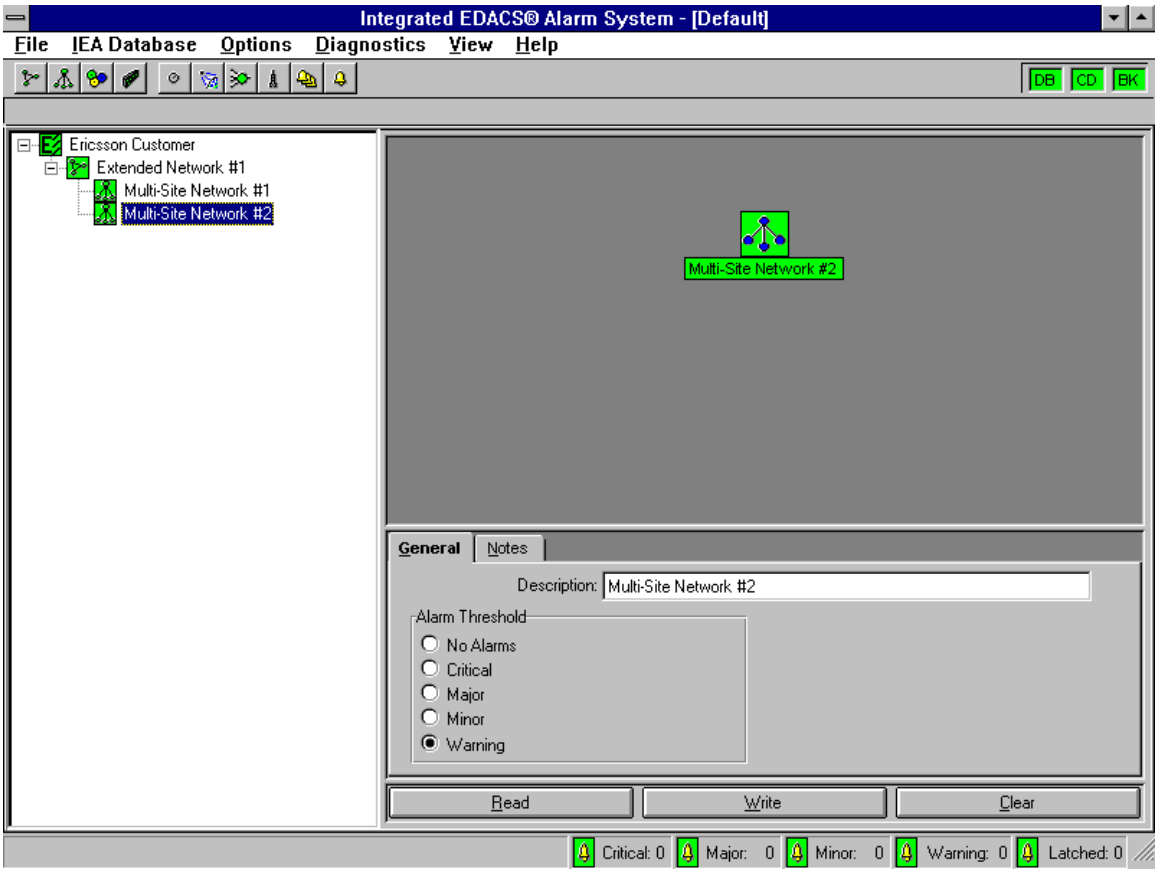


Figure 35 - MMI Screen with Multisite Network

EDACS SYSTEM

To add an EDACS System, with the mouse, click on the Multisite Network in the Tree View (Figure 35), then click on the appropriate button in the Equipment Palette for **Add An EDACS System**. This starts the Add Hardware Wizard (See Figure 36). Continue as directed in Step 1 through Step 6 (Figures 36 through 41). Figure 42 shows an MMI screen with an EDACS System.

Step 1 - Identifies an EDACS System is what is being added to the IEA.

Step 2- Asks how many EDACS Systems are to be added (1-99). The computer will prompt for information about each site

Step 3 - Asks for a description of the EDACS System. User enters a name for the system (i.e. EDACS System #1).

Step 4 - Asks for a confirmation of the information entered.

Step 5 - Finishes the process.

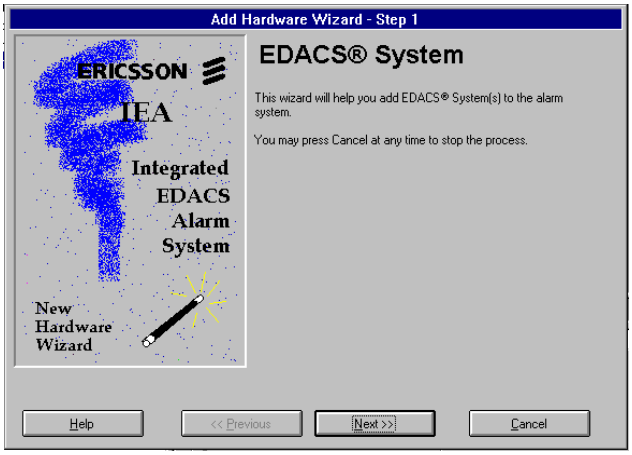


Figure 36 - EDACS System (Step 1)

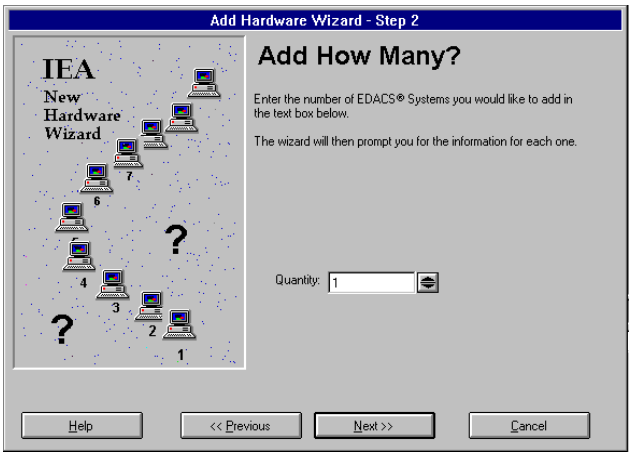


Figure 37 - Add Systems (Step 2)

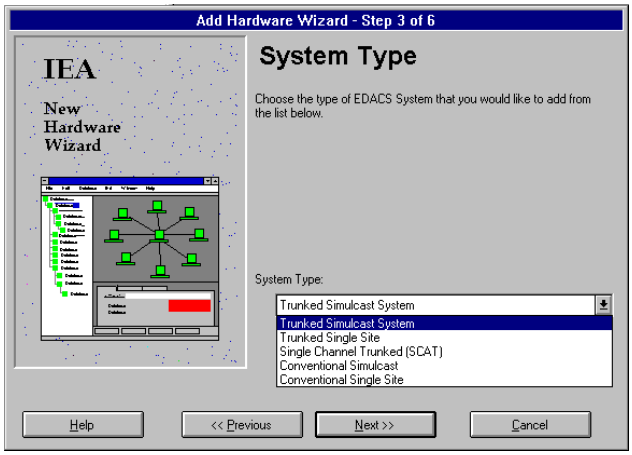


Figure 38 - System Type (Step 3)

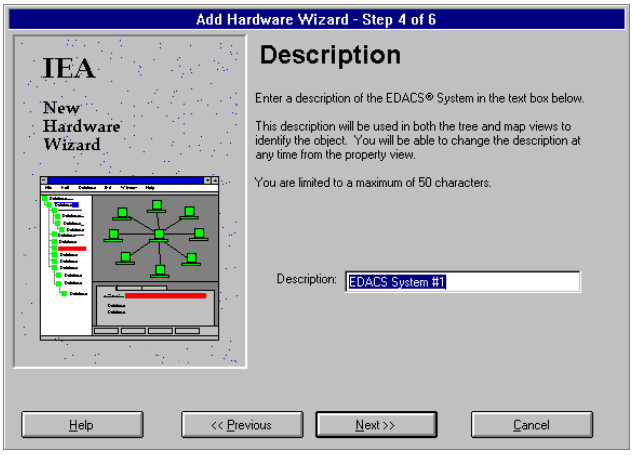


Figure 39 - Description (Step 4)

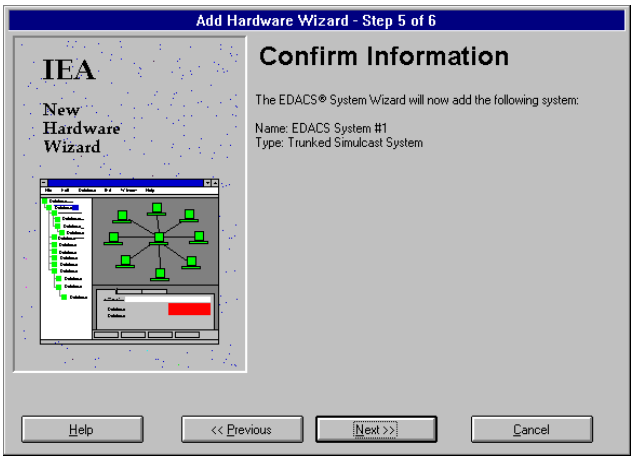


Figure 40 - Confirm (Step 5)

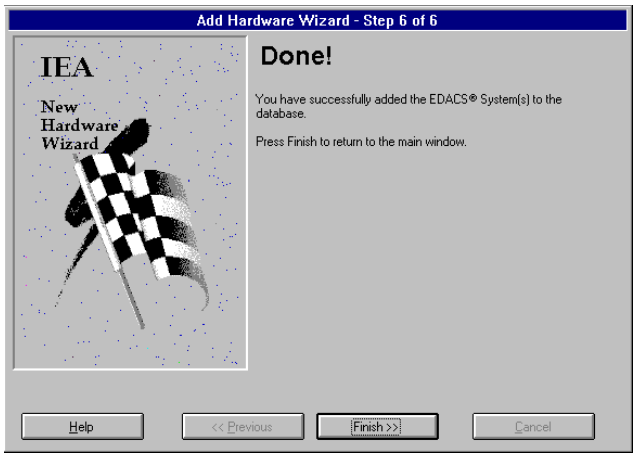


Figure 41 - Finish (Step 6)

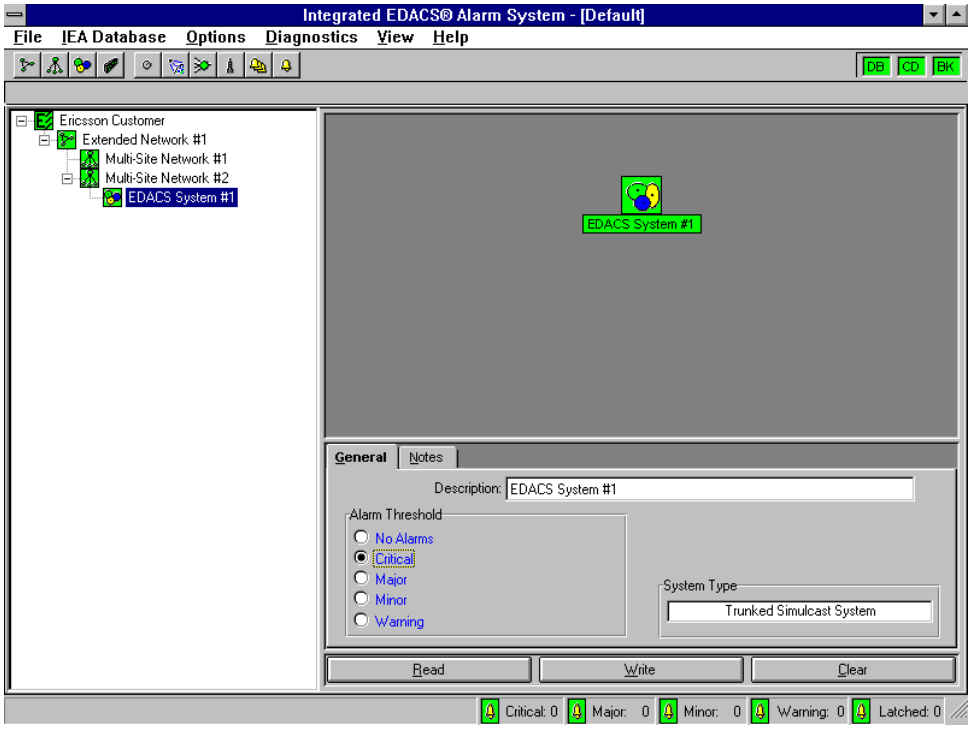


Figure 42 - EDACS System

EDACS SITE

To add an EDACS Site, with the mouse, click on the EDACS System in the Tree View (Figure 42), then click on the appropriate button in the Equipment Palette for **Add An EDACS Site**. This starts the Add Hardware Wizard (See Figure 43). Continue as directed in Step 1 through Step 7 (Figures 43 through 49). Figure 50 shows an MMI screen with an EDACS site.

Step 1 - Identifies an EDACS Site is what is being added to the IEA.

Step 2- Asks how many EDACS Sites are to be added. The computer will prompt for information about each site.

Step 3 - Asks for a description of the Site. The user enters a name in the box (i.e. EDACS Site #1).

Step 4 - Asks for a confirmation of the information entered.

Step 5 - Finishes the process.

Figure 43 - EDACS Site (Step 1)

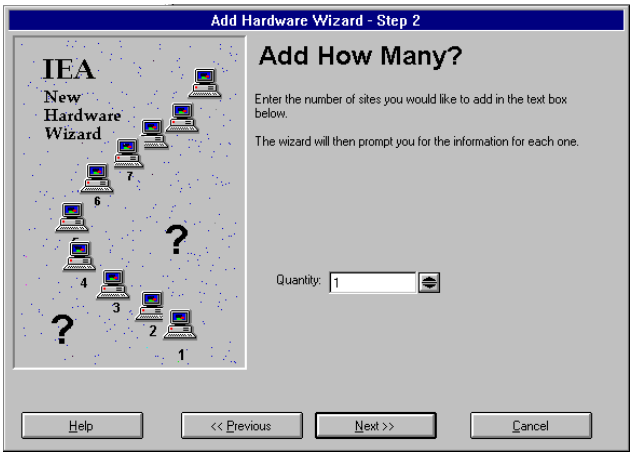


Figure 44 - How Many - (Step 2)

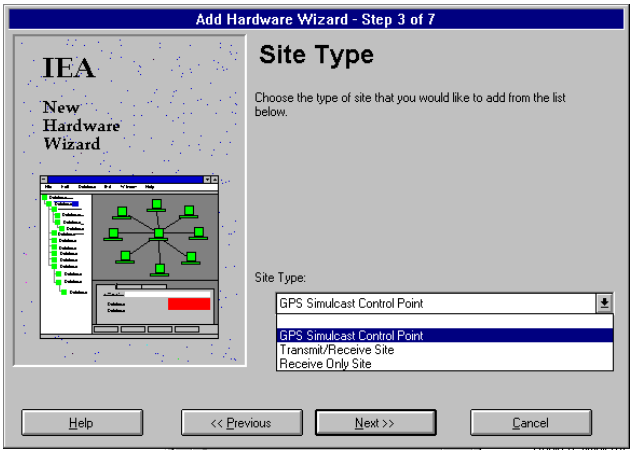


Figure 45 - Type Site (Step 3)

