User Manual

Software

InPower™ GOEM

Table of Contents

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2 Introduction

2.1 Warning

Electrical equipment and engines present hazards that can result in property damage, severe personal injury or death. The InPower tool is for use by trained and experienced technicians only. Refer to important Safety Instructions in the equipment's Operator and Maintenance manuals.

⚠️ *WARNING: Electrical equipment and engines present hazards that can result in property damage, severe personal injury or death. The InPower tool is for use by trained and experienced technicians only. Refer to important Safety Instructions in the equipment's Operator and Maintenance manuals.*

2.2 InPower

InPower™ is a Windows-based service, maintenance and diagnostic tool. This tool provides electronic service functions including: adjustments for trims and settings, monitoring, strip chart, data logging, viewing faults, and report capability.

☞ **NOTE:** **PowerCommand is a registered trademark of Cummins Inc.**

The InPower tool also can be used to save a device's trims and settings to a file. The stored settings can be viewed off-line and they can be used to configure multiple installations of the same application controller type.

Each copy of InPower is packaged and installed separately. No more than one InPower product can be installed on the same PC.

After successful completion of InPower version 9.5 and later versions, the tool must be registered and set up before it can be used. The user is prompted to register the product the first time InPower is started.

For detailed registration information, refer to the Registration and License Renewal Instruction Sheet (A030X097).

2.2.1 Commercial Products

InPower is available in two kits, one with calibration download capability and one without calibration download capability. Each product is packaged and installed separately, and each one has a unique serial number and registration password, to provide software security.

Refer to the recommended system hardware and software. Installing and using InPower requires experience using the Windows operating system.

The service PC, running InPower, is connected to the device via an RS-232 serial communications null-modem cable. *(With InPower, the term device is used to describe an application controller, like a PowerCommand® genset control).* **Figure 1** illustrates the typical method used to connect a service PC to different device types.

☞ **NOTE:** **The pin configuration for Cummins null-modem cables is included in Section 2.2.2. Be sure to use a null-modem cable that matches this configuration (the 9th pin on the DB9 female-to-female serial cable must not be connected).**

The serial cable is connected to the (COM) port on the PC with a DB9 connector. The other end of the serial cable is connected with either a DB9 connector or a 9-Pin Deutsch connector, depending on the application.
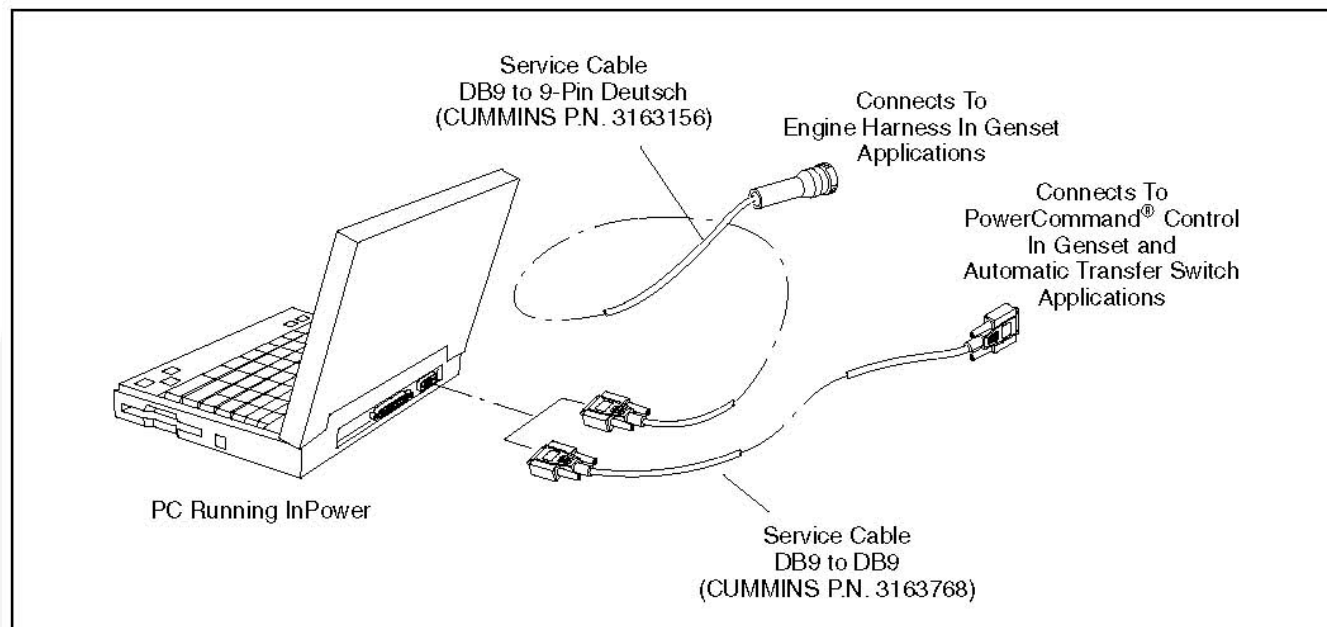
FIGURE 1.   TYPICAL INPOWER SERIAL CONNECTION METHODS

2.2.1.1 Interface Harness Kits for Commercial Products

Controller	Required Kit/Part
PS 0500, PCC 1300, PCC 1301, PCC 1302, PCC 2300, PCC 3300, MCM 3320	541-1199
PCC 3100	3164721
PCC 1300, PCC 2100, PCC 3200 (DB9-to-DB9)	3163768
PCC 3200 (DB9-to-9-pin Deutsch)	3163156

☞   **NOTE:**   **Your version of InPower may not support all of these devices.**

2.2.2   Null Modem Cable Configuration
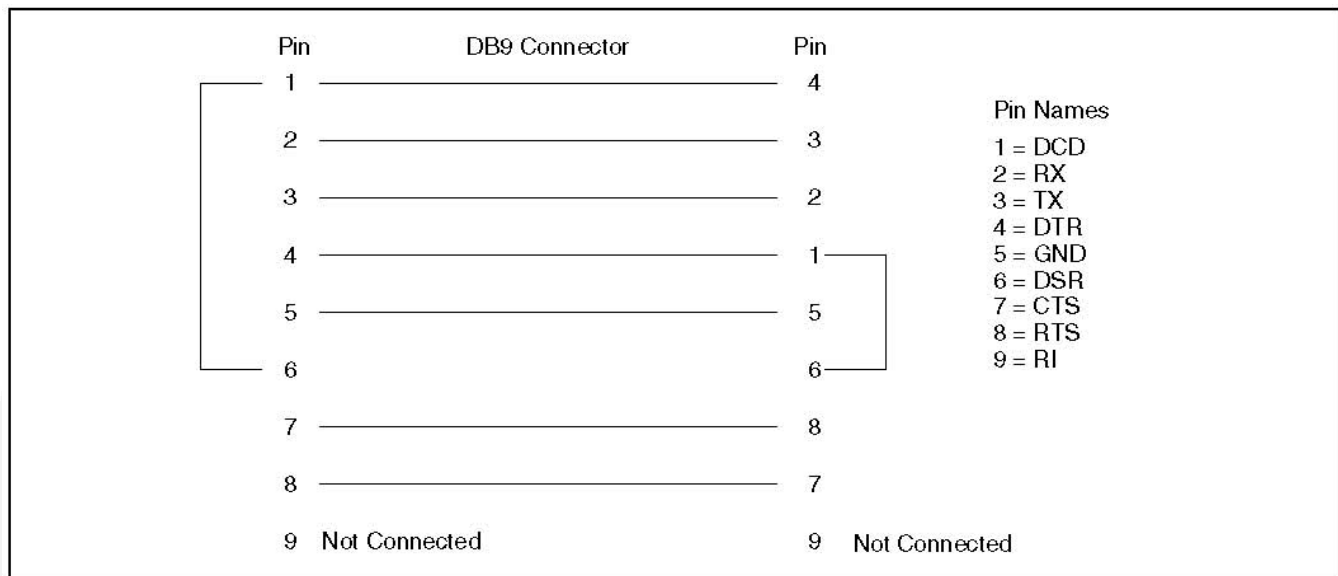
FIGURE 2.   NULL MODEM CABLE CONFIGURATION

2.3   About This User's Guide

This User's Guide covers installation and operation of the InPower service tool. Last minute software changes and corrections may be found in the InPower ReadMe file.

2.4   Supported Devices

This version of InPower supports the following devices:

- AUX101(Auxillary I/O Device)
- HMI 112
- PCC3300
- HMECM(AUX105)
- PCC2300
- HMI211
- PCC1302
- HMI220(HMI320)
- HMI320(HMI320)
- PS 0500
- PCC2300V2(PCC2300)
- HMI321
- Universal Simulator
- AUX 101LBNG(Auxillary I/O Device)

- G-Drive
- ECM 850 (Core II ECS)
- ECM 2150 (Core II ECS)

2.5   System Requirements

2.5.1   Recommended PC

The following are the recommended laptop PC specifications.

- An IBM PC or 100% compatible PC
- Recommended Operating System: Windows XP Pro, Windows Vista, or Windows 7 (see details below)
- Windows Vista Capable or Windows Vista Premium Ready

TABLE 1.   OPERATING SYSTEMS

	Windows XP Pro	Windows Vista Capable*	Windows Vista Premium Ready* or Windows 7**
Processor	500 MHz	800 MHz	1 GHz
Memory	256 MB RAM	512 MB RAM	1 GB RAM
Graphics Card	-	DirectX 9.0	DirectX 9.0 capable and WDDM 1.0 driver support
Graphics Memory	-	32 MB RAM	128 MB RAM (1920 x 1200 resolution) or 512 MB+ for greater resolution such as 2560 x 1600
Hard Drive Capacity	1.5 GB	20 GB	40 GB
Hard Drive Free Space	-	-	15 GB
Other Drives	-	-	DVD-ROM
Audio	-	-	Audio Output
* Only 32-bit Windows Vista is supported. 64-bit Windows Vista is not supported. ** Both 32-bit and 64-bit Windows 7 are supported.			

- Microsoft Internet Explorer version 5.5 or higher
- SVGA (1024x768) color display
- Windows compatible pointing device and 101 key enhanced keyboard
- 16X CD-ROM
- One free serial communications port
- Windows compatible printer (optional)

☞ **NOTE: Please note that InPower version 7.5 and higher does not support the Windows 95, Windows 98, Windows 2000, or Windows NT operating systems.**

☞ **NOTE: Windows Vista requires the use of Adobe Acrobat 8 or newer.**

2.5.2   Administrative Rights

Administrative rights are required for every installation and uninstallation.

2.6   Program Directories Installed with InPower

When InPower is installed, the InPower setup wizard creates several directories (folders) that are used by various features in InPower. You might want to look in these directories as you use the associated features.

The locations of these directories depend on two selections made during installation. If you do not know what these selections were, the default locations are shown in the following table.

TABLE 2.   DEFAULT LOCATIONS OF PROGRAM DIRECTORIES

Description	Default Location
Folder in which InPower is installed	D:\Program Files
Folder in which strip chart and monitor files are stored	D:\Program Files\InPower

The strip chart and monitor directories are created in the folder that is selected during installation. Other directories are created in the <selected folder>\Power Generation\Shared folder.