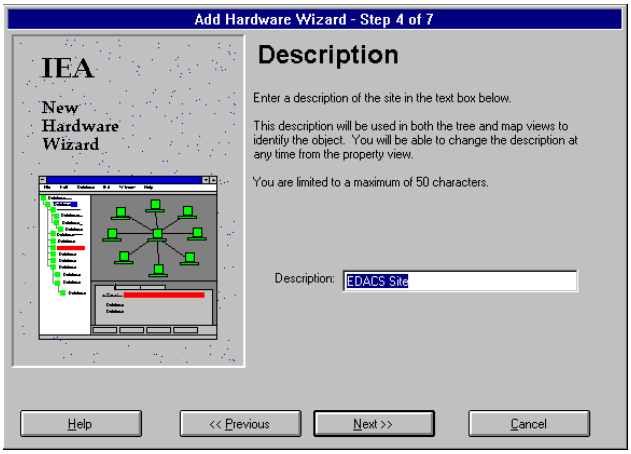


Figure 46 - Description (Step 4)

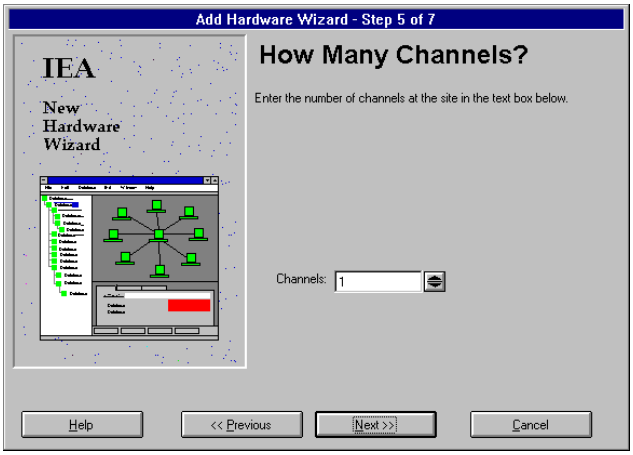


Figure 47 - Channels (Step 5)

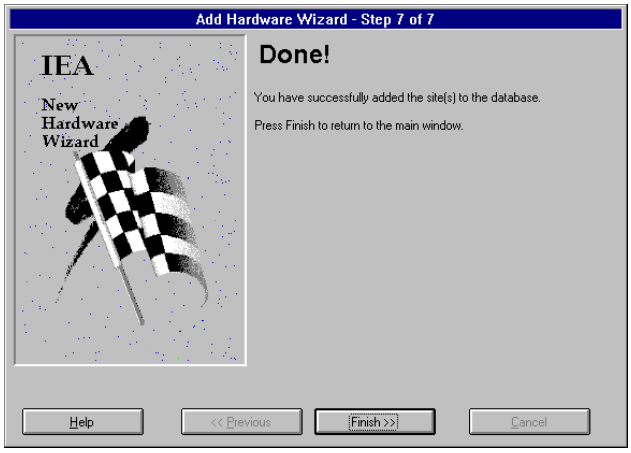


Figure 49 - Finish (Step 7)

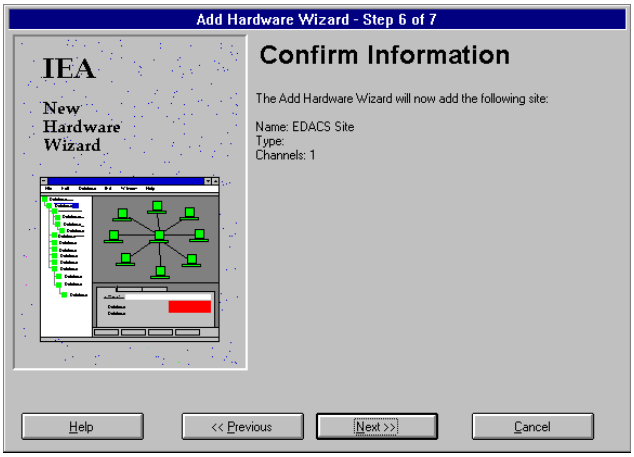


Figure 48 - Confirm (Step 6)

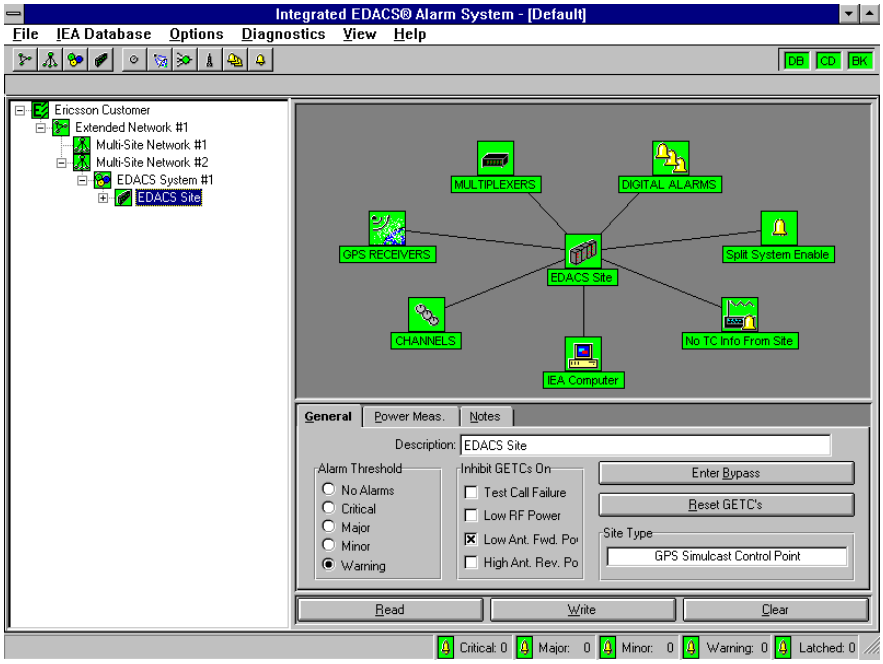


Figure 50 - EDACS Site

ADDITION OF OTHER DEVICES

At this point, using the first set of icons on the Equipment Palette, the basic communication system has been added to the EIA. The second set of icons adds additional:

- Channels
- GPS Receivers
- Multiplexer
- Antennas
- Digital Alarm Groups
- Digital Input Alarms

NOTE

These items can only be added at locations that will accept them. The program displays a message informing the operator when an item cannot be added.

If the tree is expanded from the EDACS Site shown in Figure 50, the equipment shown in the map view is shown in the tree view (see Figure 51).

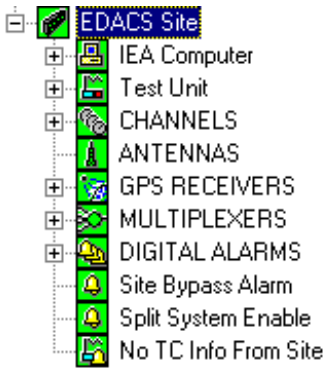


Figure 51 - Other Devices

Each of these items can be further expanded by clicking with the mouse on the plus (+) box to the left of the item. For example, CHANNELS (see Figure 52).

Figure 52 - CHANNELS

Figure 52 shows that there are three channels assigned to the EDACS Site (Control Point). The map view shown in Figure 53 also shows a connection of three channels.

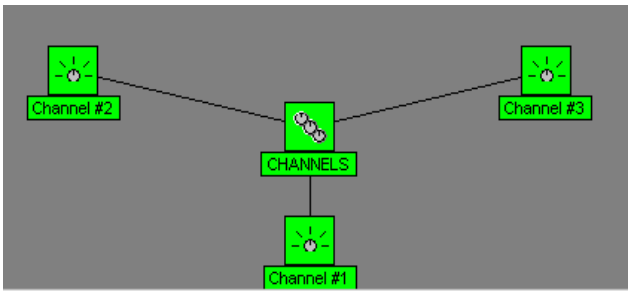
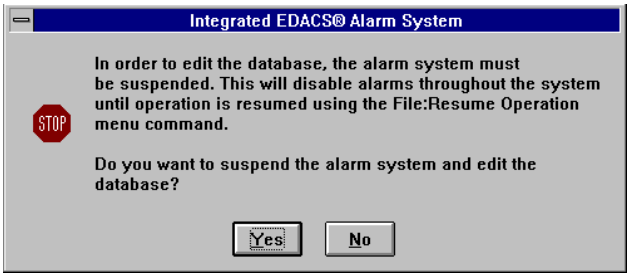


Figure 53 - Map View

When choosing to add a device to the database the following message is displayed.



If you enter yes all functions of the alarm system are suspended. A message at the bottom left-hand side of the screen says **ALARM SYSTEM SUSPENDED**. Once the new information has been entered to restart the operation, select **File** then **Resume Operation**.

ADD A CHANNEL

Other channels can be added to the EDACS Site or to CHANNELS. To add a channel, select EDACS Site or CHANNELS from the Tree View, then select Add A Channel from the Equipment Palette *(Figure 54).*

Figure 54 - Add A Channel Icon

This starts Add Hardware Wizard (Step 1) for adding channels (see Figure 55). Continue as directed in Step 1 through step 5 (Figures 55 though 61) Figure 62 shows the EDACS Site with 5 channels. In this example two channels are added. Otherwise the process would be only 5 steps.

Figure 55 - Channel (Step 1)

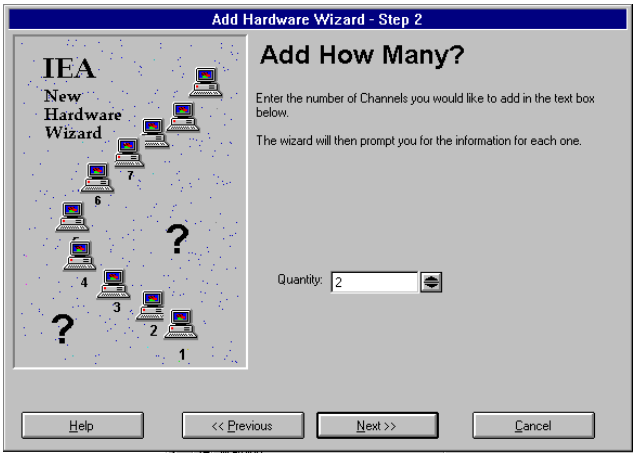


Figure 56 - How Many? (Step 2)

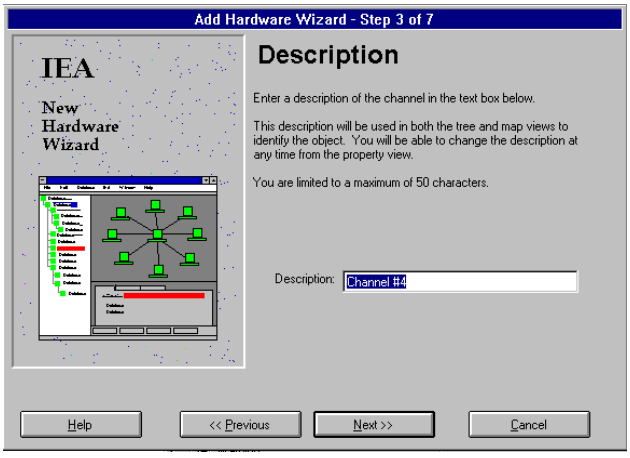


Figure 57 - Description (Step 3)

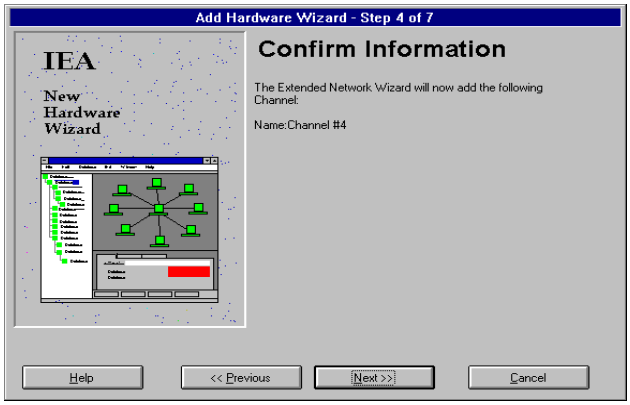


Figure 58 - Confirm (Step 4)

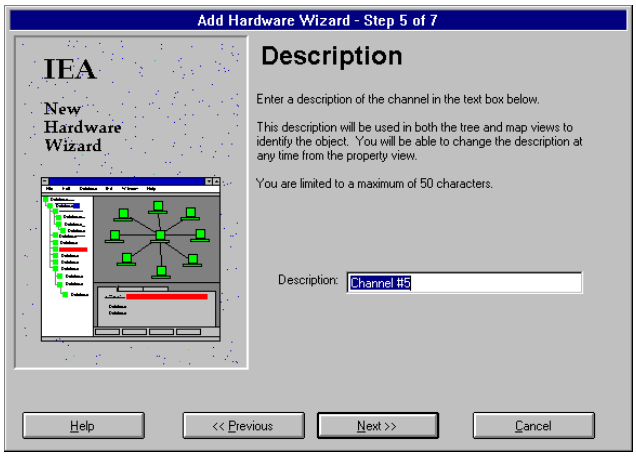


Figure 59 - Description (Step 5)

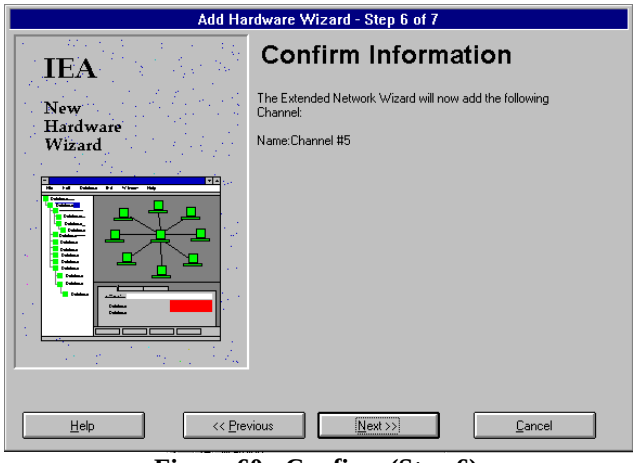


Figure 60 - Confirm (Step 6)

Figure 61 - Finish (Step 7)

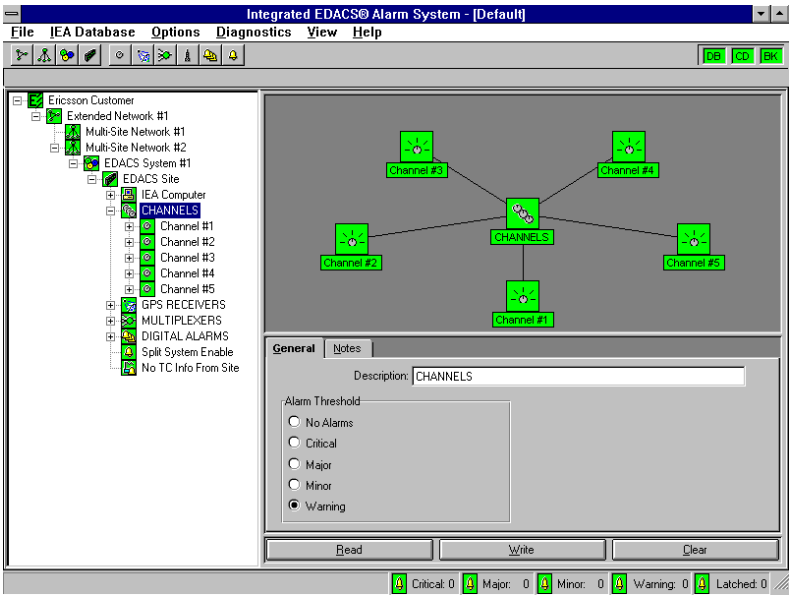


Figure 62 - CHANNELS with 5 Channels

ADD A GPS RECEIVER

GPS Receiver (s) can be added to the EDACS Site or to GPS RECEIVERS. To add a GPS Receiver(s), select EDACS Site or GPS RECEIVERS from the Tree View, then select Add A GPS Receiver from the Equipment Palette *(Figure 63).*

Figure 63 - Add A GPS Receiver

This starts Add Hardware Wizard (Step 1) for adding GPS Receivers (see Figure 64). Continue as directed in Step 1 through Step 8 (Figures 64 through 75). Figure 75 shows an EDACS Site with two GPS receivers. For this example two GPS receiver are added.

Step 1 -Identifies a GPS Receiver is being added to the IEA.

Step 2 - Answers the question of how many GPS Receivers are to be added. The computer will prompt for information about each receiver. In this example two receivers are being added.

Step 3 - Asks the user to select a Com Port. **Note:** All receivers at a particular site use the same Com Port. Any change of value here affects all GPS receiver at that site (refer to Appendix B).

Step 4 - Asks for a description of the GPS Receiver. Enter a name in the box (i.e. GPS Receiver #1).

Step 5 - Asks the user to select a Bus Address. No two GPS receivers can save the same Bus Address. A different Bus Address must be selected for each GPS receiver and must agree with the bus address configured by the switching settings on the GPS Receiver. There are typically 0-31 to choose from.

Step 6 - Asks the user to select the appropriate Time Zone from a drop down menu of Time Zones.

Step 7 - Asks for a confirmation of the information entered.

Step 8 - Asks for a description of the second GPS Receiver. Enter a name in the box (i.e. GPS Receiver #2).

Step 9 - Asks the user to select a Bus Address.

Step 10 - Asks the user to select the appropriate Time Zone from a drop down menu of Time Zones.

Step 11 - Asks for a confirmation of the information entered.

Step 12 - Finishes the process.

Figure 64 - Add Hardware (Step 1)

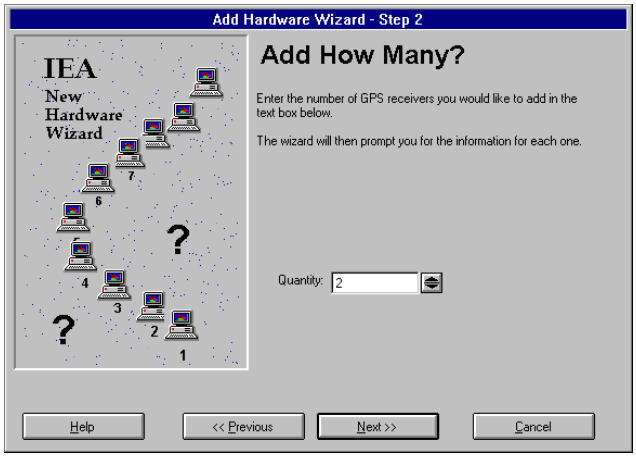


Figure 65 - How Many? (Step 2)

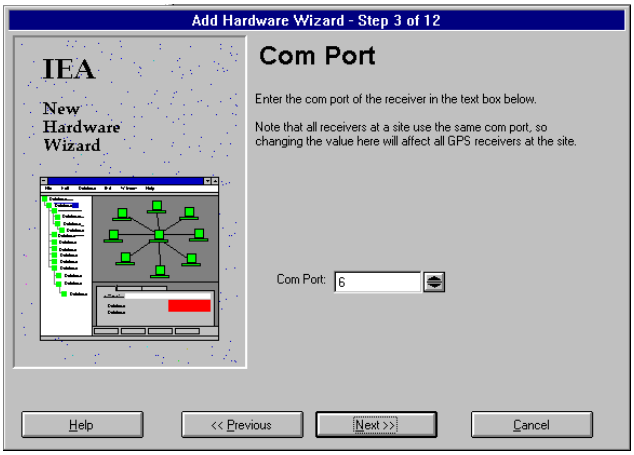


Figure 66 - Com Port (Step 3)

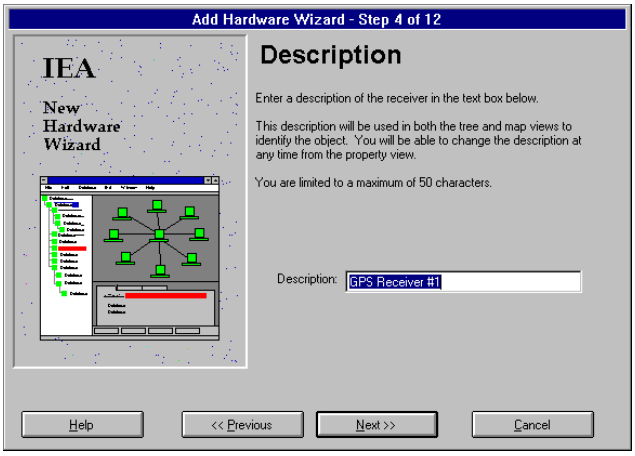


Figure 67 - Description (Step 4)

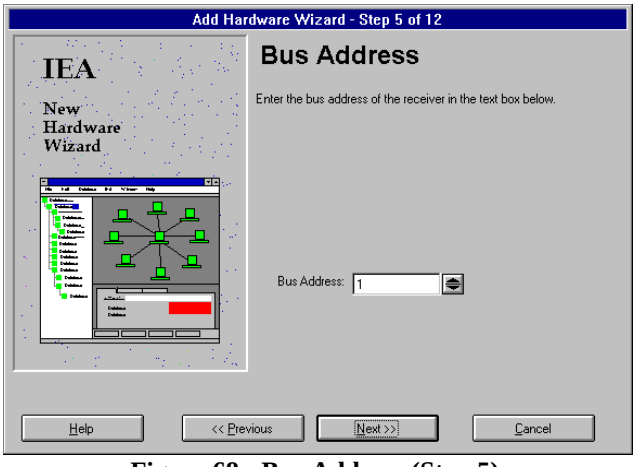


Figure 68 - Bus Address (Step 5)

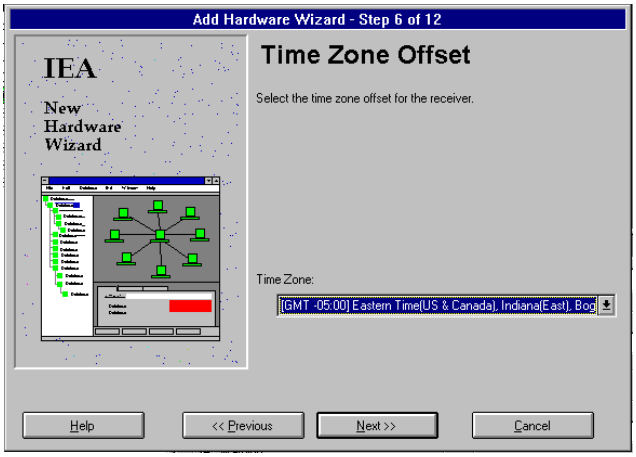


Figure 69 - (Step 6)

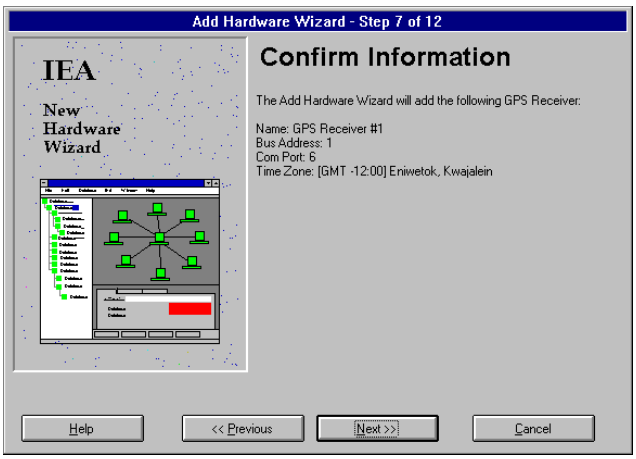


Figure 70 - Confirm (Step 7)

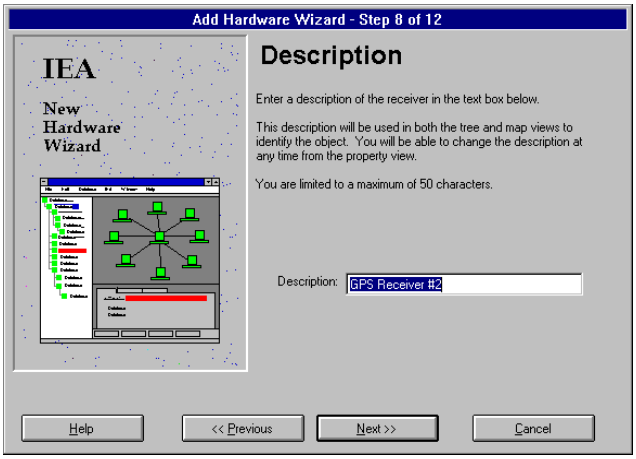


Figure 71 - Description (Step 8)

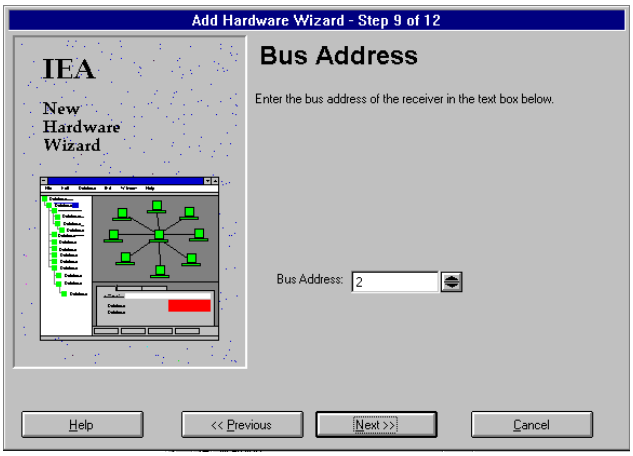


Figure 72 - Bus Address (Step 9)

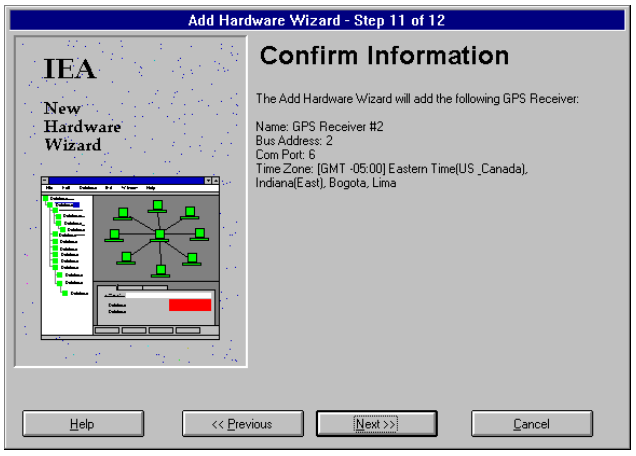


Figure 74 - Confirm (Step 11)

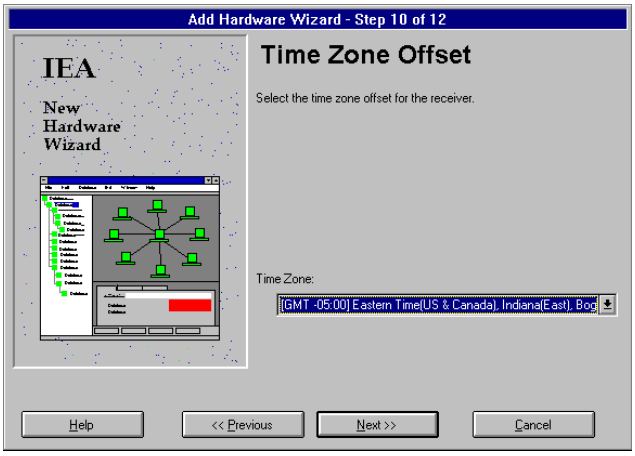


Figure 73 - Time Zone Offset (Step 10)

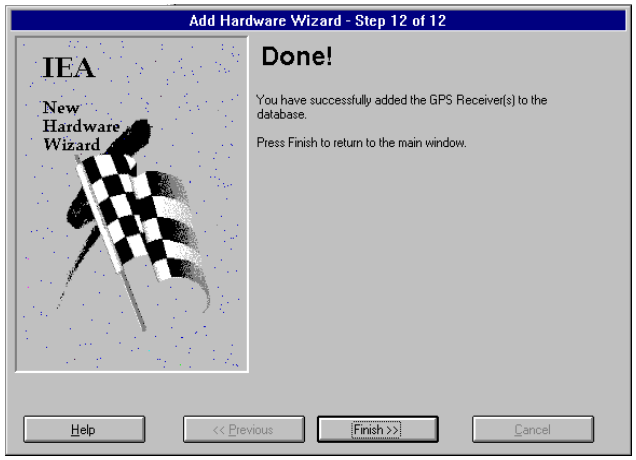


Figure 75 - Finish (Step 12)

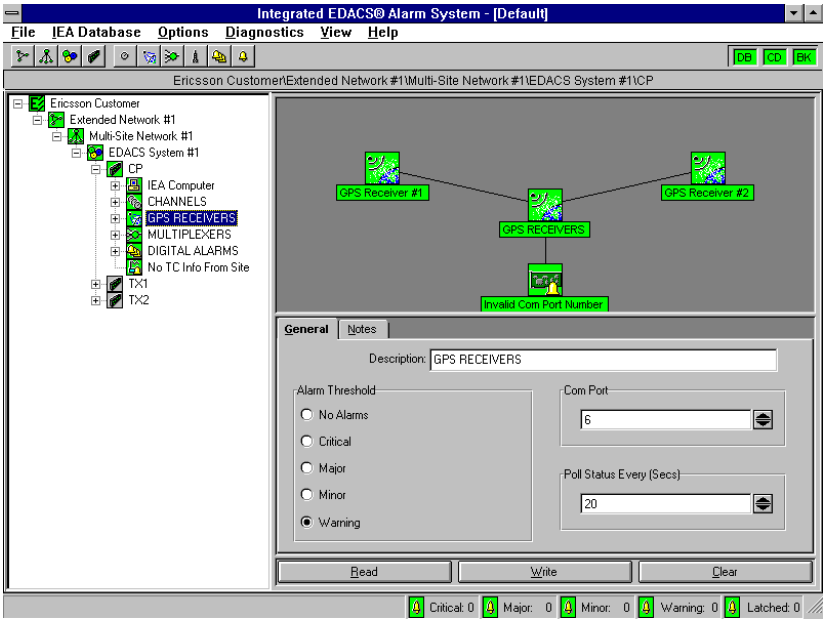


Figure 76 - EDACS Site with 2 GPS Receivers

ADD A MULTIPLEXER

A Multiplexer (s) can be added to the EDACS Site or to MULTIPLEXERS. To add a Multiplexer select EDACS Site or MULTIPLEXERS from the Tree View, then select **Add A Multiplexer** from the Equipment Palette *(Figure 77).*

Figure 77 - Add A Multiplexer Icon

This starts the Add Hardware Wizard (Step 1) for adding Multiplexers (see Figure 78). Continue as directed in Step 1 through Step 7 (Figures 78 through 87). Figure 88 shows an EDACS site Control Point with two multiplexers.

Step 1 - Identifies a Multiplexer is what is being added to the IEA.

Step 2 - Asks the question of how many Multiplexers are to be added. The computer will prompt for information about each Multiplexer.

Step 3 - Asks for a Com Port number. **Note:** All multiplexers at any particular site use the same Com Port. Changing the value at a site will affect all multiplexer at that site.