The installation error message shown below is displayed if a restricted path is selected.
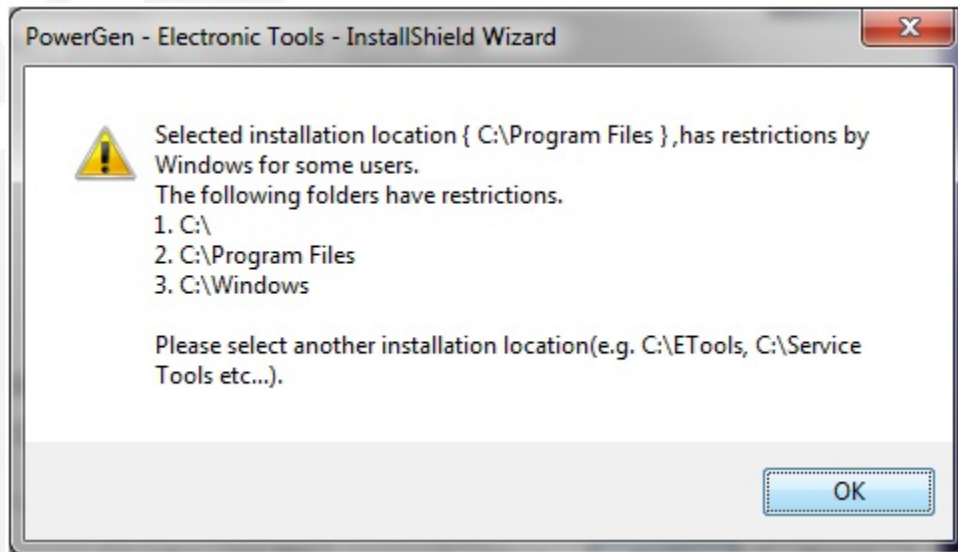
FIGURE 3.   INSTALLATION ERROR MESSAGE

InPower cannot be installed in usage-restrictive folders on Windows 7 or Windows VISTA. Usage-restrictive folders include:

- C:\
- C:\Program Files
- C:\Windows

If any of the above paths are slected for installation, the error message displayed includes suggested alternate paths.

If the D:\ drive, (the default location) is not available, another folder on the C drive can be used, as long as it isn't one of those mentioned above. For example, InPower can be installed in one of the following locations.

- C:\ETools
- C:\Cummins
- C:\InPowerPro
- C:\Service Tool

A folder with your preferred name will need to be created before installing InPower. When installing InPower, the default installation path "D:\Program Files" is displayed as shown below. To select a different location, click on the **Browse** button and navigate to the appropriate folder and click **OK**.
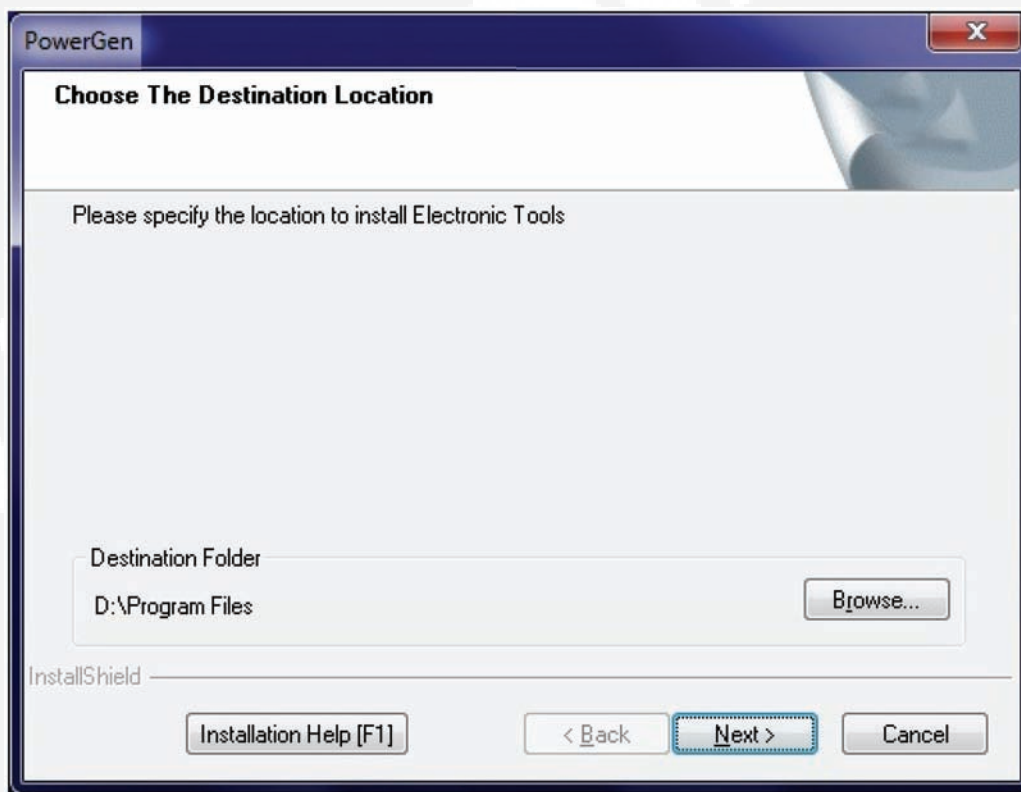
FIGURE 4.   INSTALLATION DESTINATION LOCATION DIALOG

InPower cannot be installed on an external drive. If there is an attempt to install InPower on an external drive a message is displayed.
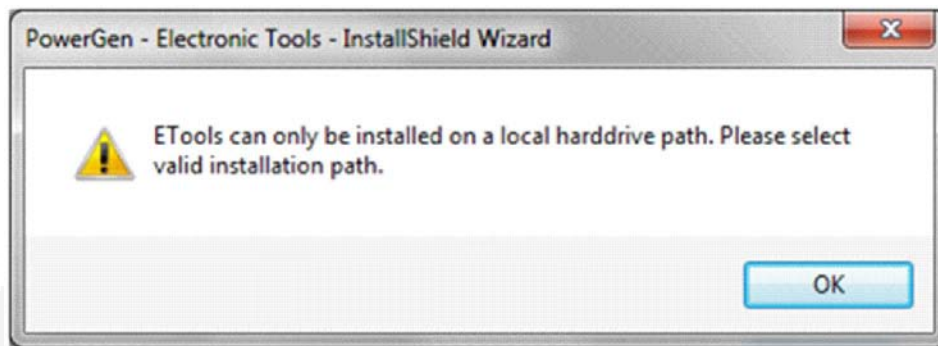
FIGURE 5.   MESSAGE FOR ATTEMPTED INSTALLATION ON EXTERNAL DRIVE

The user must have write access to the installation directory.

When the Tool Registration starts, the **Welcome to the Tool Registration Wizard** window shows:

FIGURE 6.   WELCOME TO THE TOOL REGISTRATION WIZARD WINDOW

If the user does not have write access to the installation directory when Next is selected for Manual or Web Registration, then a message window shows.

FIGURE 7.   MESSAGE WINDOW FOR READ-ONLY ACCESS

2.6.1   Monitor

The Monitor folder contains the Target Parameter List files (.TPL). This folder will contain one or more .TPL files. These files support the InPower software. The user will not need to view or access any of these files.

2.6.2   Strip Chart

The Strip Chart folder contains one or more strip chart parameter listing files (.TPL).

The files contain chart design parameters, the user will not need to view or access these files.

2.6.3   Data

The two Data folders contain data files. These files support the InPower software. The user will not need to view or access any of these files.

2.6.4   Captured Files

The Captured Files folder stores extracted (captured) device information. Initially this folder will not contain any files. Files are created when the user chooses to **Capture to File** from a connected device (**Device** menu). The user names the file and InPower appends a .CAP extension.

Captured files are read-only files. You can connect to, and view these files, but you cannot modify the file contents. Captured files can be copied (written) to a connected device, as long as the captured file is from the same device type.

Example: The Captured file is from a Genset controller, this file can be written to another (connected) Genset controller. This file cannot be written to a G-Drive controller.

2.6.5   Simulator

The Simulator folder contains Captured (.CAP) files that are used to simulate a connected device. The files are read only; however, the user can simulate editing (the changes are not actually written to the file). The Simulator feature does not allow for simulating **Edit-Save Adjustments** operations.

2.7   Start Menu Group Shortcuts

InPower installs **Start-Menu** shortcuts for the InPower applications. Clicking on any one of these shortcuts will launch the selected application.
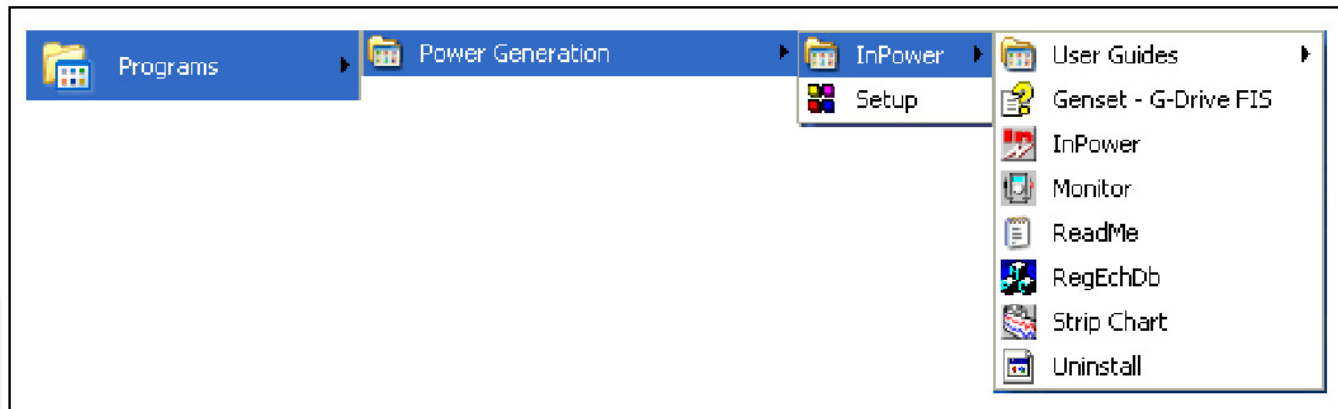
FIGURE 8.   START MENU GROUP SHORTCUTS

2.7.1   Readme File

When InPower is installed, a Readme file is copied to the Power Generation group. This file contains last minute instructions for using InPower. Open and review these instructions after the initial software installation.

2.8   User Interface

The InPower software operates in the Windows graphical environment and is compatible with Windows. You can access the system like any other Windows application. If you are unfamiliar with Windows, or have questions, refer to the *Microsoft Windows User's Guide* for your specific operating system, or click on **Help**, from the Windows **Start** menu, to view the Windows Help Topics.

All system commands are accessible by mouse and keyboard. Frequently used commands have keyboard shortcuts and tool bar access.

InPower uses the Windows Explorer tree hierarchy for navigating a connected file or device (*referred to as Device Explorer, in InPower*).

The tool's main window displays a Menu Bar and a Toolbar for access to the tool's functions. Only commands applicable to the current active window are enabled, all other commands from the Menu Bar or Toolbar are grayed out.

2.9   How to Get Service

If you are having a problem with the software, follow these steps.

1. Write down what you can about the problem.

2. Determine whether or not the problem can be repeated.

3. Write down the software version. (This can be found in the Help-About window.)

4. Contact your distributor.

Distributors should contact Cummins Power Generation using standard channels.

2.10   Notification of Tool Expiration

A tool expiry notification message is displayed to inform InPower users that their license is about to expire. The message, such as "InPower Pro will exire on Mmmm dd, yyy," is automatically generated by the InPower software. The message snoozes, based upon the frequency set up by the user. When displayed, users should prepare for upgrading the subscription.
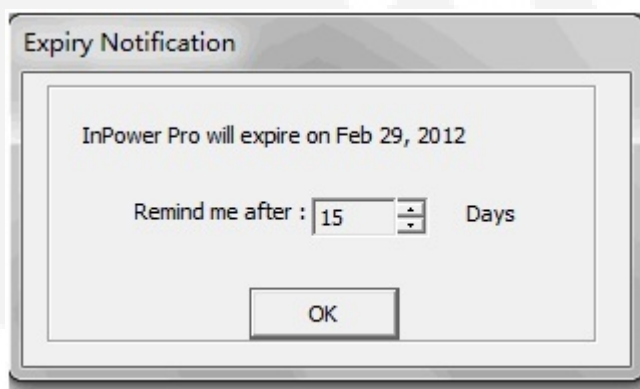
FIGURE 9.   TOOL EXPIRY NOTIFICATION MESSAGE

☞   **NOTE:**   **This expiry notification is mainly intended for non-Cummins users because they need to renew the InPower software license. All registered Cummins users will automatically be upgraded to a new release of InPower by SCCM. Any new Cummins users should request InPower from the Software Shelf.**

3   Setup

The **Setup** dialog allows the installer, or System Administrator, to set user preferences and make changes to both Sites and Devices.