Step 4 - Asks for a description of the Multiplexer. The user enters a name in the box (i.e. Multiplexer #1).

Step 5 - Asks for a Bus Address for Multiplexer #1. No two Multiplexers can save the same Bus Address. A different Bus Address must be selected for each Multiplexer and must agree with the bus address configured by the switch settings in the Multiplexer circuit. There are typically 0-31 to choose from.

Step 6 - Asks for confirmation of the information entered for Multiplexer #1.

Step 7 - Asks for a description of the second Multiplexer. The user enters a name in the box (i.e. Multiplexer #2).

Step 8 - Asks for a Bus Address for Multiplexer #2.

Step 9 - Asks for confirmation of the information entered for Multiplexer #2.

Step 10 - Finishes process.

Figure 78 - Multiplexers (Step 1)

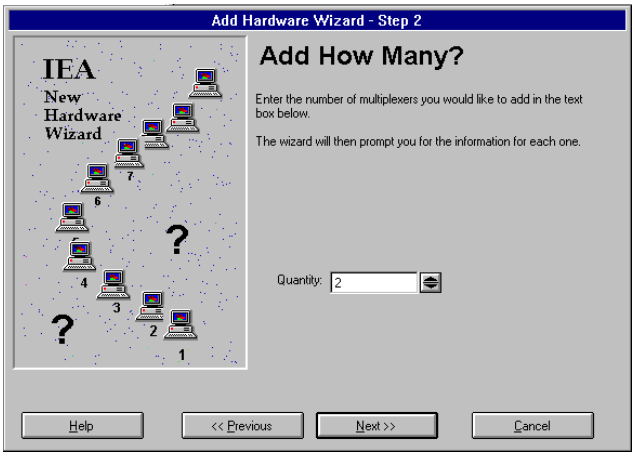


Figure 79 - How Many? (Step 2)

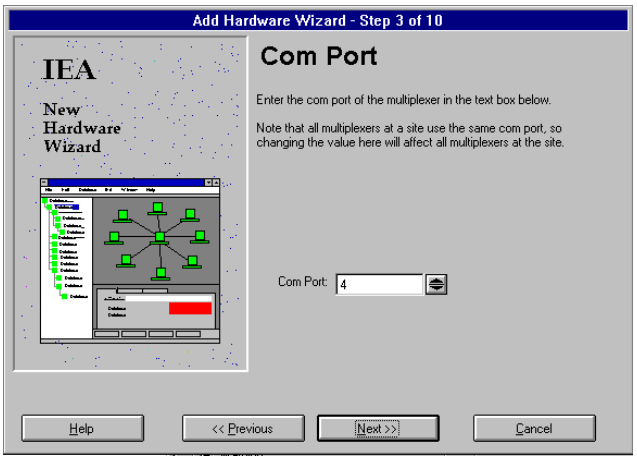


Figure 80 - Com Port (Step 3)

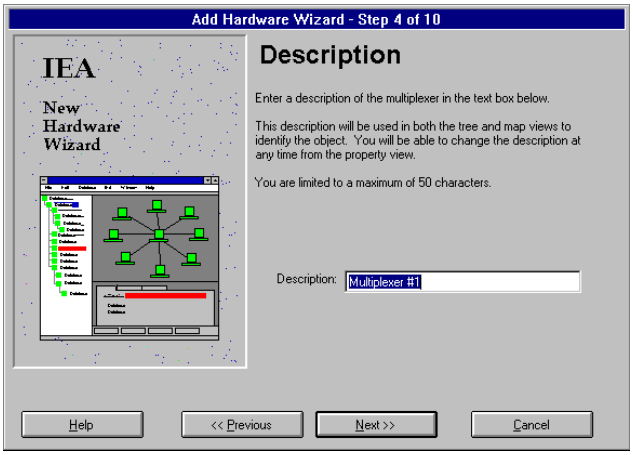


Figure 81 - Description (Step 4)

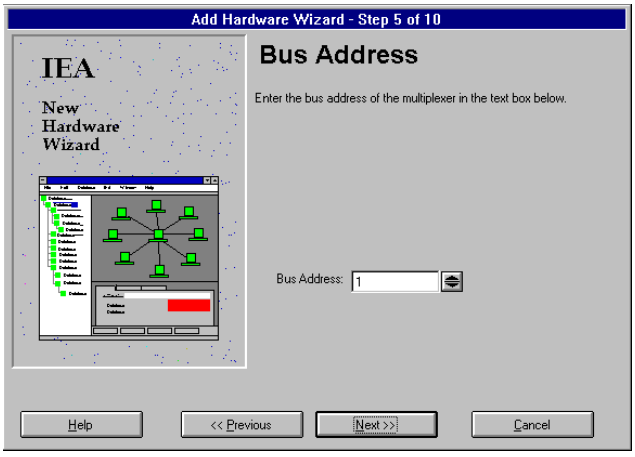


Figure 82 - Bus Address (Step 5)

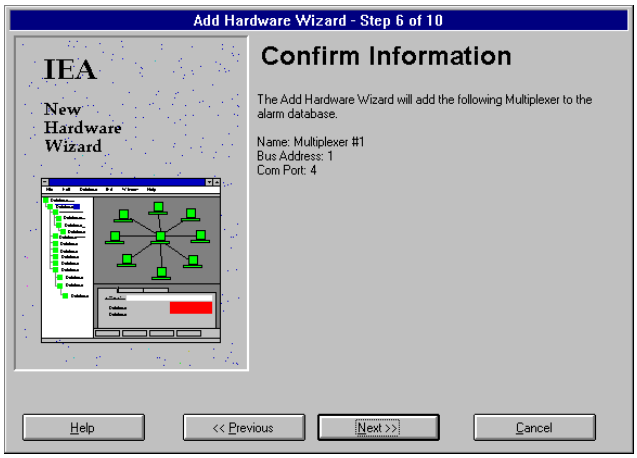


Figure 83 - Confirm (Step 6)

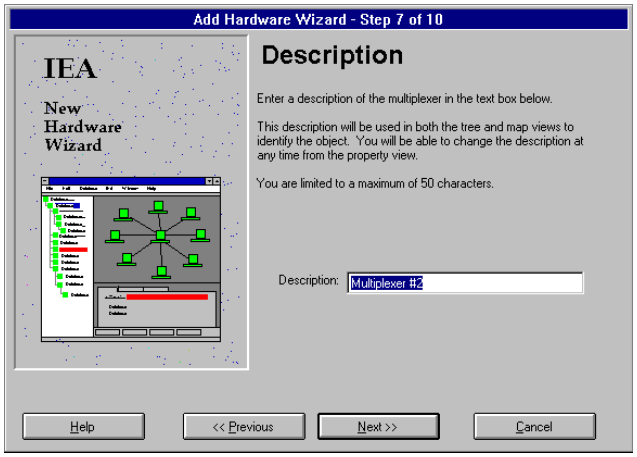


Figure 84 - Description (Step 7)

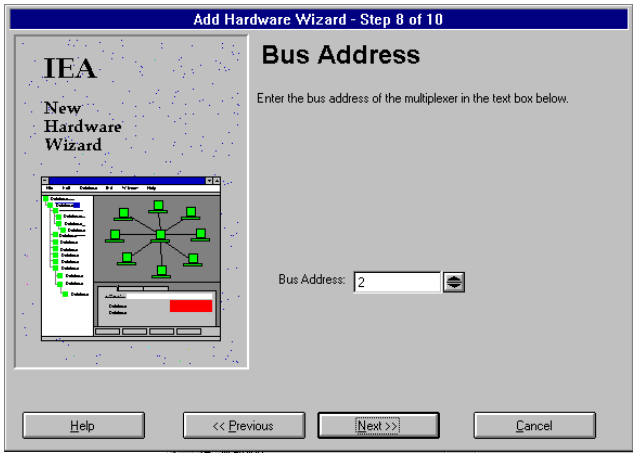


Figure 85 - Bus Address (Step 8)

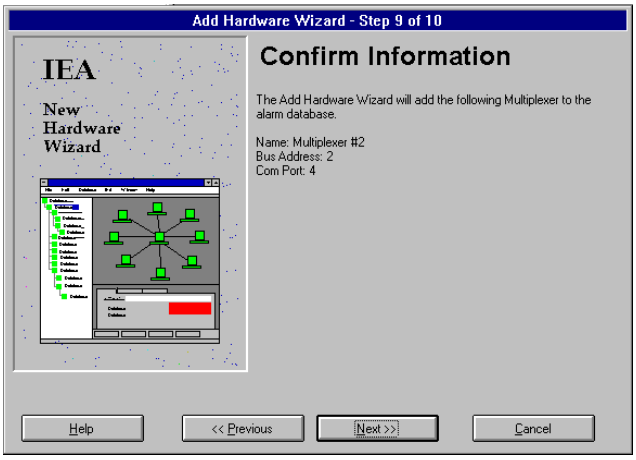


Figure 86 - Confirm (Step 9)

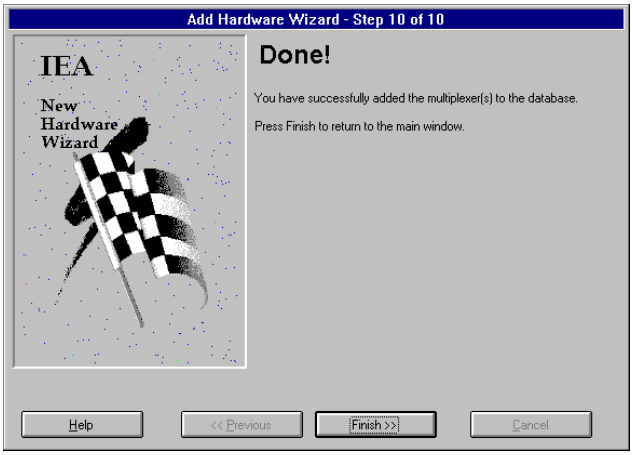


Figure 87 - Finish (Step 10)

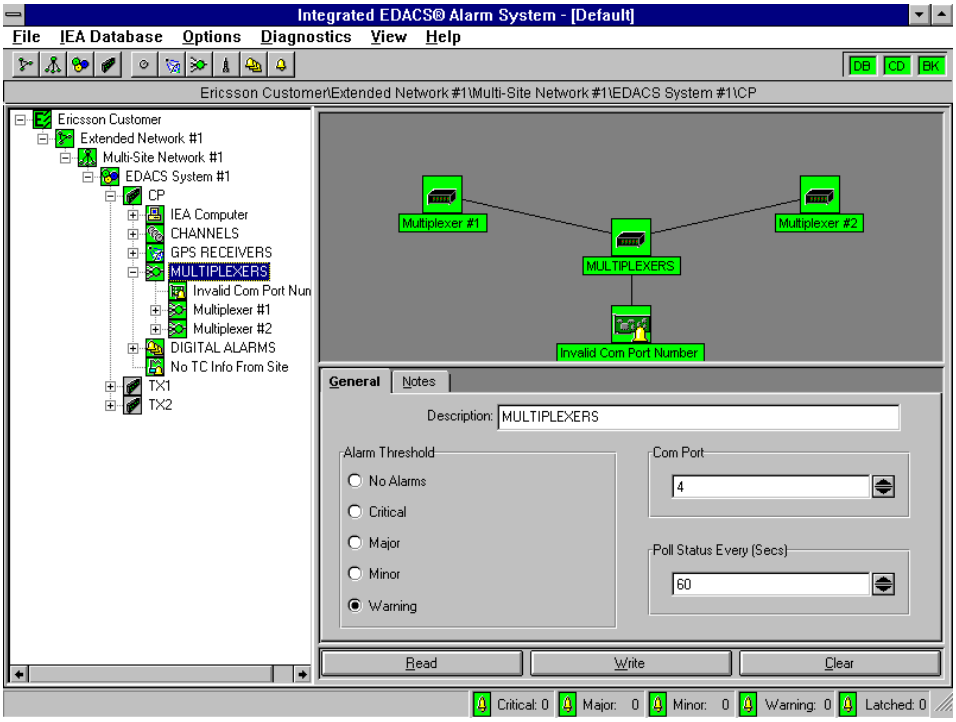


Figure 88 - EDACS Site Control Point with 2 Multiplexers

ADD AN ANTENNA

An Antenna (s) can be added to a Transmit Site or to ANTENNAS. To add an antenna, from the Tree View, select a Transmit Site (TX1, TX2, etc.) or ANTENNAS if a Transmit Site is already selected. Then, select Add An Antenna from the Equipment Palette *(Figure 89)*

Figure 89 - Add An Antenna Icon

This starts the Add Hardware Wizard (Step 1) for adding Antennas (see Figure 90). Continue as directed in Step 1 through Step 5 (Figures 90 through 94). Figure 95 shows the EDACS Site with Antennas connected.

Step 1 - Identifies an antenna is what is being added to the IEA.

Step 2 - Asks the question of how many antennas are to be added. The computer will prompt for information about each antenna.

Step 3 - Asks what type of antenna (transmit).

Step 4 - Asks for a confirmation of the information entered.

Step 5 - Finishes process.

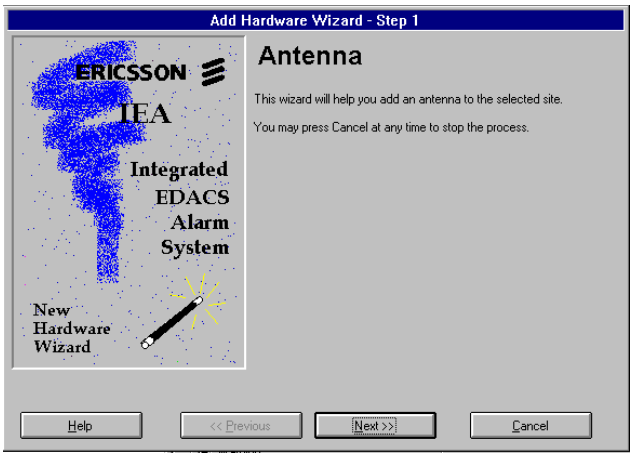


Figure 90 - Antennas (Step 1)

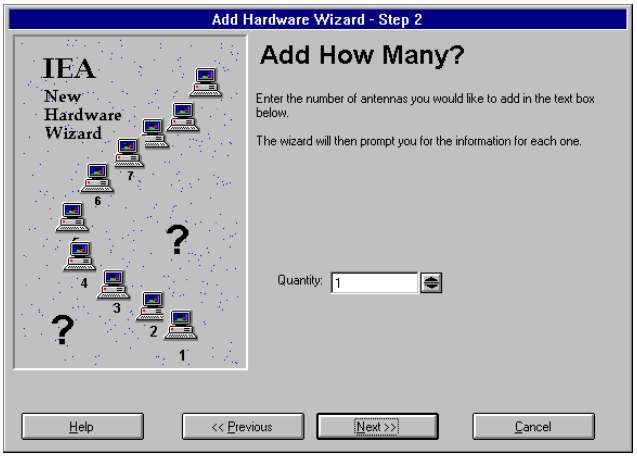


Figure 91 - How Many? (Step 2)

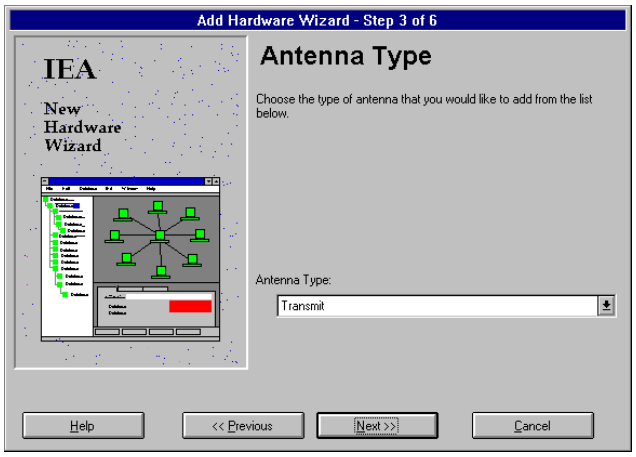


Figure 92 - Antenna Type (Step 3)