☞   **NOTE:**   **If you attempt to access the Setup program while InPower is running, the message "Initialization mode failed" is displayed. Make sure InPower is not running before accessing the Setup program.**

3.1   General Setup

The **Setup** feature can be accessed from the **Start** menu (**Start -> All Programs -> Power Generation -> Setup**).

Four Setup tabs are displayed; the **Unit of Measurement** tab is the default tab selection. To select another tab, click on the desired tab. When the **Site Setup** tab is selected, clicking on an item from the Site List will add a button, named **Device Setup**.

The **Communications** tab is used in genset applications to configure the service PC for remote communications.

If you need to set up another COM port, refer to **Create Site**.

3.2   Unit of Measurement

This feature allows selection of a list of pre-defined units of measure, based on their region or country. InPower will convert and display values according to the units of measure selected from the **System Of Measurement** drop down list.

Users can create their own list by entering a name in the **System of Measurement** dialog. To customize a setup, select individual **Unit Descriptions**, by **Unit Type**, from the drop down lists. Click on the **Apply** button to save the changes.
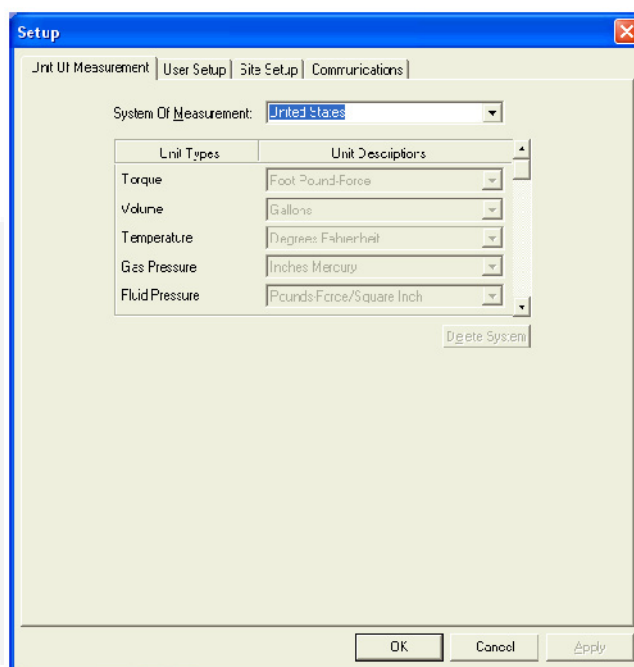
FIGURE 10.   SETUP DIALOG - UNIT OF MEASURE

3.3   User Setup - System Administration

The System Administration feature (**User Setup**) allows a person using the Windows logon (with System Administrator privileges) to establish a user profile for each user on the system. After the initial setup, only the System Administrator will have access to the **User Setup** dialog.

☞   **NOTE: By default, the user will be set up as system administrator the first time they launch the program. After this intial launch, the user will have the ability to change this setting to different access levels if desired.**

Three access levels are available as follows:

Read Only: User can connect to a device and read all parameter settings, fault information and history records.

Read/Write: User has full use of all InPower features, including making adjustments.

Administrator: Administrator has full use all InPower features and the ability to establish and maintain user privileges for all users on this PC.

3.4   Capture File Options

The **User Setup** dialog allows the user to set their preference to either automatically create a capture file each time they connect to a device or to be prompted before creating a capture file. Click inside the checkbox next to the desired setting then click on the **OK** button. See **Figure 11**.
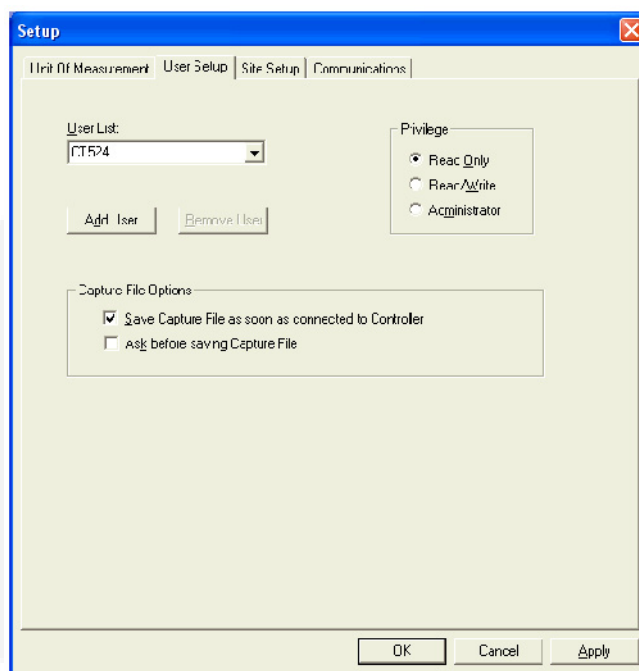
FIGURE 11.   USER SETUP

3.5   Site Setup

The **Site Setup** dialog allows the user to **Add**, **Remove** or edit either a port or a file (**Figure 12**).
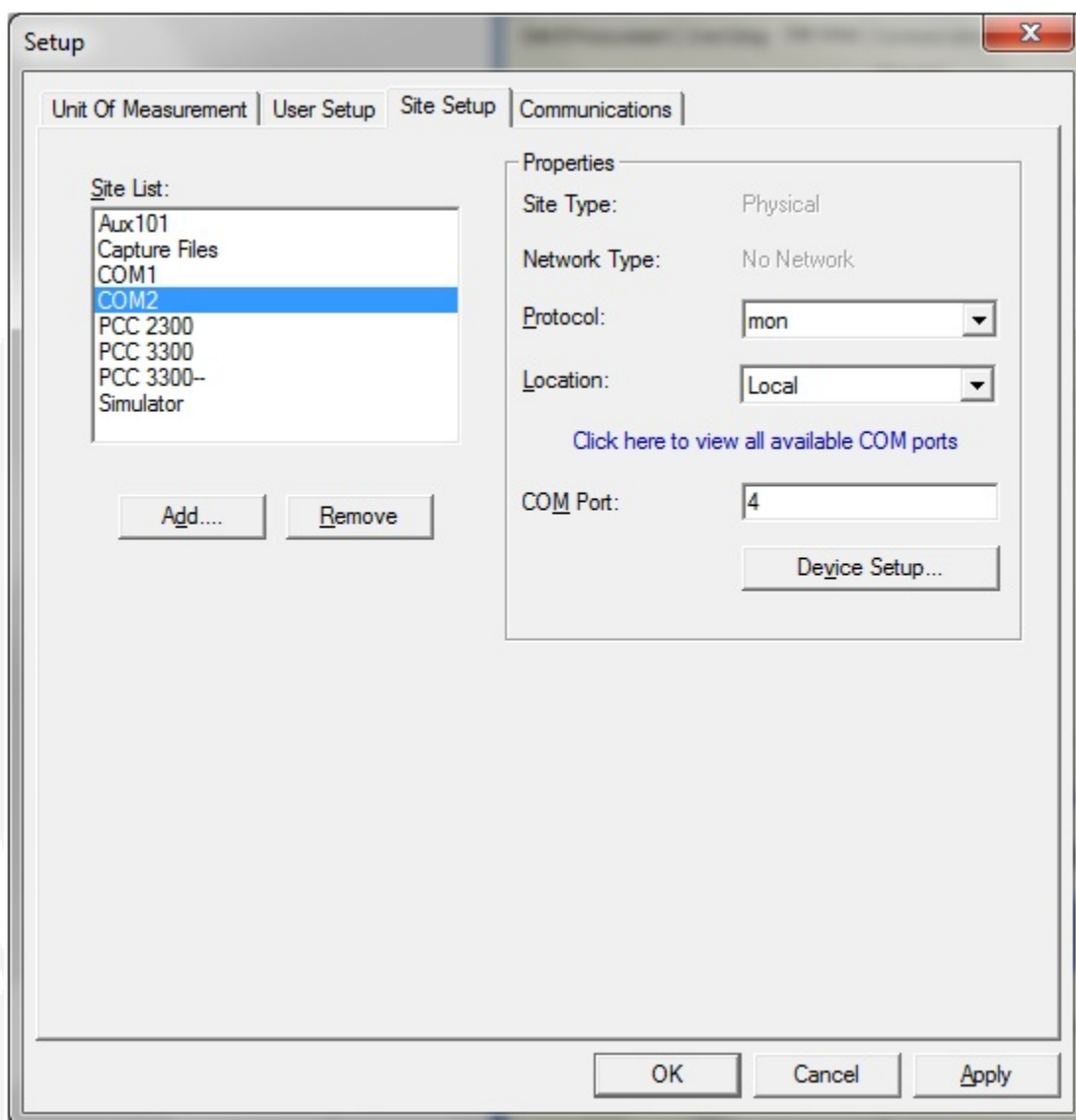
FIGURE 12.   SITE SETUP DIALOG

To add a file or port, click on the **Add** button. The Create Site dialog is displayed. For more information, see **Section 3.6 on page 19**.

To remove an item from the **Site List**, select the item and click on the **Remove** button. A popup will be displayed to prompt you to continue (**Yes**) or cancel this operation (**No**) (**Figure 13**). Click on the **Yes** button to remove the item, or click on the **No** button to cancel the removal.
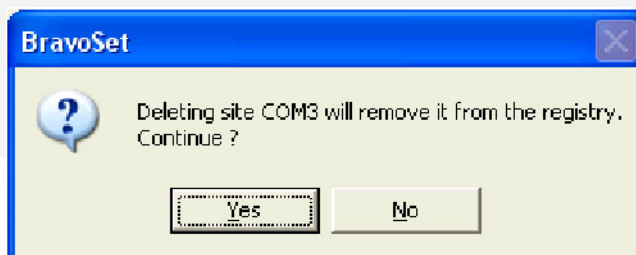
FIGURE 13.   REMOVE DEVICE DIALOG

Selecting a site from the **Site List** enables the edit feature, allowing modifications to some item properties. When a file is selected, the file location (path) is displayed. This feature allows the user to edit the file location.

When a site is selected, the sites protocol and COM port can be edited. Also the **Device Setup** button is enabled. This feature allows the user to add or remove devices.

Use the **Apply** button to save the data in the current dialog box to the InPower settings. Use the **Cancel** button to close the **Site Setup** dialog without saving any changes made during this session. Use the **OK** button to accept the existing settings. The **Help** button is used to access help regarding the **Site Setup** dialog.

COM ports can be added or changed by clicking on **Click here to view all available COM ports** on the **Site Setup** dialog. When the **List of COM Port** dialog is displayed, select a port from the available list and click **OK**.
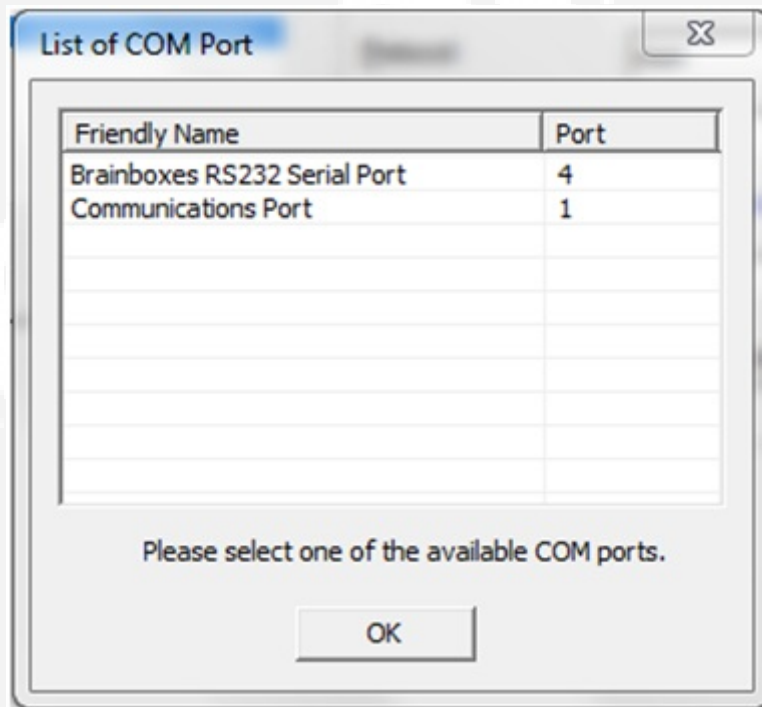
FIGURE 14.   COM PORT LIST

3.6   Create Site

When the user selects the **Add** button, the **Create Site** dialog appears (**Figure 15**). This dialog allows the user to select a **Site Type**, **Site ID**, **Protocol**, **Location**, and **Name** (or **Device Type** and **Path** for files).

☞   **NOTE:**   **All consumer devices will support generic device connections only. To create a site as a 'consumer device' use the 'add site' menu provided in the 'Tools' setup. Existing sites that were created previously will continue to be supported.**

Use each of the dialog fields as follows:

Site Type - Use **Physical** for devices, **File_A** for capture files, or **Network** for connection to multiple devices. Network sites are available only if the RS-485 adapter is used to connect to the genset. A Physical connection connects to all devices and is the recommended site type for basic tool operation.

☞ **NOTE:** **Initial and Update Calibration features are disabled when the Site Type = Network.**

Site ID - Typically use the name of the COM port for devices and the file name type (such as Capture File) for files.

Protocol - Select **goal** as the protocol for all devices and **Capture** for files.

Location - Use **Local**.

COM Port/Path: - Enter the COM port for devices and the directory path for files. You can use the link above it to look for available COM ports.

☞ **NOTE:** **To use COM3 or COM4 with InPower, use the following example to create them and to add them to the Site List.**

FIGURE 15.   CREATE SITE DIALOG

The following example describes how to add a new COM port.

Example: To add a COM3 port, click on the **Add** button in the **Site Setup** dialog. Select *Physical* from the **Site Type** drop-down list. Enter the **Site ID**.: *COM3* and select the **Protocol: goal**. Next enter **Location:** *Local* and the **COM Port:** *3*. When finished click the **OK** button to save the entries. The new port will be added to the **Site List**.

Once the port is established, you can setup a device for the port (Device Setup is covered on the following page).

For this example, Select **COM3** in the **Site List**, click on the **Device Setup** button. Click on the **Add** button to add a device for COM3. Enter the following information in the **Create Device dialog** (**Figure 18**): **Device ID**: **COM3**, **Device Name**: **COM3**, **Device Type**: select **pcf_dvc** from the drop-down list. Click on the **OK** button to enter the information.

When the **OK** button is selected, the new site is added to the Site List in the Site Setup dialog and the message "Default device has been added to this site. Please click <Device Setup> button to modify default settings" is displayed (**Figure 16**). Click **OK** to complete the setup.
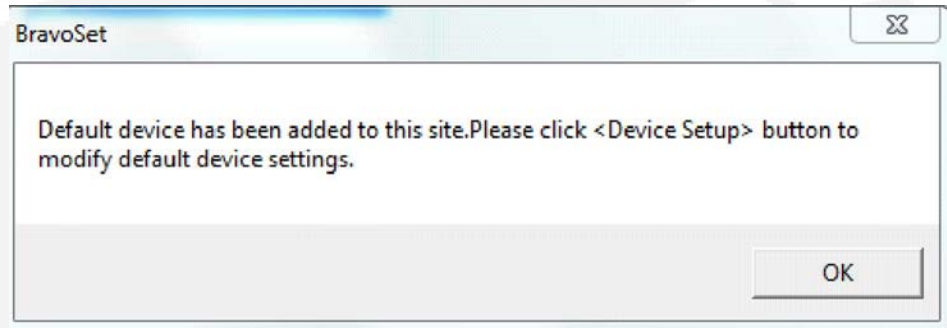
FIGURE 16.   DEVICE SETUP INSTRUCTIONS
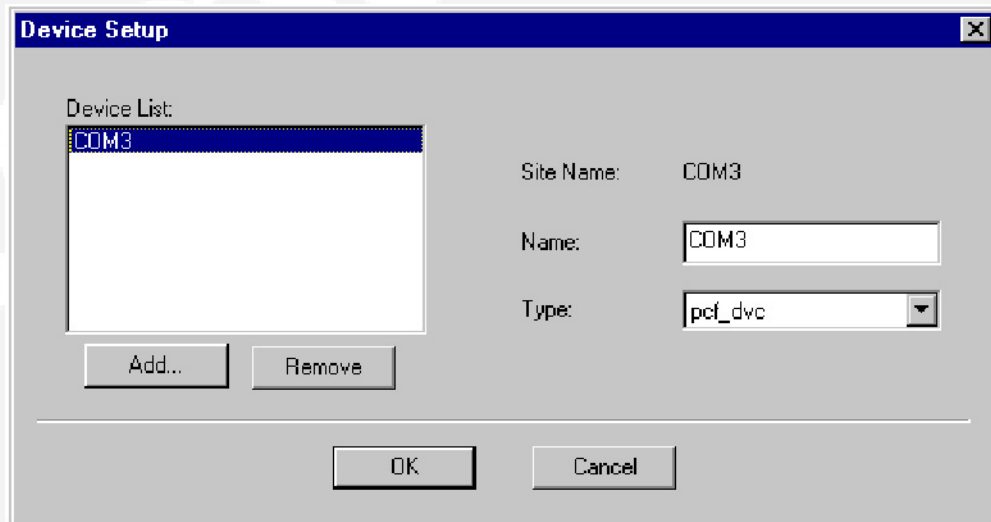
FIGURE 17.   DEVICE SETUP DIALOG

3.7   Device Setup

The **Device Setup** dialog allows the user to Add, Remove, or edit a device (**Figure 17**).

Selecting a device from the **Device List** allows the user to edit the **Device Name** and **Type**. The dialog also displays the **Site Name,** that the Device is associated with.

Selecting the **Add** button displays the **Create Device** dialog (**Figure 18**). This dialog allows the user to enter a new **Device ID.**, **Device Name** and allows the user to select a **Device Type** from a drop-down list.
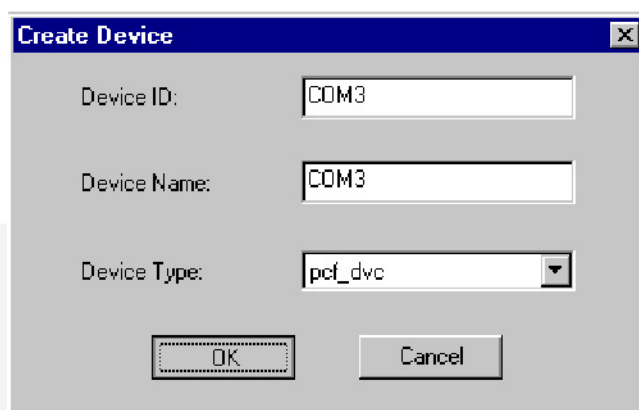
FIGURE 18.   CREATE DEVICE DIALOG

Use each of the dialog fields as follows:

Device ID - Enter a name to identify the device.

Device Name - Use a generic term to describe the device (such as GCS).

Device Type - Select **pcf_dvc** (dominion based control system).

3.8   Communications Setup

The **Communications Setup** dialog (**Figure 19**) allows the user to have the system allow incoming calls and to select a modem for incoming calls and remote connections.

If applicable, the user can also use this dialog to select local and remote LonWorks network connections.
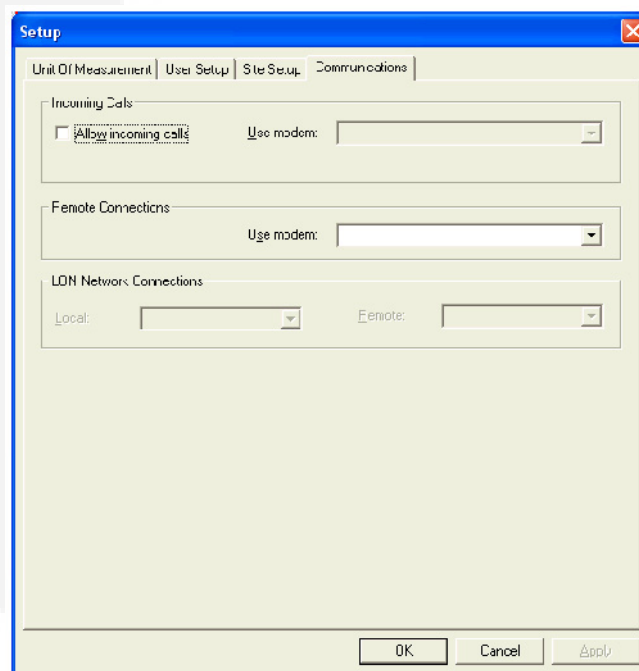
FIGURE 19.   COMMUNICATIONS DIALOG

3.9   PCC 1302 InPower Setup

Refer to Setup for a general description of the Setup feature. Launch the **Setup** program from the **Start** menu.

In this example, a new site will be created specifically for connecting to a PCC 1302 control.

Select the **Site Setup** tab and then click on the **Add** button, located below the **Site List**. Create a new site for connecting to the PCC 1302 control. Select the **Site Type: Physical**, from the drop-down list. Enter a **Site ID**. Select **mon** from the **Protocol** drop-down list. (PCC1302 select PCF Device in the Protocol list.) Select **Local** for the **Location** and enter **1** (or the desired com port) for the **COM Port.** Click on the **OK** button to create the new site (**Figure 20**).
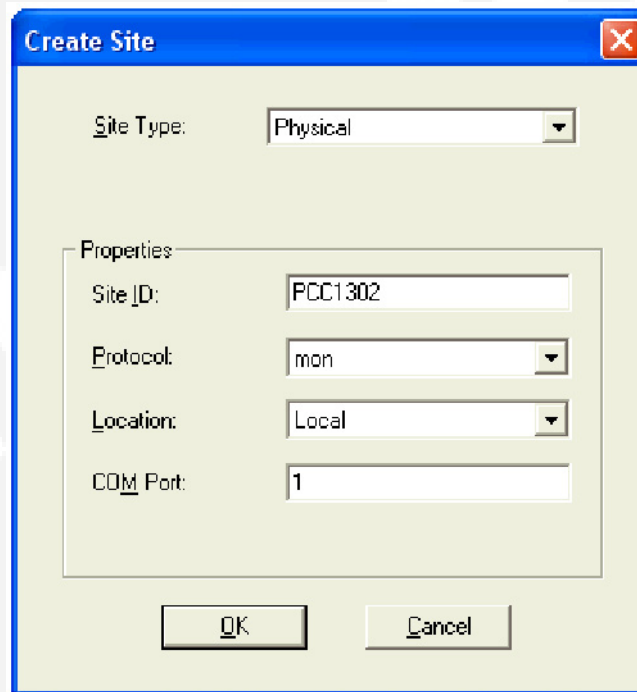
FIGURE 20.   PCC 1302 SITE SETUP

With **PCC1302** selected in the **Site List**, click on the **Device Setup** button, then click on the **Add** button in the Device Setup window to create a new device.