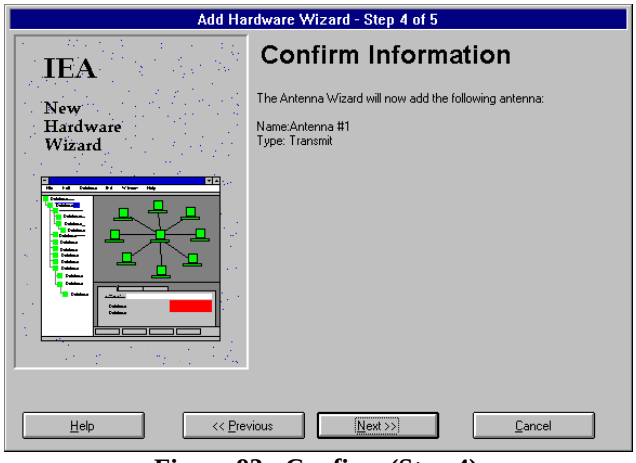


Figure 93 - Confirm (Step 4)

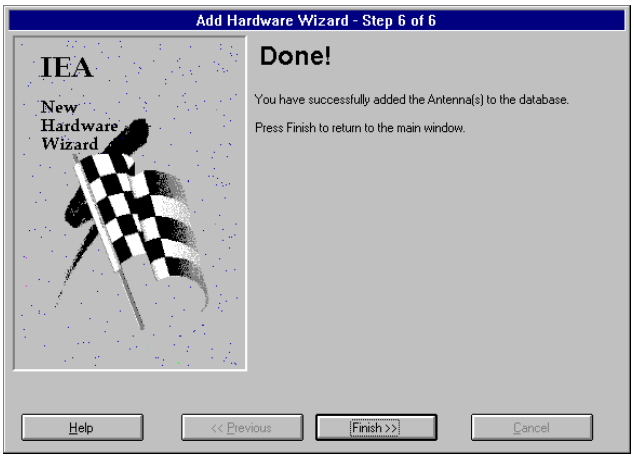


Figure 94 - Finish (Step 5)

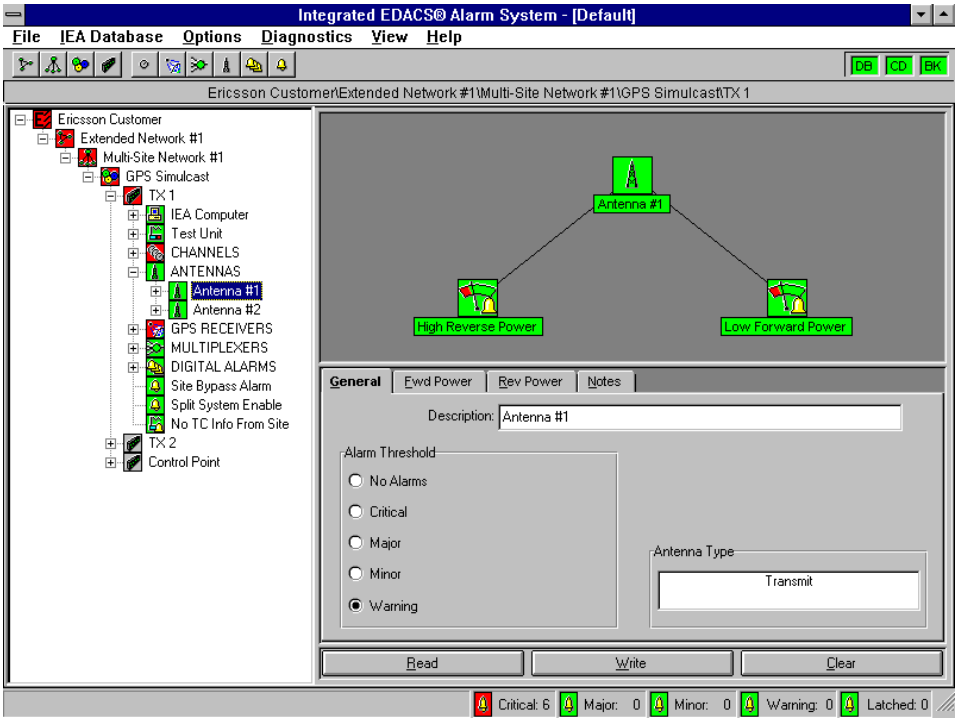


Figure 95 - EDACS Transmit Site with 2 Antennas

ADD A DIGITAL ALARM GROUP

Digital Alarm Groups provide a way to organize the many user-configurable digital alarms that the IEA system supports. The digital I/O board in the alarm system provides an expandable number of inputs/outputs for use by the customer. A majority of these alarms are customer defined and can be changed at their discretion. Groups are used to organize the large number of available inputs into smaller, easier to manage, groups such as door alarms, environment, etc. Individual alarms are added within each group.

Digital Alarm Groups can be added to EDACS Site or to DIGITAL ALARMS. To add a Digital Alarm Group, select EDACS Site or DIGITAL ALARMS from the Tree View, then select Add A Digital Alarm Group from the Equipment Palette *(Figure 96).*

Figure 96 - Add A Digital Alarm Group Icon

Figure 97 - GP Digital I/O Group (Step 1)

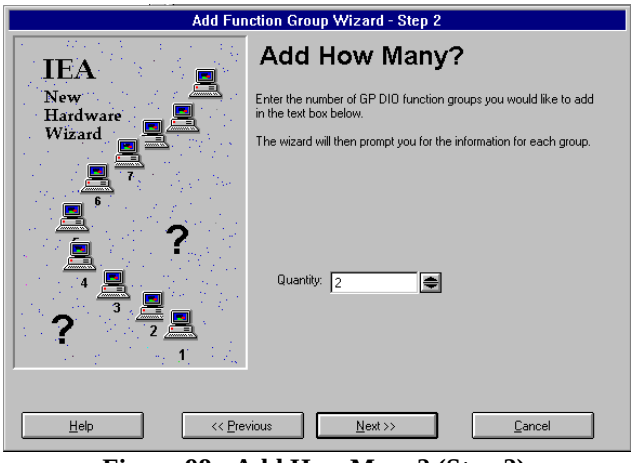


Figure 98 - Add How Many? (Step 2)

This starts Add Hardware Wizard (Step 1) for adding Digital Alarm Groups (See Figure 98) Continue as directed in Step 1 through Step 5 (Figures 97 through 101). Figure 102 shows the EDACS Site with Digital Alarms

Step 1 - Identifies a Digital Alarm Group is what is being added to the IEA.

Step 2 - Ask the question of how many groups are to be added. The computer will prompt for information about each group.

Step 3 - Asks for a description of the group. The user enters a name for the group (i.e. Function Group #1).

Step 4 - Asks for confirmation of the information entered.

Step 5 - Finishes the process.

.

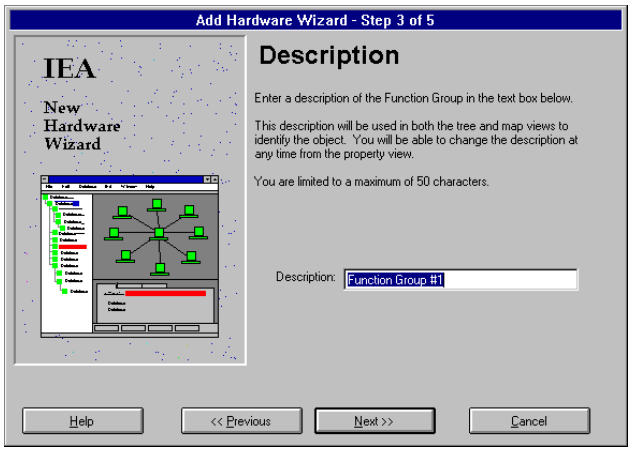


Figure 99 - Description (Step 3)

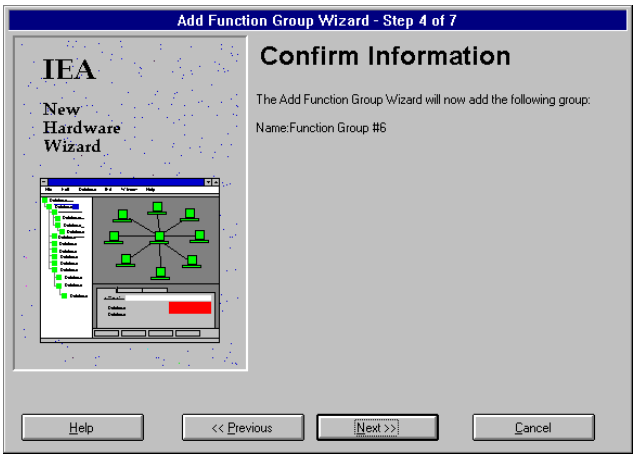


Figure 100 - Confirm (Step 4)

Figure 101 - Finish (Step 5)

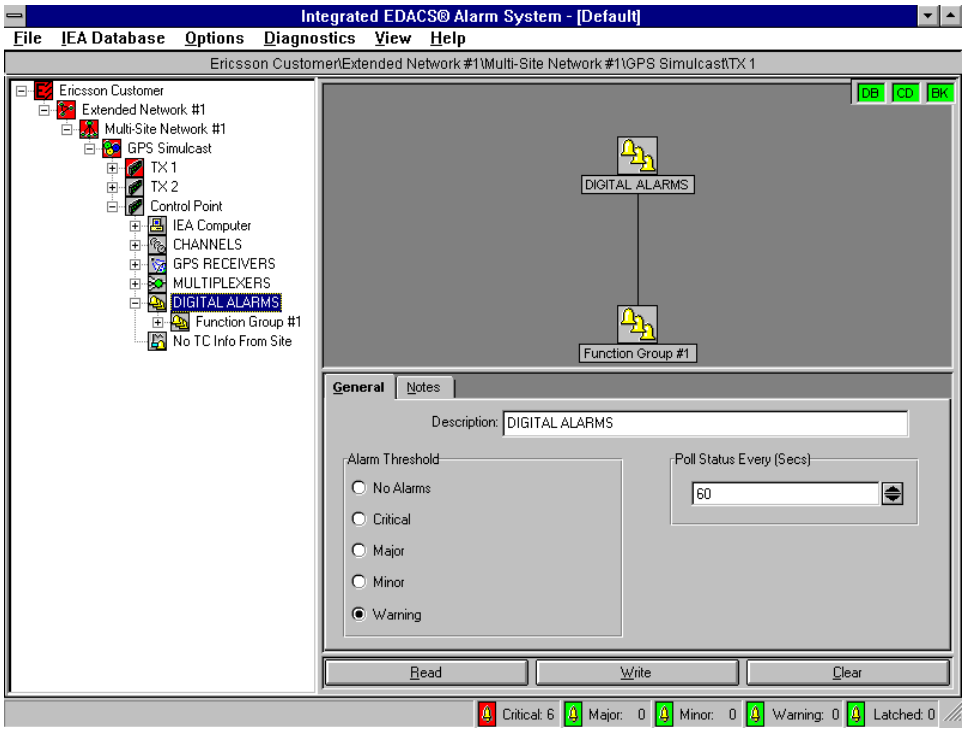


Figure 102 - Digital Alarm Groups

ADD A DIGITAL INPUT ALARM

A Digital Input Alarm can be added to EDACS Site or to DIGITAL ALARMS. To add a Digital Alarm, select EDACS Site or DIGITAL ALARMS from the Tree View, then select Add A Digital Input Alarm from the Equipment Palette *(Figure 103).*

Figure 103 - Add A Digital Input Alarm Icon

This starts Add Hardware Wizard (Step 1) for adding a Digital Input Alarm *(Figure 104).* Continue as directed in Step 1 through Step 13 *(Figures 104 through 116).* With this example, two digital alarms are added

Step 1 - Identifies a Digital Input Alarm is what is being added to the IEA.

Step 2 - Asks the question of how many Digital Input Alarms are to be added. The computer will prompt for information about each alarm.

Step 3 - Asks for a description of the alarm. The user enters a name in the box for the alarm (i.e. Point #5).

Step 4 - Asks the user to select from a menu the board containing the input to be added (General Purpose Digital I/O Board).

Step 5 - Asks the user to choose an input point number to be added from a list. The list will only show the point number that are available (refer to Appendix A).

Step 6 - Asks the user to select the polarity of the I/O point from a menu *(This defines the active state of the alarm).*

NOTE

The user defined I/O point must be electrically compatible with the customer's equipment, e.g., the polarity and signal routing must be consistent with the wizard selection. Refer to the appropriate system wiring diagrams and Appendix A for detailed information.

Step 7 - Ask for a confirmation of the information entered for Point #5.

Step 8 - Ask for a description of the alarm. The user enters a name in the box for the alarm (i.e. Point #11).

Step 9 - Asks the user to select from a menu the board containing the input to be added (General Purpose Digital I/O Board).

Step 10 - Asks the user to choose an input point number to be added from a list. Only the list will only show the point numbers that are available (refer to Appendix A).

Step 11 - Asks the user to select the polarity of the I/O point from a menu.

Step 12 - Ask for a confirmation of the information entered for Point #11.

Step 13 - Finishes the process.

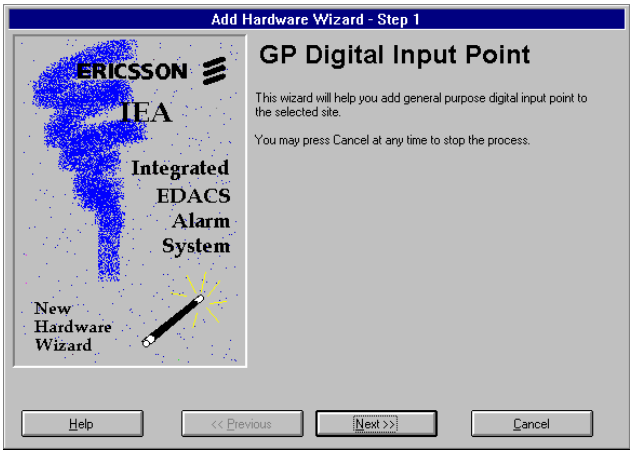


Figure 104 - Add Hardware (Step 1)

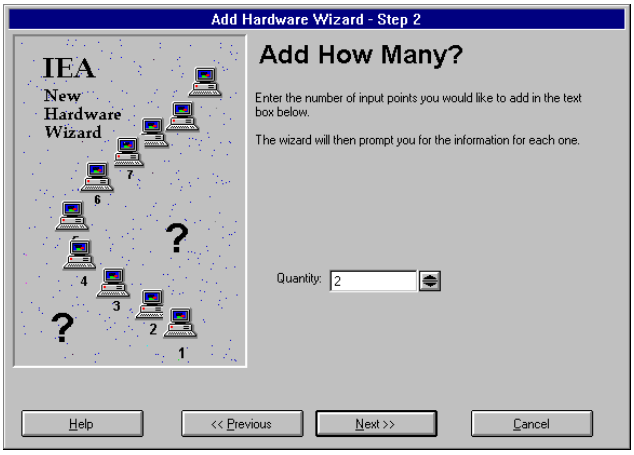


Figure 105 - Add How Many? (Step 2)

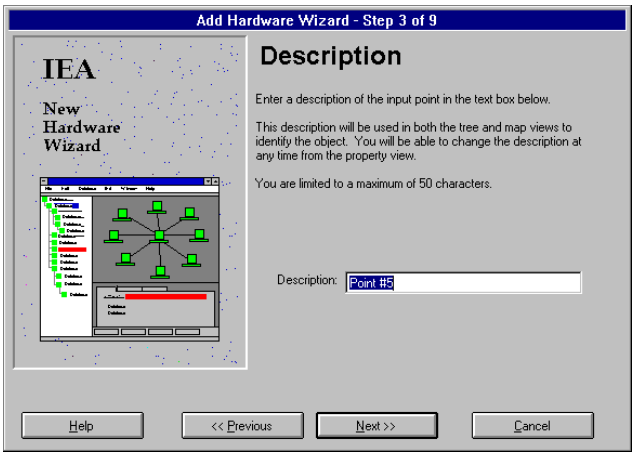


Figure 106 - Description (Step 3)

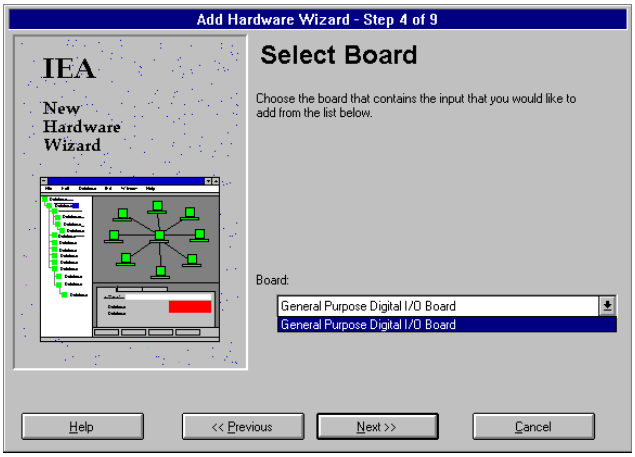


Figure 107 - Select Board (Step 4)

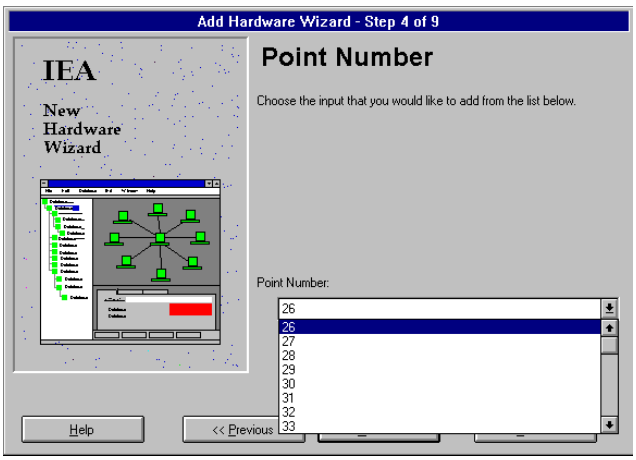


Figure 108 - Port Number (Step 5)

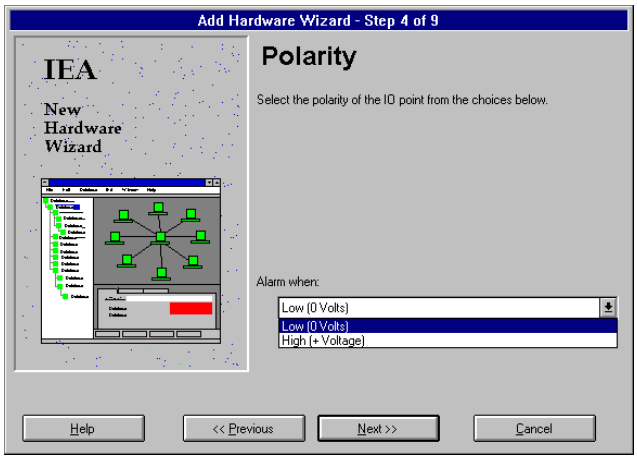


Figure 109 - Polarity (Step 6)

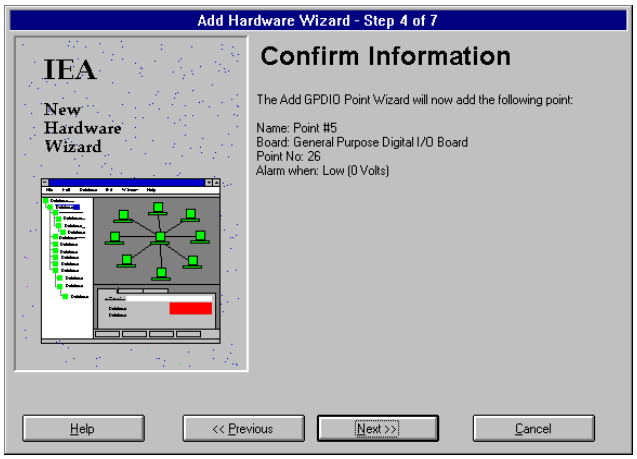


Figure 110 - Confirm (Step 7)

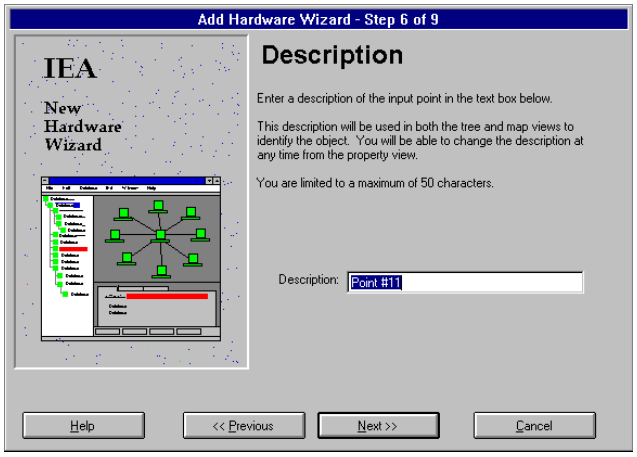


Figure 111 - Description (Step 8)

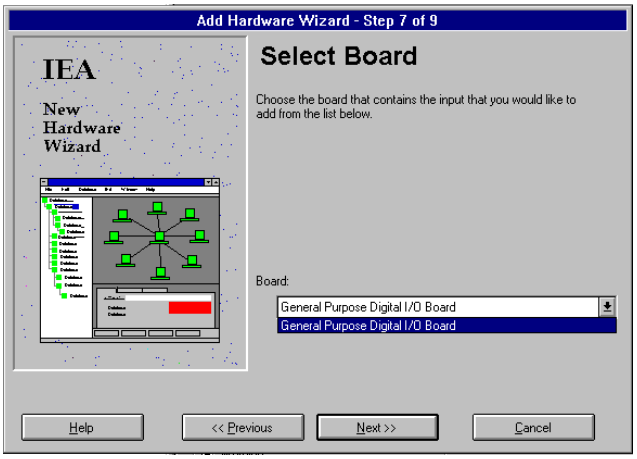


Figure 112 - Select Board (Step 9)

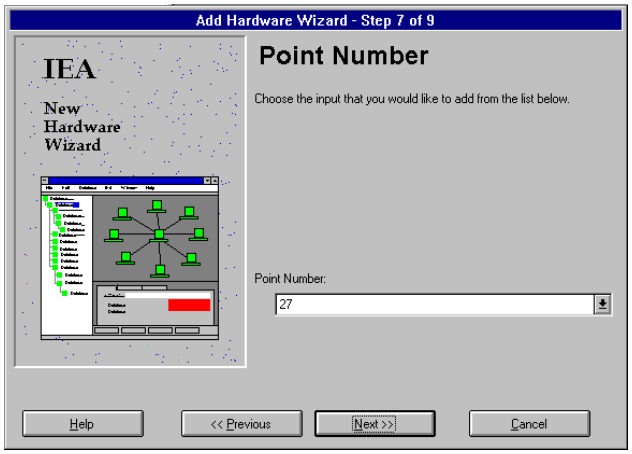


Figure 113 - Point Number (Step 10)

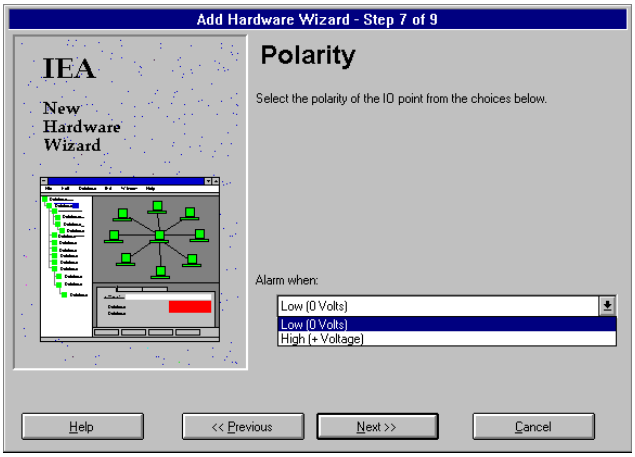


Figure 114 - Polarity (Step 11)

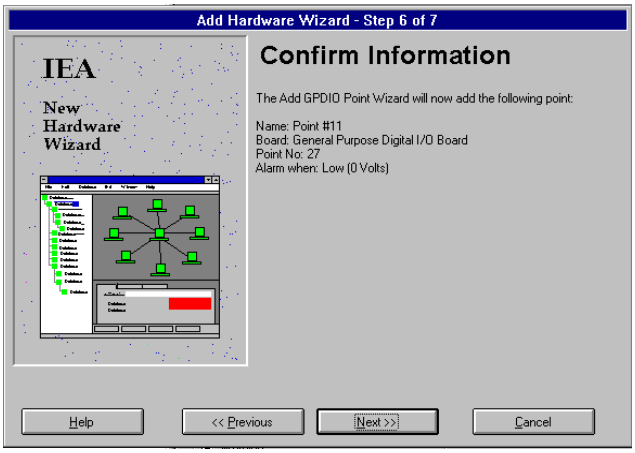


Figure 115 - Confirm (Step 12)

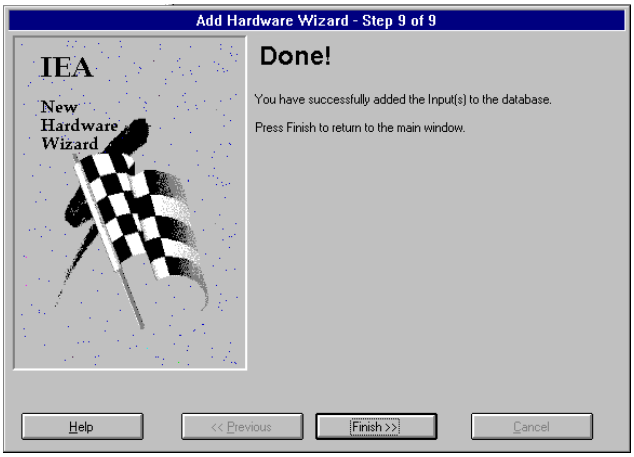


Figure 116 - Finish (Step 13)

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APPENDIX A

IEA INPUT/OUTPUT SIGNAL MAPPING

Table A-1 Digital Interrupt Board Signals

DIGITAL INTERRUPT BOARD	I/O DIR	DIGITAL INTERRUPT BOARD	ISOLATION BOARD TYPE	ALARM XCONN	SIGNAL NAME	ALARM XCONN	MORE XCONN
PTT Channel 01		J3-47		J2-47	DT1-01	J17-02	J18-02
PTT Channel 02	I	J3-45	D	J2-45	DT1-02	J17-04	J18-04
PTT Channel 03	N	J3-43	I	J2-43	DT1-03	J17-06	J18-06
PTT Channel 04	P	J3-41	O	J2-41	DT1-04	J17-08	J18-08
PTT Channel 05	U	J3-39	D	J2-39	DT1-05	J17-10	J18-10
PTT Channel 06	T	J3-37	E	J2-37	DT1-06	J17-12	J18-12
PTT Channel 07		J3-35	S	J2-35	DT1-07	J17-14	J18-14
PTT Channel 08		J3-33		J2-33	DT1-08	J17-16	J18-16
PTT Channel 09		J3-31		J2-31	DT1-09	J17-18	J18-18
PTT Channel 10	I	J3-29	D	J2-29	DT1-10	J17-20	J18-20
PTT Channel 11	N	J3-27	I	J2-27	DT1-11	J17-22	J18-22
PTT Channel 12	P	J3-25	O	J2-25	DT1-12	J17-24	J18-24
PTT Channel 13	U	J3-23	D	J2-23	DT1-13	J17-26	J18-26
PTT Channel 14	T	J3-21	E	J2-21	DT1-14	J17-28	J18-28
PTT Channel 15		J3-19	S	J2-19	DT1-15	J17-30	J18-30
PTT Channel 16		J3-17		J2-17	DT1-16	J17-32	J18-32
PTT Channel 17		J3-15		J2-15	DT1-17	J17-34	J18-34
PTT Channel 18	I	J3-13	D	J2-13	DT1-18	J17-36	J18-36
PTT Channel 19	N	J3-11	I	J2-11	DT1-19	J17-38	J18-38
PTT Channel 20	P	J3-09	O	J2-09	DT1-20	J17-40	J18-40
PTT Channel 21	U	J3-07	D	J2-07	DT1-21	J17-42	J18-42
PTT Channel 22	T	J3-05	E	J2-05	DT1-22	J17-44	J18-44
PTT Channel 23		J3-03	S	J2-03	DT1-23	J17-46	J18-46
PTT Channel 24		J3-01		J2-01	DT1-24	J17-48	J18-48

Continued

Continued

DIGITAL INTERRUPT BOARD	I/O DIR	DIGITAL INTERRUPT BOARD	ISOLATION BOARD TYPE	ALARM XCONN	SIGNAL NAME	ALARM XCONN	MORE XCONN
L4 Receiver Fault Channel 01	I	J2-47	D	J3-47	DT1-25	J16-02	
L4 Receiver Fault Channel 02	N	J2-45	I	J3-45	DT1-26	J16-04	
L4 Receiver Fault Channel 03	P	J2-43	O	J3-43	DT1-27	J16-06	
L4 Receiver Fault Channel 04	U	J2-41	D	J3-41	DT1-28	J16-08	
L4 Receiver Fault Channel 05	T	J2-39	E	J3-39	DT1-29	J16-10	
L4 Receiver Fault Channel 06		J2-37	S	J3-37	DT1-30	J16-12	
L4 Receiver Fault Channel 07		J2-35		J3-35	DT1-31	J16-14	
L4 Receiver Fault Channel 08		J2-33		J3-33	DT1-32	J16-16	
L4 Receiver Fault Channel 09		J2-31		J3-31	DT1-33	J16-18	
L4 Receiver Fault Channel 10	I	J2-29	D	J3-29	DT1-34	J16-20	
L4 Receiver Fault Channel 11	N	J2-27	I	J3-27	DT1-35	J16-22	
L4 Receiver Fault Channel 12	P	J2-25	O	J3-25	DT1-36	J16-24	
L4 Receiver Fault Channel 13	U	J2-23	D	J3-23	DT1-37	J16-26	
L4 Receiver Fault Channel 14	T	J2-21	E	J3-21	DT1-38	J16-28	
L4 Receiver Fault Channel 15		J2-19	S	J3-19	DT1-39	J16-30	
L4 Receiver Fault Channel 16		J2-17		J3-17	DT1-40	J16-32	
L4 Receiver Fault Channel 17		J2-15		J3-15	DT1-41	J16-34	
L4 Receiver Fault Channel 18	I	J2-13	D	J3-13	DT1-42	J16-36	
L4 Receiver Fault Channel 19	N	J2-11	I	J3-11	DT1-43	J16-38	
L4 Receiver Fault Channel 20	P	J2-09	O	J3-09	DT1-44	J16-40	
L4 Receiver Fault Channel 21	U	J2-07	D	J3-07	DT1-45	J16-42	
L4 Receiver Fault Channel 22	T	J2-05	E	J3-05	DT1-46	J16-44	
L4 Receiver Fault Channel 23		J2-03	S	J3-03	DT1-47	J16-46	
L4 Receiver Fault Channel 24		J2-01		J3-01	DT1-48	J16-48	