Enter a Device ID and Device Name (**Figure 21**). Select **PCC1302**, from the **Device Type** drop-down list. Click on the **OK** button to create the device. Click on the Device Setup **OK** button to exit the Device Setup. Click on the **Apply** button in the Setup dialog to save the device setup.
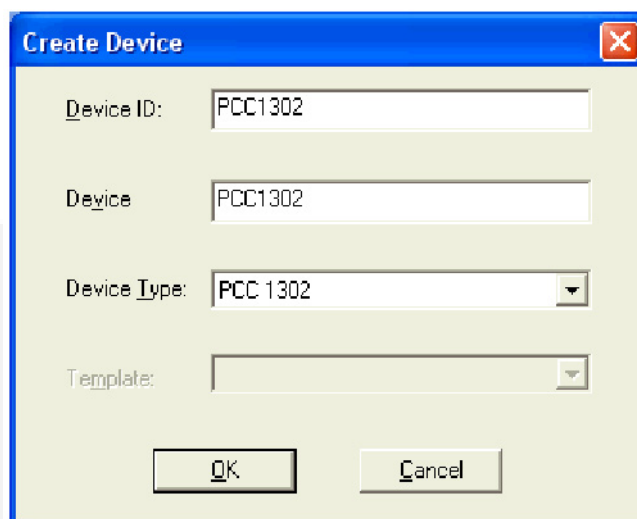
FIGURE 21.   PCC 1302 DEVICE SETUP

3.10   PCC 2300 and PCC 3300 InPower OEM Setup

To set up a generator set with a PCC 2300 or PCC 3300 control, select the control name from the device list, right click and select **Genset OEM Setup...** to view the **Genset OEM Setup** menus. An example for the PCC 2300 is shown in the following figure.
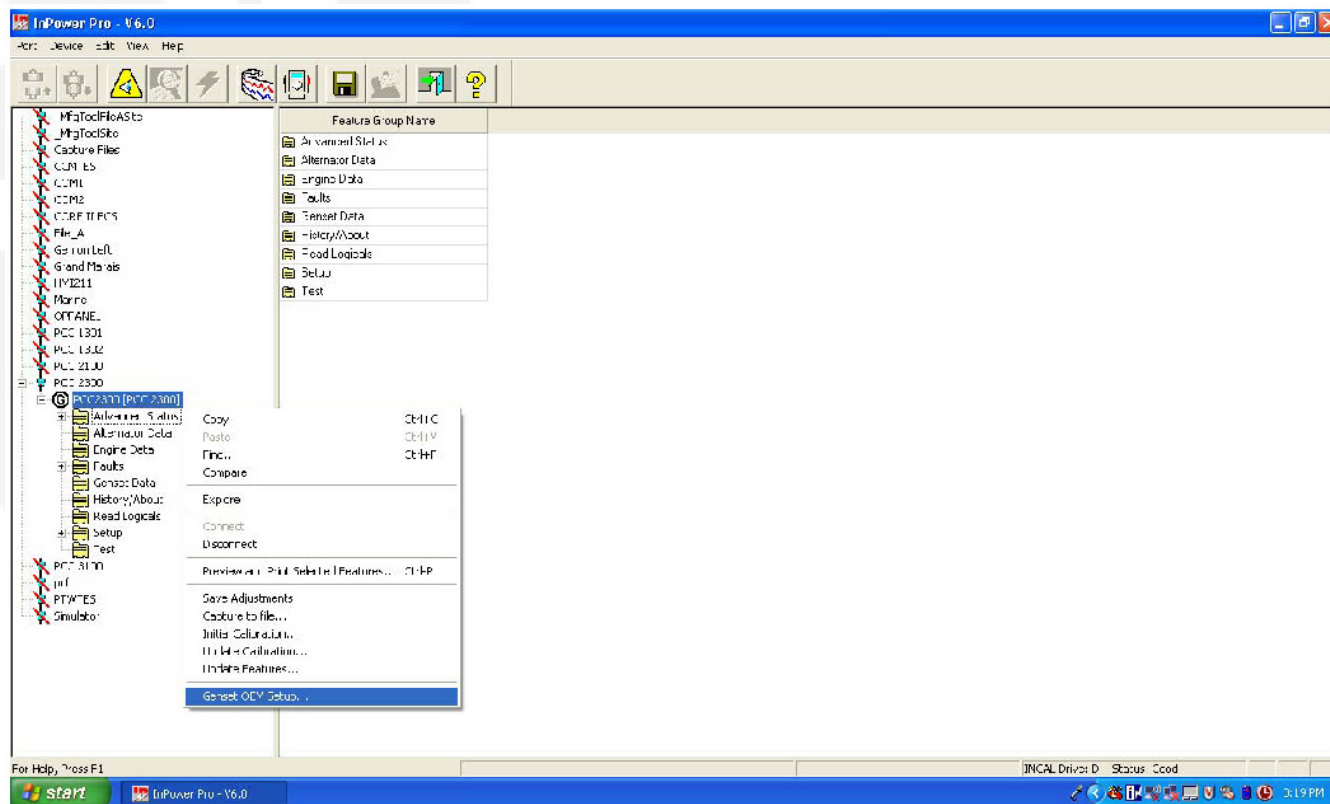
FIGURE 22.   ACCESSING THE GENSET OEM SETUP MENUS FOR THE PCC 2300 CONTROL
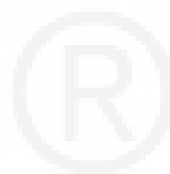
The Genset OEM Setup menus consist of various tabs. Many parameters cannot be modified without first clicking on the **Enable Setup Mode** button.

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4   InPower Basics

This section describes InPower's user interface features.

4.1   How to Start InPower

1. Open the Start menu.

2. Click **All Programs > InPower GOEM > InPower GOEM**.

Attempting to launch InPower or the Bravo Setup when one of these programs is already running will result in an error message.

- If an attempt is made to run a second instance of Bravo Setup (Start > All Programs > Power Generation > Setup), the following message is displayed.
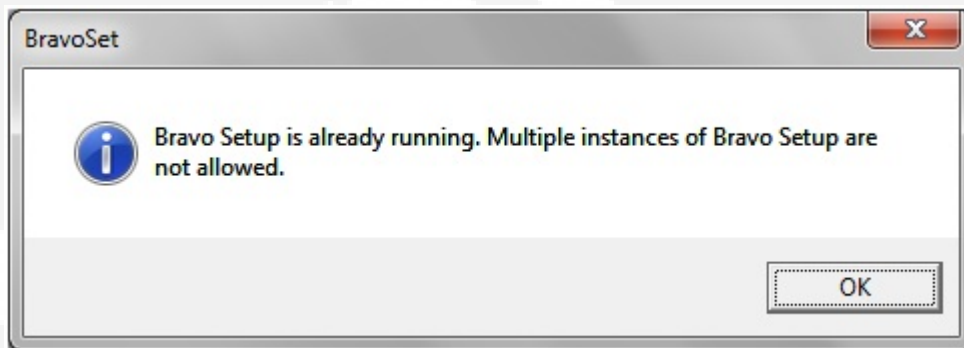
FIGURE 23.   BRAVO SETUP MESSAGE FOR WHEN BRAVO SETUP IS ALREADY IN USE

- If InPower is launched and then an attempt is made to launch Bravo Setup (Start > All Programs > Power Generation > Setup while InPower is still running), the following message is displayed.
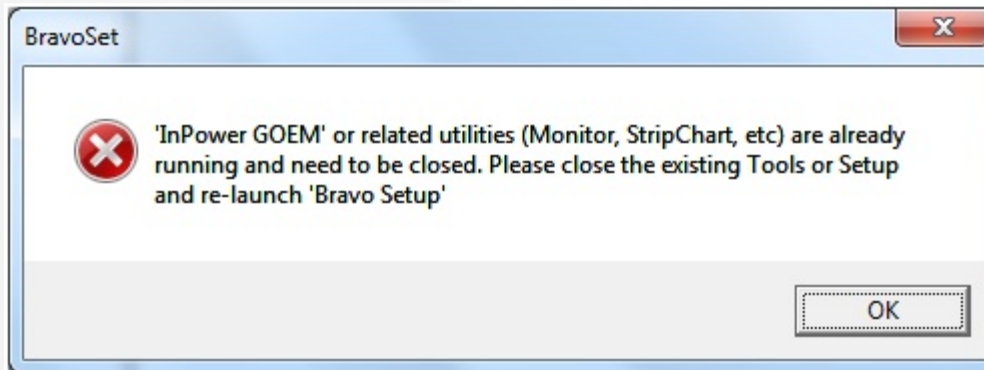
FIGURE 24.   INPOWER IS RUNNING MESSAGE FOR WHEN ATTEMPTING TO USE BRAVO SETUP

- If the Bravo Setup is launched and then an attempt to launch InPower is made while Bravo Setup is still running, the following message is displayed.
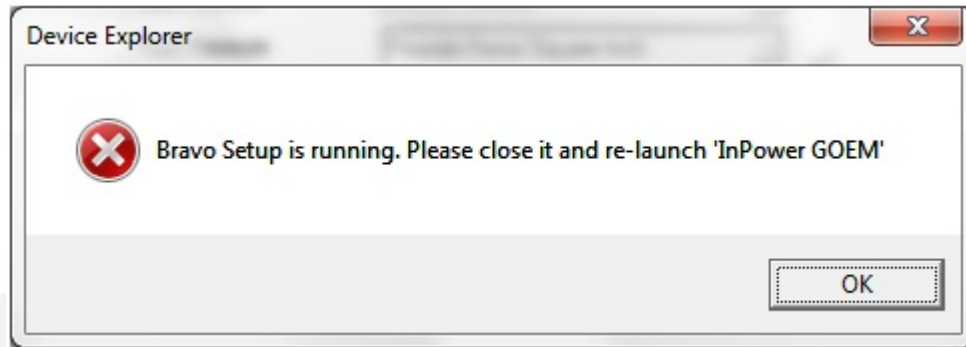
FIGURE 25.   BRAVO SETUP IS RUNNING MESSAGE FOR WHEN ATTEMPTING TO USE INPOWER

4.2   The Main Window

The main window, named **Device Explorer**, includes the **Menu Bar**, the **Toolbar**, the **Status Bar**, and the left and right window panes.

The **Menu Bar** contains the groups of commands that are used to access tool functions and features. A list of menu options is available under each main menu entry.

The InPower **Menu Bar** expands to display additional menu features when InPower is connected to a device or a file.

When a **Menu Bar** command is grayed (dimmed), the command is not available. You may need to select another action (such as connecting to a port or device) before the grayed command will be displayed in black type—indicating that the feature is available.

- To display the list of options under a menu entry, move the mouse pointer to the menu name and click on the mouse button. (Clicking refers to using the mouse select button, typically the left button.)

- To select an option from a menu list, move the mouse pointer to the option name and click on it.

The **Toolbar** provides direct graphical interface shortcuts to some of the more frequently used menu options. Buttons on the Toolbar represent frequently used tool functions.

When a **Toolbar** button is grayed (dimmed), the shortcut to that command is not available. You may need to select another action (such as connecting to a device or file) before the grayed command will be displayed in color (or black type)—indicating that it is available.

Placing the mouse pointer on a **Toolbar** button, the **Status Bar** describes the function of the button. The Status Bar also shows a description of operations as they occur.

The left window pane works like Windows Explorer to navigate the directory tree. The right window pane displays the contents (or screens) for the item selected in the left window pane.