Table A-2 Analog I/O Board Signals

ANALOG I/O BOARD	I/O DIR	ANALOG BOARD	ISOLATION BOARD	ALARM XCONN	SIGNAL NAME	ALARM XCONN
RF POWER Channel 01		P1-01		J1-01	AI1-01	J16-01
RF POWER Channel 02	I	P1-03		J1-03	AI1-02	J16-03
RF POWER Channel 03	N	P1-05	N	J1-05	AI1-03	J16-05
RF POWER Channel 04	P	P1-07	O	J1-07	AI1-04	J16-07
RF POWER Channel 05	U	P1-09	N	J1-09	AI1-05	J16-09
RF POWER Channel 06	T	P1-11	E	J1-11	AI1-06	J16-11
RF POWER Channel 07		P1-13		J1-13	AI1-07	J16-13
RF POWER Channel 08		P1-15		J1-15	AI1-08	J16-15
RF POWER Channel 09		P1-17		J1-17	AI1-09	J16-17
RF POWER Channel 10	I	P1-19		J1-19	AI1-10	J16-19
RF POWER Channel 11	N	P1-21	N	J1-21	AI1-11	J16-21
RF POWER Channel 12	P	P1-23	O	J1-23	AI1-12	J16-23
RF POWER Channel 13	U	P1-25	N	J1-25	AI1-13	J16-25
RF POWER Channel 14	T	P1-27	E	J1-27	AI1-14	J16-27
RF POWER Channel 15		P1-29		J1-29	AI1-15	J16-29
RF POWER Channel 16		P1-31		J1-31	AI1-16	J16-31
RF POWER Channel 17		P1-33		J1-33	AI1-17	J16-33
RF POWER Channel 18	I	P1-35		J1-35	AI1-18	J16-35
RF POWER Channel 19	N	P1-37	N	J1-37	AI1-19	J16-37
RF POWER Channel 20	P	P1-39	O	J1-39	AI1-20	J16-39
RF POWER Channel 21	U	P1-41	N	J1-41	AI1-21	J16-41
RF POWER Channel 22	T	P1-43	E	J1-43	AI1-22	J16-43
RF POWER Channel 23		P1-45		J1-45	AI1-23	J16-45
RF POWER Channel 24		P1-47		J1-47	AI1-24	J16-47
RF POWER Antenna 01 Forward		P1-02		J1-02	AI1-25	J29-02
RF POWER Antenna 01 Reverse	I	P1-04		J1-04	AI1-26	J29-04
RF POWER Antenna 02 Forward	N	P1-06	N	J1-06	AI1-27	J30-02
RF POWER Antenna 02 Reverse	P	P1-08	O	J1-08	AI1-28	J30-04
RF POWER Antenna 03 Forward	U	P1-10	N	J1-10	AI1-29	J31-02
RF POWER Antenna 03 Reverse	T	P1-12	E	J1-12	AI1-30	J31-04
RF POWER Antenna 04 Forward		P1-14		J1-14	AI1-31	J32-02
RF POWER Antenna 04 Reverse		P1-16		J1-16	AI1-32	J32-04
RF POWER Antenna 05 Forward		P1-18		J1-18	AI1-33	J33-02
RF POWER Antenna 05 Reverse	I	P1-20		J1-20	AI1-34	J33-04
RF POWER Antenna 06 Forward	N	P1-22	N	J1-22	AI1-35	J34-02
RF POWER Antenna 06 Reverse	P	P1-24	O	J1-24	AI1-36	J34-04
Not Assigned	U	P1-26	N	J1-26	AI1-37	J35-02
Not Assigned	T	P1-28	E	J1-28	AI1-38	J35-04
Not Assigned		P1-30		J1-30	AI1-39	J36-02
Not Assigned		P1-32		J1-32	AI1-40	J36-04
Not Assigned		P1-34		J1-34	AI1-41	J37-02
Not Assigned	I	P1-36	N	J1-36	AI1-42	J37-04
Not Assigned	N	P1-38	O	J1-38	AI1-43	J38-02
Not Assigned	P	P1-40	N	J1-40	AI1-44	J38-04
Not Assigned	U	P1-42	E	J1-42	AI1-45	J39-02
Not Assigned	T	P1-44		J1-44	AI1-46	J39-04

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ANALOG I/O BOARD	I/O DIR	ANALOG BOARD	ISOLATION BOARD	ALARM XCONN	SIGNAL NAME	ALARM XCONN
Not Assigned		P1-46		J1-46	AI1-47	J40-02
Not Assigned		P1-48		J1-48	AI1-48	J40-04

Table A-3 General Purpose I/O Digital (GPDIO) Board Signals

IEA PATH INFO	IEA I/O POINT	I/O DIR	GPDIO BOARD	ISOLATION BOARD	ALARM XCONN	NAME	ALARM XCONN	MORE XCONN	MORE XCONN
SITE > CHANNELS > CHANNEL 01 > GETC Module > GETC_Inhibit Alarm	1		P1-47	I	J5-47	DO1-01	J19-26		
SITE > CHANNELS > CHANNEL 02 > GETC Module > GETC_Inhibit Alarm	2	O	P1-45	N	J5-45	DO1-02	J19-27		
SITE > CHANNELS > CHANNEL 03 > GETC Module > GETC_Inhibit Alarm	3	U	P1-43	V	J5-43	DO1-03	J19-28		
SITE > CHANNELS > CHANNEL 04 > GETC Module > GETC_Inhibit Alarm	4	T	P1-41	E	J5-41	DO1-04	J19-29		
SITE > CHANNELS > CHANNEL 05 > GETC Module > GETC_Inhibit Alarm	5	P	P1-39	R	J5-39	DO1-05	J19-30		
SITE > CHANNELS > CHANNEL 06 > GETC Module > GETC_Inhibit Alarm	6	U	P1-37	T	J5-37	DO1-06	J19-31		
SITE > CHANNELS > CHANNEL 07 > GETC Module > GETC_Inhibit Alarm	7	T	P1-35	E	J5-35	DO1-07	J19-32		
SITE > CHANNELS > CHANNEL 08 > GETC Module > GETC_Inhibit Alarm	8		P1-33	R	J5-33	DO1-08	J19-33		
SITE > CHANNELS > CHANNEL 09 > GETC Module > GETC_Inhibit Alarm	9		P1-31	I	J5-31	DO1-09	J19-34		
SITE > CHANNELS > CHANNEL 10 > GETC Module > GETC_Inhibit Alarm	10	O	P1-29	N	J5-29	DO1-10	J19-35		
SITE > CHANNELS > CHANNEL 11 > GETC Module > GETC_Inhibit Alarm	11	U	P1-27	V	J5-27	DO1-11	J19-36		
SITE > CHANNELS > CHANNEL 12 > GETC Module > GETC_Inhibit Alarm	12	T	P1-25	E	J5-25	DO1-12	J19-37		
SITE > CHANNELS > CHANNEL 13 > GETC Module > GETC_Inhibit Alarm	13	P	P1-23	R	J5-23	DO1-13	J19-38		
SITE > CHANNELS > CHANNEL 14 > GETC Module > GETC_Inhibit Alarm	14	U	P1-21	T	J5-21	DO1-14	J19-39		
SITE > CHANNELS > CHANNEL 15 > GETC Module > GETC_Inhibit Alarm	15	T	P1-19	E	J5-19	DO1-15	J19-40		
SITE > CHANNELS > CHANNEL 16 > GETC Module > GETC_Inhibit Alarm	16		P1-17	R	J5-17	DO1-16	J19-41		
SITE > CHANNELS > CHANNEL 17 > GETC Module > GETC_Inhibit Alarm	17		P1-15	I	J5-15	DO1-17	J19-42		
SITE > CHANNELS > CHANNEL 18 > GETC Module > GETC_Inhibit Alarm	18	O	P1-13	N	J5-13	DO1-18	J19-43		
SITE > CHANNELS > CHANNEL 19 > GETC Module > GETC_Inhibit Alarm	19	U	P1-11	V	J5-11	DO1-19	J19-44		
SITE > CHANNELS > CHANNEL 20 > GETC Module > GETC_Inhibit Alarm	20	T	P1-09	E	J5-09	DO1-20	J19-45		
SITE > CHANNELS > CHANNEL 21 > GETC Module > GETC_Inhibit Alarm	21	P	P1-07	R	J5-07	DO1-21	J19-46		
SITE > CHANNELS > CHANNEL 22 > GETC Module > GETC_Inhibit Alarm	22	U	P1-05	T	J5-05	DO1-22	J19-47		
SITE > CHANNELS > CHANNEL 23 > GETC Module > GETC_Inhibit Alarm	23	T	P1-03	E	J5-03	DO1-23	J19-48		
SITE > CHANNELS > CHANNEL 24 > GETC Module > GETC_Inhibit Alarm	24		P1-01	R	J5-01	DO1-24	J19-49		

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IEA PATH INFO	IEA IO POINT	I/O DIR	GPDIO BOARD	ISOLATION BOARD	ALARM XCONN	NAME	ALARM XCONN	MORE XCONN	MORE XCONN
BYPASS	25		P2-47		J6-47	DO2-01	J20-26	J48-02	
Unassigned	26	O	P2-45	D	J6-45	DO2-02	J20-27	J48-04	
Unassigned	27	U	P2-43	I	J6-43	DO2-03	J20-28	J49-02	
Unassigned	28	T	P2-41	O	J6-41	DO2-04	J20-29	J49-04	
Unassigned	29	P	P2-39	D	J6-39	DO2-05	J20-30	J50-02	
Unassigned	30	U	P2-37	E	J6-37	DO2-06	J20-31	J50-04	
Unassigned	31	T	P2-35	S	J6-35	DO2-07	J20-32	J51-02	
Unassigned	32		P2-33		J6-33	DO2-08	J20-33	J51-04	
GETC Reset	33		P2-31	I	J6-31	DO2-09	J20-34	J52-02	
Unassigned	34	O	P2-29	N	J6-29	DO2-10	J20-35	J52-04	
Unassigned	35	U	P2-27	V	J6-27	DO2-11	J20-36		
Unassigned	36	T	P2-25	E	J6-25	DO2-12	J20-37		
Unassigned	37	P	P2-23	R	J6-23	DO2-13	J20-38		
Unassigned	38	U	P2-21	T	J6-21	DO2-14	J20-39		
Unassigned	39	T	P2-19	E	J6-19	DO2-15	J20-40		
Unassigned	40		P2-17	R	J6-17	DO2-16	J20-41		
Unassigned	41		P2-15	I	J6-15	DO2-17	J20-42		
Unassigned	42	O	P2-13	N	J6-13	DO2-18	J20-43		
Unassigned	43	U	P2-11	V	J6-11	DO2-19	J20-44		
Unassigned	44	T	P2-09	E	J6-09	DO2-20	J20-45		
Unassigned	45	P	P2-07	R	J6-07	DO2-21	J20-46		
Unassigned	46	U	P2-05	T	J6-05	DO2-22	J20-47		
Unassigned	47	T	P2-03	E	J6-03	DO2-23	J20-48		
Unassigned	48		P2-01	R	J6-01	DO2-24	J20-49		

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IEA PATH INFO	IEA IO POINT	I/O DIR	GPDIO BOARD	ISOLATION BOARD	ALARM XCONN	NAME	ALARM XCONN	MORE XCONN	MORE XCONN
SITE > DIGITAL ALARMS > LSD Selector Modules > LSD Selector A Alarm	49		P3-47		J7-47	DI1-01	J21-01		
SITE > DIGITAL ALARMS > LSD Selector Modules > LSD Selector B Alarm	50	I	P3-45	D	J7-45	DI1-02	J21-26		
SITE > DIGITAL ALARMS > LSD Selector Modules > No Low Speed Data	51	N	P3-43	I	J7-43	DI1-03	J21-02		
SITE > DIGITAL ALARMS > Timing Modules > Module A Fault	52	P	P3-41	O	J7-41	DI1-04	J21-27		
SITE > DIGITAL ALARMS > Timing Modules > Module B Fault	53	U	P3-39	D	J7-39	DI1-05	J21-03		
SITE > DIGITAL ALARMS > Timing Modules > Timing Module Major	54	T	P3-37	E	J7-37	DI1-06	J21-28		
SITE > DIGITAL ALARMS > Timing Modules > FSL (CP) or LL 1PPS (TX/RX)	55		P3-35	S	J7-35	DI1-07	J21-04		
SITE > DIGITAL ALARMS > Resync Modules > Resync Card 1	56		P3-33		J7-33	DI1-08	J21-29		
SITE > DIGITAL ALARMS > Resync Modules > Resync Card 2	57		P3-31		J7-31	DI1-09	J21-05		
SITE > DIGITAL ALARMS > Resync Modules > Resync Card 3	58	I	P3-29	D	J7-29	DI1-10	J21-30		
SITE > DIGITAL ALARMS > Resync Modules > Resync Card 4	59	N	P3-27	I	J7-27	DI1-11	J21-06		
SITE > DIGITAL ALARMS > Timing Modules > GPS A Fault	60	P	P3-25	O	J7-25	DI1-12	J21-31		
SITE > DIGITAL ALARMS > Timing Modules > GPS B Fault	61	U	P3-23	D	J7-23	DI1-13	J21-07		
SITE > DIGITAL ALARMS > LSD Selector Modules > LSD Selector A Active	62	T	P3-21	E	J7-21	DI1-14	J21-32		
SITE > DIGITAL ALARMS > LSD Selector Modules > LSD Selector B Active	63		P3-19	S	J7-19	DI1-15	J21-08		
SITE > DIGITAL ALARMS > Timing Modules > Module A Active	64		P3-17		J7-17	DI1-16	J21-33		
SITE > DIGITAL ALARMS > Timing Modules > Module B Active	65		P3-15		J7-15	DI1-17	J21-09		
Unassigned	66	I	P3-13	D	J7-13	DI1-18	J21-34		
Unassigned	67	N	P3-11	I	J7-11	DI1-19	J21-10		
Unassigned	68	P	P3-09	O	J7-09	DI1-20	J21-35		
Unassigned	69	U	P3-07	D	J7-07	DI1-21	J21-11		
SITE > DIGITAL ALARMS > GPS Dist Module > Major Alarm	70	T	P3-05	E	J7-05	DI1-22	J21-36		
SITE > DIGITAL ALARMS > GPS Dist Module > Minor Alarm	71		P3-03	S	J7-03	DI1-23	J21-12		
SITE > DIGITAL ALARMS > Power Supply Alarms > Sim Equip. Rack PS	72		P3-01		J7-01	DI1-24	J21-37		