4.2.1   Main Window Example
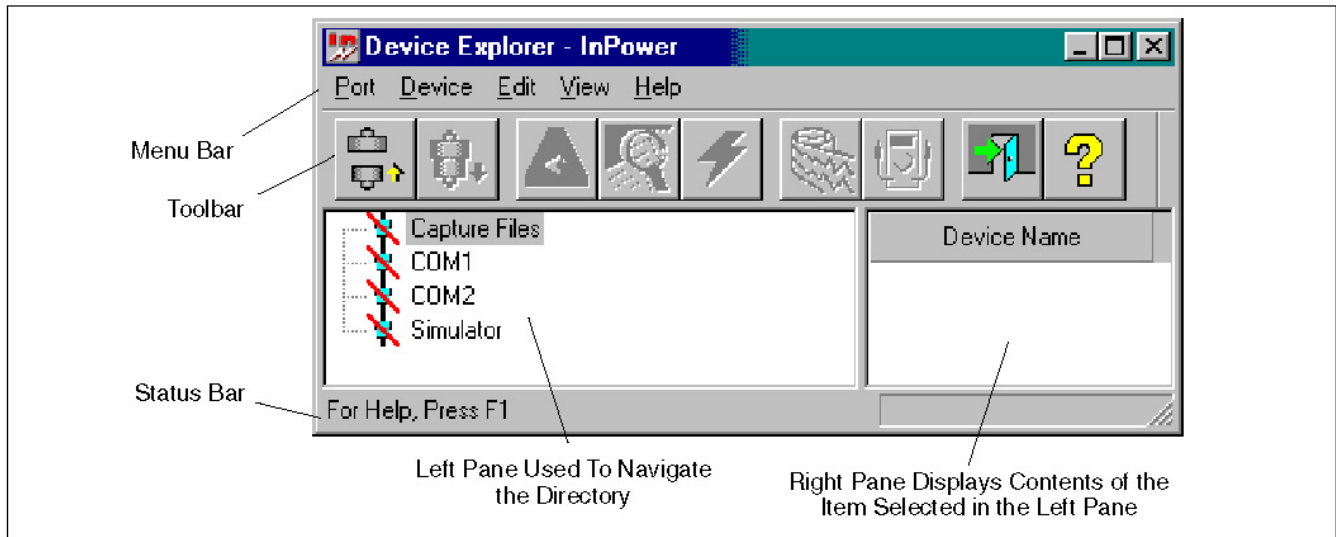
FIGURE 26.   MAIN WINDOW

4.3   Menu Descriptions

This section provides a brief description of the functions performed by each of the InPower menu commands. Some of the menus are not displayed until the tool is connected to a Port (COM port or .CAP file).

Several of the menu features have Toolbar shortcuts and some features can be enabled simply by double clicking on the item from the directory tree in the left window.

4.3.1   Port

The **Port** menu allows the user to **Connect** to and **Disconnect** from a port. *InPower uses the term Port to refer to either a COM Port or a .CAP(ture) File, including Simulator files.* The Port menu also allows the user to **Add** a local or remote **Site**, **find InCAL** calibrations, and it has an **Exit** selection for exiting InPower.

In order to connect to a COM port, the PC must be physically connected to a device via a serial communications null-modem cable.

COM port error messages are displayed at the following times:

- In Bravo Setup when the user selects add site
- In Bravo Setup when the user selects apply
- In Bravo Setup when the user selects another site
- When the user closes bravo setup
- In Engineering Tool when the user selects add site
- In InPower Tool when the user selects add site.

The following shows an example error message:

FIGURE 27.   MESSAGE DISPLAYED FOR COM PORT

4.3.2   Device

The **Device** menu is used to **Connect** to, and **Disconnect** from, a device, and for performing read and write functions with a connected device. *InPower uses the term device when referring to a controller such as the generator set control.*
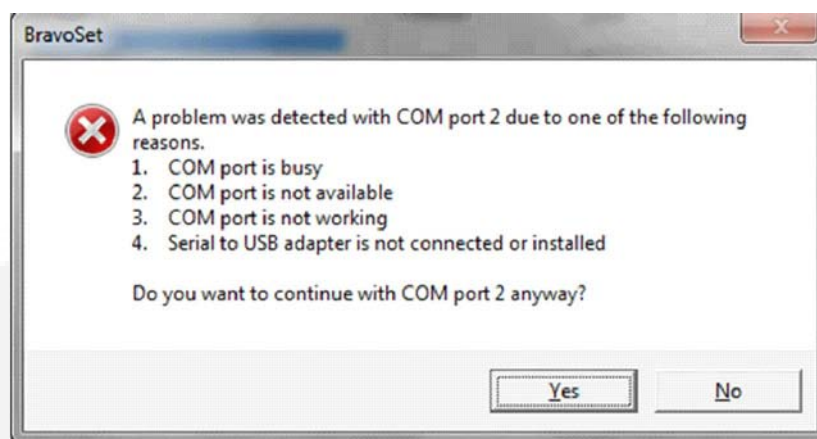
Use InPower to change a device's trims and settings, and then use the **Device** menu to **Save Adjustments**. The device's parameters can be **Captured** (saved) **to a File.**

The **Device** Menu can also be used to **Clear Faults** (inactive faults only) and to **Prepare CSV file with All Selected Features** of the device's settings.

When the InPower service tool is connected to a device, three new features are added to the Device menu; **Initial Calibration**, **Update Calibration**, and **Update Features**.

4.3.3   Edit

The **Edit** menu works within the directory of the connected device to **Find** a specified string of data. The *Edit* menu can also be used to **Copy** and **Paste** selected data.

4.3.4   Utilities

The **Utilities** menu is used to download simulator files from an InCal CD. When **Utilities** -> **Universal Simulator Download** is selected, a pop-up menu is displayed allowing you to set the COM port and baud rate. If the InCal CD is inserted in your local drive, you can navigate to the simulator file(s) you wish to download and then click on **Download**.

4.3.5   View

The **View** menu is used to view data from the connected device in a **Monitor** display or **Strip Chart** display. The **View** menu can also be used to access the FIS **Fault Tree** Main Window, view faults and refresh (update) all of the parameters displayed in the Value field.

4.3.6 Help

The **Help** menu commands are used to find online information about using InPower and Windows. **Help** is also used to display Service and Support information and to obtain InPower product and version information. A separate **Help** file contains information on consumer device fault codes for marine and RV products. The menu also allows the user to launch the registration program.

4.4   User Interface

Frequently used commands have keyboard shortcuts and toolbar access. Only commands applicable to the current active window are enabled. All other commands are grayed out.

4.4.1   Keyboard Access

InPower uses standard Windows keyboard conventions.

The underlined letter indicates the keyboard selection for a given menu option. For example, to select the Port menu, press and hold the "Alt" key and type a "P" (**Alt P**).

Once the menu is open, type just the underlined letter to select a specific menu item. For example, once the Port menu is open, type a (**C**) to select Connect.

4.4.2   Toolbar

Some frequently used commands have toolbar shortcut buttons. Each button is associated with one or more menu items. The buttons have the same effect as the menu items.
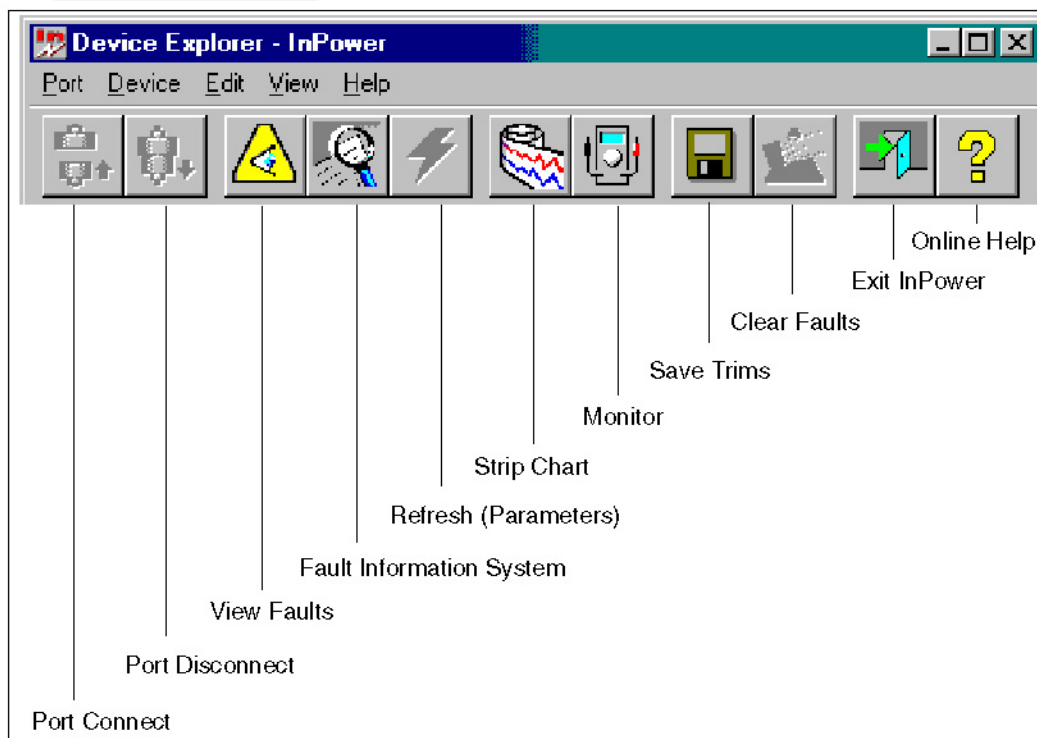
4.4.2.1 Toolbar Example

FIGURE 28.   TOOLBAR

4.4.3   Dialog Boxes

A dialog box is a window that requires information from the user. Often, when you select a function or menu option, the software will display a dialog box. You will then provide the required information by selecting an item from a list, by clicking on an option button, or by entering text. Several different dialog boxes are used with InPower.

The following rules will apply to all the dialog boxes and system messages unless specified otherwise.

- The **Cancel** button allows you to close and exit a dialog box without saving any modifications, and without executing any commands.

- The **OK** button allows you to save any changes made and/or execute a command and close the dialog or message box.

All lists that the dialog boxes display are sorted alphabetically.

4.4.4   Mouse Menu Functions

In some Window views, clicking on the right mouse button will bring up a menu command related to that Window. (Some users change the right and left mouse functions to their preferences. The default settings for a two-button mouse are left for select and right for menu.)

Example: When viewing Faults in the Detail View, clicking on the right menu button will bring up three choices:

- View Snapshot

- View Fault Information

- Clear Faults

4.5   How to Terminate InPower

Should the InPower program ever hang up or crash abruptly, the Terminate InPower Application utility can be used to close all InPower applications. After the applications are closed, InPower can be re-launched and work can be resumed.

☞   **NOTE:**   **This feature is not available on PCs with a Windows 2000 operating system.**

To use this feature, go to **Start** > **All Programs** > **Power Generation** > **Utilities** > **Terminate InPower Application**.
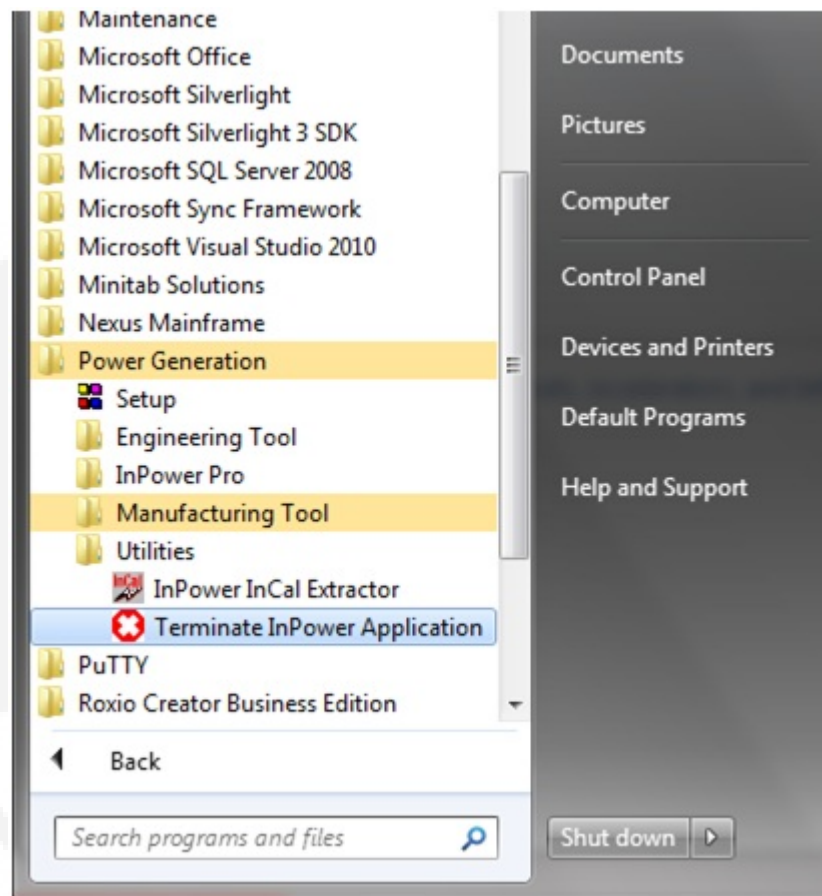
FIGURE 29.   LAUNCHING THE TERMINATE INPOWER APPLICATION FEATURE