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IEA PATH INFO	IEA IO POINT	I/O DIR	GPDIO BOARD	ISOLATION BOARD	ALARM XCONN	NAME	ALARM XCONN	MORE XCONN	MORE XCONN
SITE > Site Bypass Alarm	73		P4-47		J8-47	DI2-01	J21-13&47	J41-01	J46-02&03
Unassigned	74	I	P4-45	D	J8-45	DI2-02	J21-38		
SITE > DIGITAL ALARMS > Timing Modules > GPS Major (CP) or LL Backup (TX/RX)	75	N	P4-43	I	J8-43	DI2-03	J21-14		
SITE > Split System Enable	76	P	P4-41	O	J8-41	DI2-04	J21-39	J46-04&05	
SITE > DIGITAL ALARMS > CC/TU Alarms > Buffer Board Relay	77	U	P4-39	D	J8-39	DI2-05	J41-02		
SITE > DIGITAL ALARMS > CC/TU Alarms > Remote TU Alarm	78	T	P4-37	E	J8-37	DI2-06	J41-03		
SITE > DIGITAL ALARMS > CC/TU Alarms > CC Monitor Alarm	79		P4-35	S	J8-35	DI2-07	J41-04		
Unassigned	80		P4-33		J8-33	DI2-08	J41-05		
Unassigned	81		P4-31		J8-31	DI2-09	J42-02		
Unassigned	82	I	P4-29	D	J8-29	DI2-10	J42-03		
Unassigned	83	N	P4-27	I	J8-27	DI2-11	J42-04		
Unassigned	84	P	P4-25	O	J8-25	DI2-12	J42-05		
Unassigned	85	U	P4-23	D	J8-23	DI2-13	J43-02		
Unassigned	86	T	P4-21	E	J8-21	DI2-14	J43-03		
Unassigned	87		P4-19	S	J8-19	DI2-15	J43-04		
Unassigned	88		P4-17		J8-17	DI2-16	J43-05		
Unassigned	89		P4-15		J8-15	DI2-17	J44-02		
Unassigned	90	I	P4-13	D	J8-13	DI2-18	J44-03		
Unassigned	91	N	P4-11	I	J8-11	DI2-19	J44-04		
Unassigned	92	P	P4-09	O	J8-09	DI2-20	J44-05		
Unassigned	93	U	P4-07	D	J8-07	DI2-21	J45-02		
Unassigned	94	T	P4-05	E	J8-05	DI2-22	J45-03		
Unassigned	95		P4-03	S	J8-03	DI2-23	J45-04		
Unassigned	96		P4-01		J8-01	DI2-24	J45-05		

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IEA PATH INFO	IEA IO POINT	I/O DIR	GPDIO BOARD	ISOLATION BOARD	ALARM XCONN	NAME	ALARM XCONN	MORE XCONN	MORE XCONN
Unassigned	97		P5-47		J9-47	DI3-01	J22-26		
Unassigned	98	C	P5-45		J9-45	DI3-02	J22-27		
Unassigned	99	H	P5-43	N	J9-43	DI3-03	J22-28		
Unassigned	100	O	P5-41	O	J9-41	DI3-04	J22-29		
Unassigned	101	I	P5-39	N	J9-39	DI3-05	J22-30		
Unassigned	102	C	P5-37	E	J9-37	DI3-06	J22-31		
Unassigned	103	E	P5-35		J9-35	DI3-07	J22-32		
Unassigned	104		P5-33		J9-33	DI3-08	J22-33		
Unassigned	105		P5-31		J9-31	DI3-09	J22-34		
Unassigned	106	C	P5-29		J9-29	DI3-10	J22-35		
Unassigned	107	H	P5-27	N	J9-27	DI3-11	J22-36		
Unassigned	108	O	P5-25	O	J9-25	DI3-12	J22-37		
Unassigned	109	I	P5-23	N	J9-23	DI3-13	J22-38		
Unassigned	110	C	P5-21	E	J9-21	DI3-14	J22-39		
Unassigned	111	E	P5-19		J9-19	DI3-15	J22-40		
Unassigned	112		P5-17		J9-17	DI3-16	J22-41		
Unassigned	113		P5-15		J9-15	DI3-17	J22-42		
Unassigned	114	C	P5-13		J9-13	DI3-18	J22-43		
Unassigned	115	H	P5-11	N	J9-11	DI3-19	J22-44		
Unassigned	116	O	P5-09	O	J9-09	DI3-20	J22-45		
Unassigned	117	I	P5-07	N	J9-07	DI3-21	J22-46		
Unassigned	118	C	P5-05	E	J9-05	DI3-22	J22-47		
Unassigned	119	E	P5-03		J9-03	DI3-23	J22-48		
Unassigned	120		P5-01		J9-01	DI3-24	J22-49		

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IEA PATH INFO	IEA IO POINT	I/O DIR	GPDIO BOARD	ISOLATION BOARD	ALARM XCONN	NAME	ALARM XCONN	MORE XCONN	MORE XCONN
Unassigned	121		P6-47		J10-47	DI4-01	J23-26		
Unassigned	122	C	P6-45		J10-45	DI4-02	J23-27		
Unassigned	123	H	P6-43	N	J10-43	DI4-03	J23-28		
Unassigned	124	O	P6-41	O	J10-41	DI4-04	J23-29		
Unassigned	125	I	P6-39	N	J10-39	DI4-05	J23-30		
Unassigned	126	C	P6-37	E	J10-37	DI4-06	J23-31		
Unassigned	127	E	P6-35		J10-35	DI4-07	J23-32		
Unassigned	128		P6-33		J10-33	DI4-08	J23-33		
Unassigned	129		P6-31		J10-31	DI4-09	J23-34		
Unassigned	130	C	P6-29		J10-29	DI4-10	J23-35		
Unassigned	131	H	P6-27	N	J10-27	DI4-11	J23-36		
Unassigned	132	O	P6-25	O	J10-25	DI4-12	J23-37		
Unassigned	133	I	P6-23	N	J10-23	DI4-13	J23-38		
Unassigned	134	C	P6-21	E	J10-21	DI4-14	J23-39		
Unassigned	135	E	P6-19		J10-19	DI4-15	J23-40		
Unassigned	136		P6-17		J10-17	DI4-16	J23-41		
Unassigned	137		P6-15		J10-15	DI4-17	J23-42		
Unassigned	138	C	P6-13		J10-13	DI4-18	J23-43		
Unassigned	139	H	P6-11	N	J10-11	DI4-19	J23-44		
Unassigned	140	O	P6-09	O	J10-09	DI4-20	J23-45		
Unassigned	141	I	P6-07	N	J10-07	DI4-21	J23-46		
Unassigned	142	C	P6-05	E	J10-05	DI4-22	J23-47		
Unassigned	143	E	P6-03		J10-03	DI4-23	J23-48		
Unassigned	144		P6-01		J10-01	DI4-24	J23-49		

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IEA PATH INFO	IEA IO POINT	I/O DIR	GPDIO BOARD	ISOLATION BOARD	ALARM XCONN	NAME	ALARM XCONN	MORE XCONN	MORE XCONN
Unassigned	145		P7-47		J11-47	DI5-01	J24-26		
Unassigned	146	C	P7-45		J11-45	DI5-02	J24-27		
Unassigned	147	H	P7-43	N	J11-43	DI5-03	J24-28		
Unassigned	148	O	P7-41	O	J11-41	DI5-04	J24-29		
Unassigned	149	I	P7-39	N	J11-39	DI5-05	J24-30		
Unassigned	150	C	P7-37	E	J11-37	DI5-06	J24-31		
Unassigned	151	E	P7-35		J11-35	DI5-07	J24-32		
Unassigned	152		P7-33		J11-33	DI5-08	J24-33		
Unassigned	153		P7-31		J11-31	DI5-09	J24-34		
Unassigned	154	C	P7-29		J11-29	DI5-10	J24-35		
Unassigned	155	H	P7-27	N	J11-27	DI5-11	J24-36		
Unassigned	156	O	P7-25	O	J11-25	DI5-12	J24-37		
Unassigned	157	I	P7-23	N	J11-23	DI5-13	J24-38		
Unassigned	158	C	P7-21	E	J11-21	DI5-14	J24-39		
Unassigned	159	E	P7-19		J11-19	DI5-15	J24-40		
Unassigned	160		P7-17		J11-17	DI5-16	J24-41		
Unassigned	161		P7-15		J11-15	DI5-17	J24-42		
Unassigned	162	C	P7-13		J11-13	DI5-18	J24-43		
Unassigned	163	H	P7-11	N	J11-11	DI5-19	J24-44		
Unassigned	164	O	P7-09	O	J11-09	DI5-20	J24-45		
Unassigned	165	I	P7-07	N	J11-07	DI5-21	J24-46		
Unassigned	166	C	P7-05	E	J11-05	DI5-22	J24-47		
Unassigned	167	E	P7-03		J11-03	DI5-23	J24-48		
Unassigned	168		P7-01		J11-01	DI5-24	J24-49		

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IEA PATH INFO	IEA IO POINT	I/O DIR	GPDIO BOARD	ISOLATION BOARD	ALARM XCONN	NAME	ALARM XCONN	MORE XCONN	MORE XCONN
Unassigned	169		P8-47		J12-47	DI6-01	J25-26		
Unassigned	170	C	P8-45		J12-45	DI6-02	J25-27		
Unassigned	171	H	P8-43	N	J12-43	DI6-03	J25-28		
Unassigned	172	O	P8-41	O	J12-41	DI6-04	J25-29		
Unassigned	173	I	P8-39	N	J12-39	DI6-05	J25-30		
Unassigned	174	C	P8-37	E	J12-37	DI6-06	J25-31		
Unassigned	175	E	P8-35		J12-35	DI6-07	J25-32		
Unassigned	176		P8-33		J12-33	DI6-08	J25-33		
Unassigned	177		P8-31		J12-31	DI6-09	J25-34		
Unassigned	178	C	P8-29		J12-29	DI6-10	J25-35		
Unassigned	179	H	P8-27	N	J12-27	DI6-11	J25-36		
Unassigned	180	O	P8-25	O	J12-25	DI6-12	J25-37		
Unassigned	181	I	P8-23	N	J12-23	DI6-13	J25-38		
Unassigned	182	C	P8-21	E	J12-21	DI6-14	J25-39		
Unassigned	183	E	P8-19		J12-19	DI6-15	J25-40		
Unassigned	184		P8-17		J12-17	DI6-16	J25-41		
Unassigned	185		P8-15		J12-15	DI6-17	J25-42		
Unassigned	186	C	P8-13		J12-13	DI6-18	J25-43		
Unassigned	187	H	P8-11	N	J12-11	DI6-19	J25-44		
Unassigned	188	O	P8-09	O	J12-09	DI6-20	J25-45		
Unassigned	189	I	P8-07	N	J12-07	DI6-21	J25-46		
Unassigned	190	C	P8-05	E	J12-05	DI6-22	J25-47		
Unassigned	191	E	P8-03		J12-03	DI6-23	J25-48		
Unassigned	192		P8-01		J12-01	DI6-24	J25-49		

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IEA PATH INFO	IEA IO POINT	I/O DIR	GPDIO BOARD	ISOLATION BOARD	ALARM XCONN	NAME	ALARM XCONN	MORE XCONN	MORE XCONN
Unassigned	193		P9-47		J13-47	DI7-01	J26-26		
Unassigned	194	C	P9-45		J13-45	DI7-02	J26-27		
Unassigned	195	H	P9-43	N	J13-43	DI7-03	J26-28		
Unassigned	196	O	P9-41	O	J13-41	DI7-04	J26-29		
Unassigned	197	I	P9-39	N	J13-39	DI7-05	J26-30		
Unassigned	198	C	P9-37	E	J13-37	DI7-06	J26-31		
Unassigned	199	E	P9-35		J13-35	DI7-07	J26-32		
Unassigned	200		P9-33		J13-33	DI7-08	J26-33		
Unassigned	201		P9-31		J13-31	DI7-09	J26-34		
Unassigned	202	C	P9-29		J13-29	DI7-10	J26-35		
Unassigned	203	H	P9-27	N	J13-27	DI7-11	J26-36		
Unassigned	204	O	P9-25	O	J13-25	DI7-12	J26-37		
Unassigned	205	I	P9-23	N	J13-23	DI7-13	J26-38		
Unassigned	206	C	P9-21	E	J13-21	DI7-14	J26-39		
Unassigned	207	E	P9-19		J13-19	DI7-15	J26-40		
Unassigned	208		P9-17		J13-17	DI7-16	J26-41		
Unassigned	209		P9-15		J13-15	DI7-17	J26-42		
Unassigned	210	C	P9-13		J13-13	DI7-18	J26-43		
Unassigned	211	H	P9-11	N	J13-11	DI7-19	J26-44		
Unassigned	212	O	P9-09	O	J13-09	DI7-20	J26-45		
Unassigned	213	I	P9-07	N	J13-07	DI7-21	J26-46		
Unassigned	214	C	P9-05	E	J13-05	DI7-22	J26-47		
Unassigned	215	E	P9-03		J13-03	DI7-23	J26-48		
Unassigned	216		P9-01		J13-01	DI7-24	J26-49		

APPENDIX _B

COMMUNICATIONS PORT ALLOCATION

Table B-1 COM Port Allocation

		Control Point			Transmit Site		
COM	**Protocol**	**RAS**	**Modem**	**Interface**	**RAS**	**Modem**	**Description**
1	RS-232			Mouse			Mouse
2	RS-232	✓	Modem	T1 Backup	✓	Modem	T1 Backup
3	RS-232			Site Controller ACU Port	✓	Null Modem	Control Point
4	RS-232			Mux Programming Port			Mux Programming Port
5	RS-232			*n/c*			Test Unit Radio
6	RS-422 **			GPS Programming Port			GPS Programming Port
7	RS-232	✓	Null Modem	TX Site			Master III Base Station 1
8	RS-232	✓	Null Modem	TX Site			Master III Base Station 2
9	RS-232	✓	Null Modem	TX Site			Master III Base Station 3
10	RS-232	✓	Null Modem	TX Site			Master III Base Station 4
11	RS-232	✓	Null Modem	TX Site			Master III Base Station 5
12	RS-232	✓	Null Modem	TX Site			Master III Base Station 6
13	RS-232	✓	Null Modem	TX Site			Master III Base Station 7
14	RS-232	✓	Null Modem	TX Site			Master III Base Station 8
15	RS-232	✓	Null Modem	TX Site			Master III Base Station 9
16	RS-232	✓	Null Modem	TX Site			Master III Base Station 10
17	RS-232	✓	Null Modem	TX Site			Master III Base Station 11
18	RS-232	✓	Null Modem	TX Site			Master III Base Station 12
19	RS-232	✓	Null Modem	TX Site			Master III Base Station 13
20	RS-232	✓	Null Modem	TX Site			Master III Base Station 14
21	RS-232	✓	Null Modem	TX Site			Master III Base Station 15
22	RS-232	✓	Null Modem	TX Site			Master III Base Station 16
23	RS-232	✓	Null Modem	TX Site			Master III Base Station 17
24	RS-232	✓	Null Modem	TX Site			Master III Base Station 18
25	RS-232	✓	Null Modem	TX Site			Master III Base Station 19
26	RS-232	✓	Null Modem	TX Site			Master III Base Station 20
27	RS-232	✓	Null Modem	TX Site			Master III Base Station 21
28	RS-232	✓	Null Modem	TX Site			Master III Base Station 22
29	RS-232	✓	Null Modem	TX Site			Master III Base Station 23
30	RS-232	✓	Null Modem	TX Site			Master III Base Station 24
31	RS-232	✓	Modem	Remote Terminal			*n/c*
32	RS-232	✓	Modem	Remote Terminal			*n/c*
33	RS-232	✓	Modem	Remote Terminal			*n/c*
34	RS-232	✓	Null Modem	Local Terminal	✓	Null Modem	Local Terminal

** Only RS-422 used
RAS - Remote Access Service

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