After the Terminate InPower Application is launched, the following message is displayed.
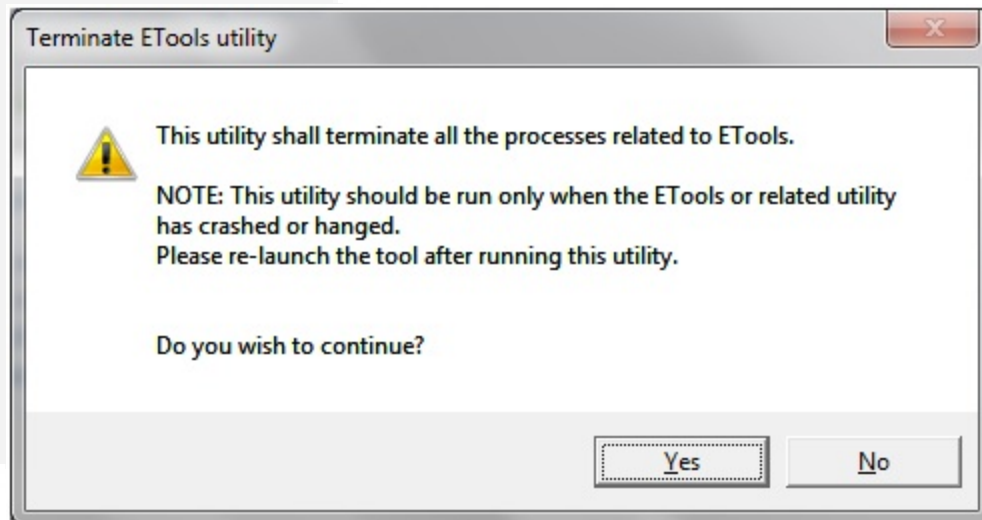
FIGURE 30.   TERMINATING INPOWER APPLICATIONS MESSAGE

Afer clicking **Yes**, all Etool applications are terminated and the following message is displayed. Click **OK**.
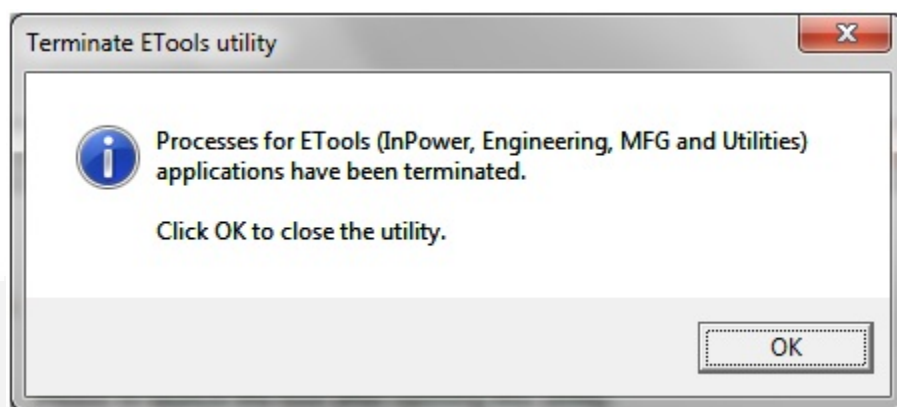
FIGURE 31.   ETOOL TERMINATION MESSAGE

5 Genset Service

This section describes how to use InPower for making adjustments and performing tests on commercial or consumer gensets. When the user is connected to a genset, they can also access the Monitor, Faults, and Events Configuration features.

5.1 Commercial Genset Service

InPower performs several functions including genset service and diagnostic functions. The **Adjustment** feature is used to perform service adjustments and trims.

The **Test** feature is used for diagnostics. **Test** is used to temporarily override a variety of input and output parameters. (The PCC 3100 does not include the Test Feature).

⚠️ *WARNING: Electrical shock and moving parts can cause severe personal injury or death. Notify personnel before starting a generator set and before performing load transfer on a transfer switch. Refer to the equipment Operator's Manual for important safety precautions.*

You must be connected to the genset in order to write adjustment trims and setting changes to the controller, and to temporary send test commands to the genset controller. The features described may not apply to all control types.

5.1.1 Connecting to a Genset

Connection between the service PC and some gensets is made with a special RS-232 serial null-modem cable. Some connections between the generator set and the PC require an interface wiring harness and an RS-232 to RS-485 converter.

If the service PC does not have a serial port, a USB-to-serial converter may be required as well.

5.1.1.1 Connecting to PS 0500

The PS 0500 control requires an RS-232 to RS-485 data converter and a unique cable. **Figure 32** shows the PS 0500 InPower connection.

Kit number 541-1199 is available for use with the PS 0500. The kit includes the RS-232 to RS-485 converter and the cable used for these applications. The 5-pin connector is used to connect to the back of the display at the TB15 connector.
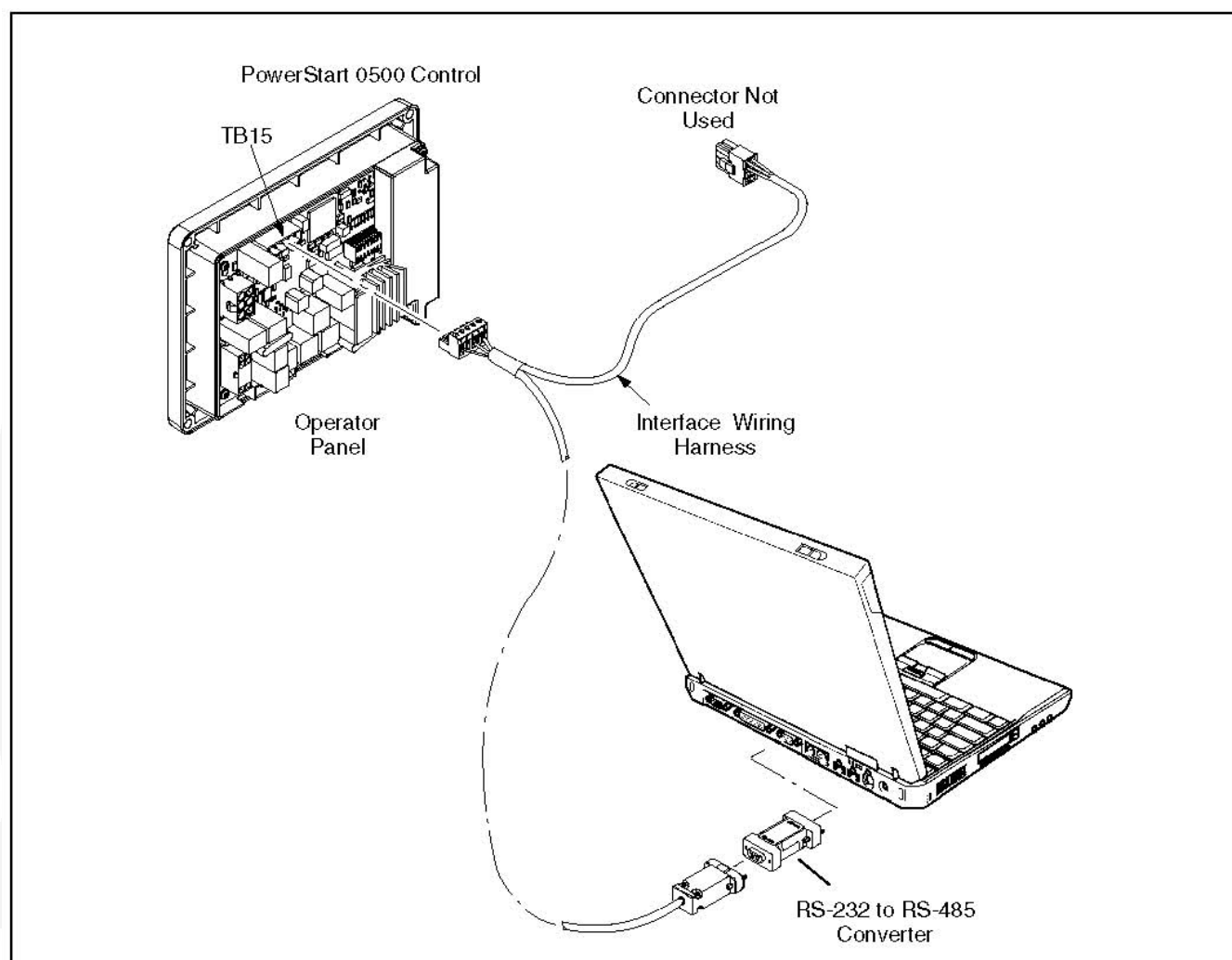
FIGURE 32.   INPOWER SERIAL CONNECTION WITH POWERSTART 0500 CONTROL

5.1.1.2 Connecting to PCC 1302

The PCC 1302 control requires an RS-232 to RS-485 data converter and a unique cable. The PCC 1302 also requires an extension harness connected from the display to the engine harness J2 connector. **Figure 33** shows the PCC 1302 InPower connection.

FIGURE 33.   KIT INSTALLATION FOR POWERCOMMAND CONTROL 1302 WITH HMI211

5.1.1.3 Connecting to PCC2300 and PCC3300

The PCC2300 and PCC3300 controls require an RS-232 to RS-485 data converter and a unique cable. **Figure 34** shows the PCC2300 InPower connection and **Figure 35** shows the PCC3300 InPower connection.
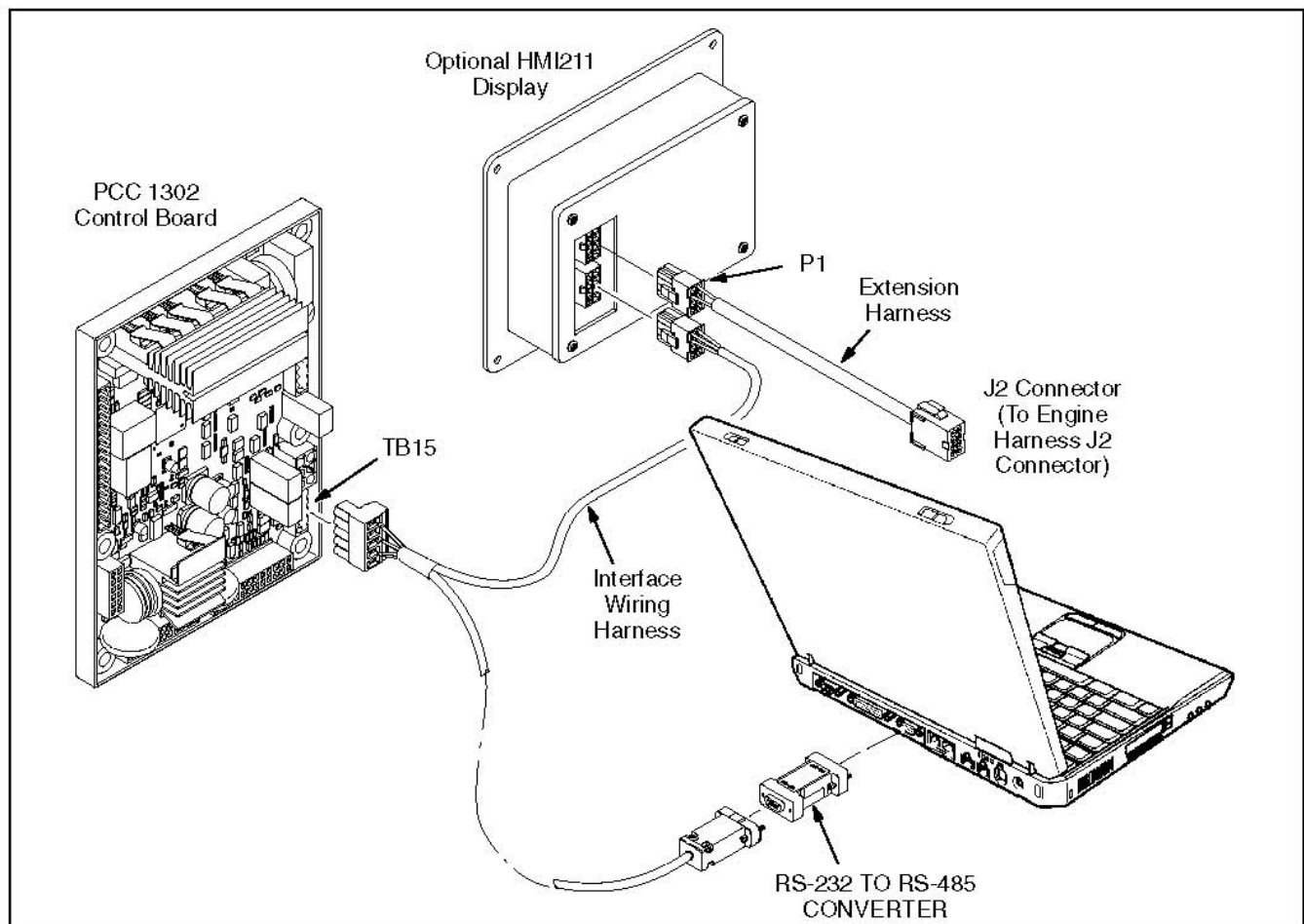
Kit number 541-1199 is available for use with the PCC2300 and PCC3300. The kit includes the RS-232 to RS-485 converter and the cable used for these applications. The 5-pin connector is used to connect either to the control board or the display.
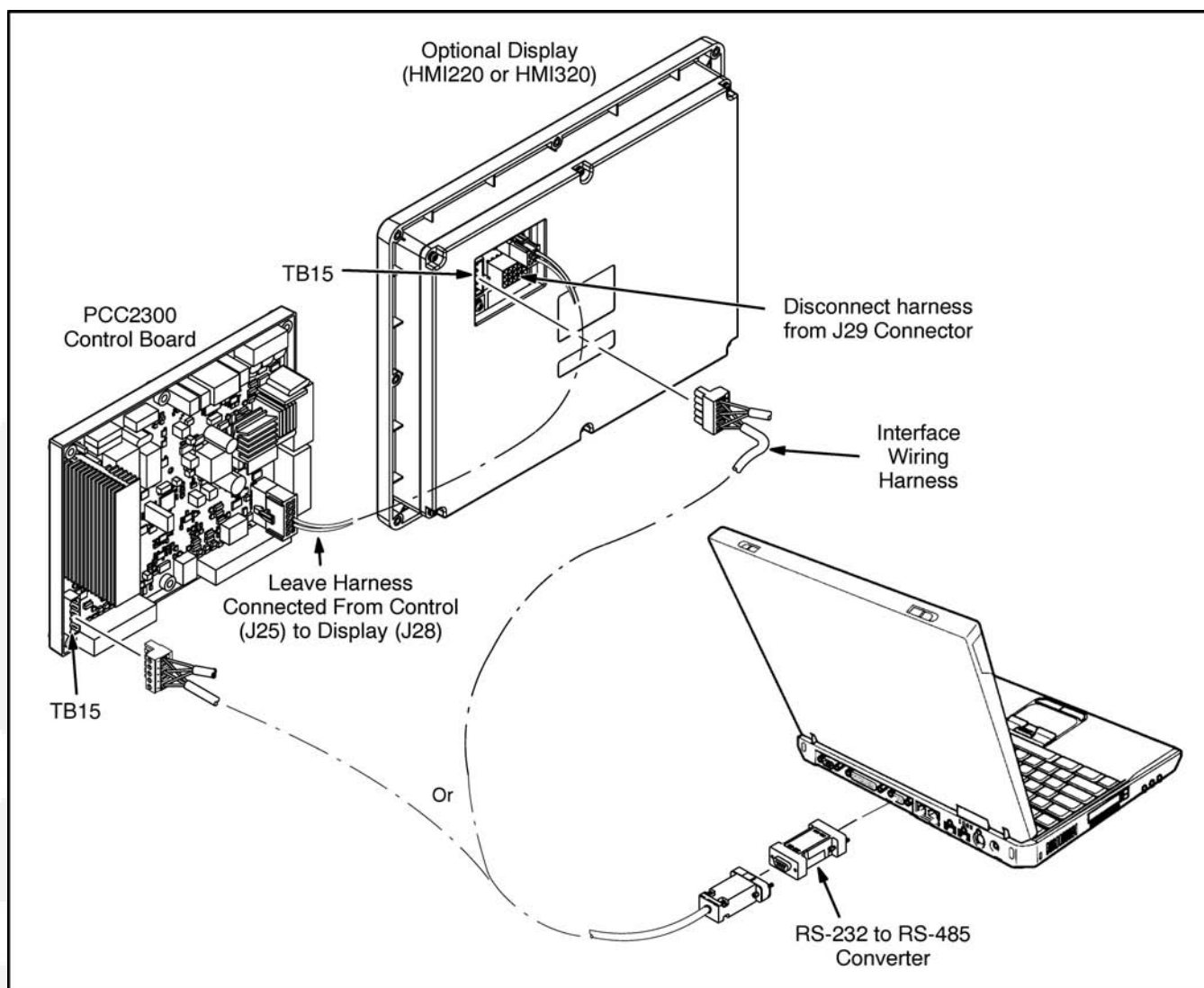
FIGURE 34.   KIT INSTALLATION FOR PCC2300 WITH HMI220 OR HMI320 DISPLAY
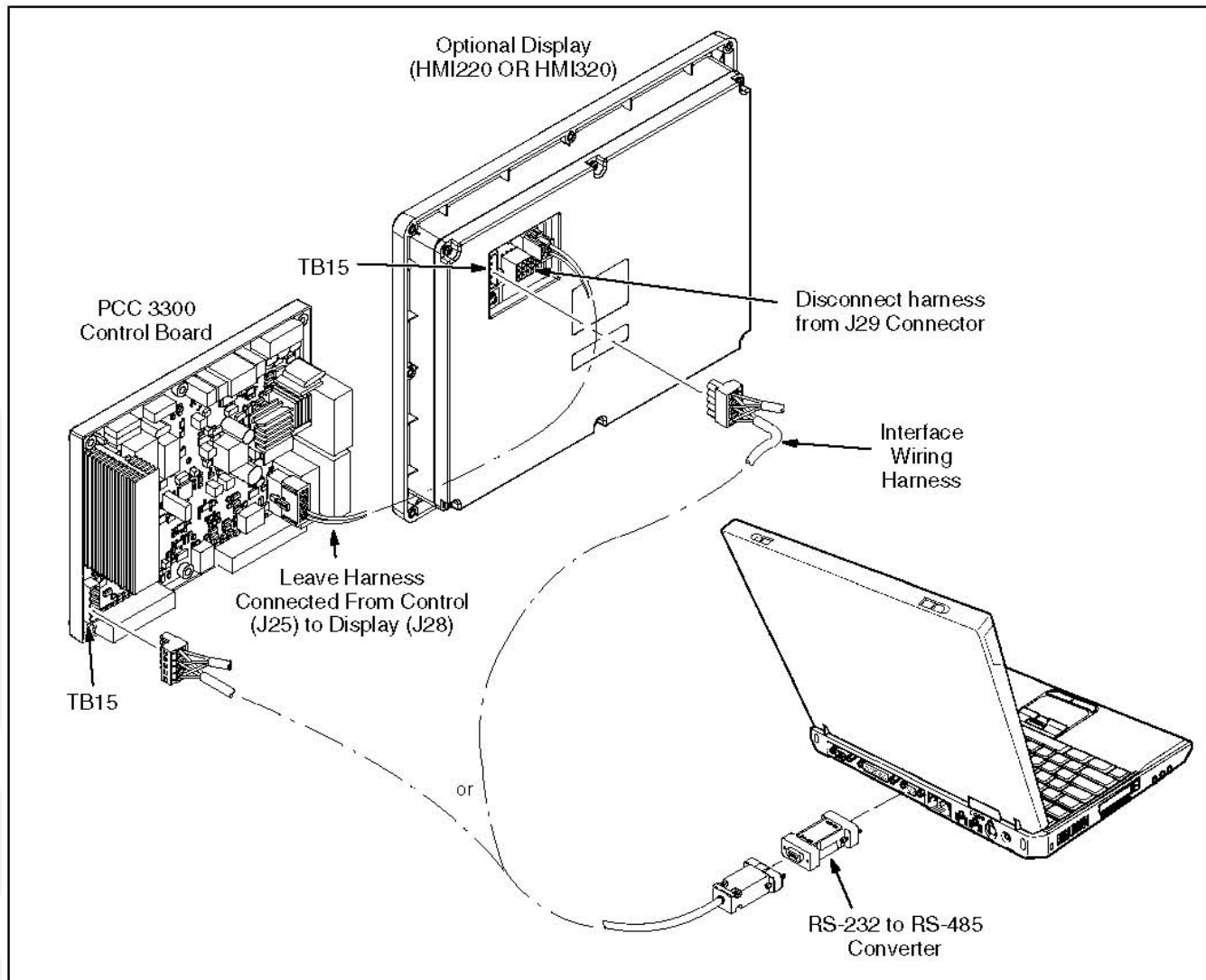
FIGURE 35.   PCC3300 INPOWER CONNECTION

5.2   Starting InPower

Start InPower and connect to the port (COM1, COM2, etc.) that matches the COM port on the service PC, that is being used for the genset connection. The available COM ports are displayed in the Device Explorer directory (left pane). Double click on the COM port (or click on the COM port and then click on the **Connect** button, on the toolbar).

If InPower has problems connecting to a site, the message shown in **Figure 36** is displayed. If, after a few seconds, the program still cannot connect to the site, the connection failure message shown in **Figure 36** is displayed. If you get this message, click on **OK**, make sure the selected COM port is available, make sure the COM port is being used, verify that the RS-485 adapter is correctly installed, make sure the genset is powered and the control is awake, check all connections, and repeat the procedure for connecting to the COM port.

☞   **NOTE:**   **To wake up the genset control, press and hold the Stop button on the genset until the switch's status light is enabled.**
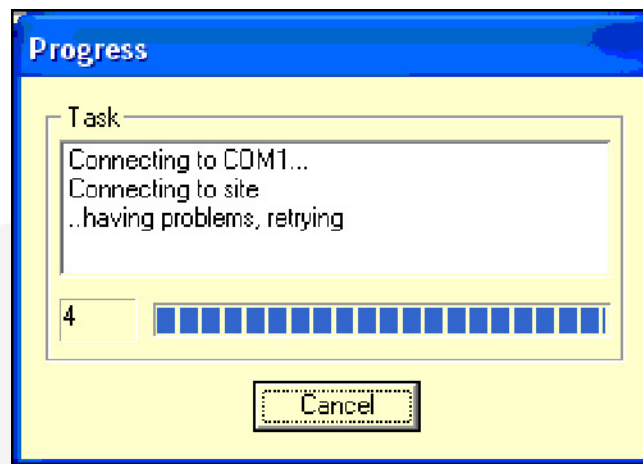
FIGURE 36.   CONNECTION PROBLEM MESSAGE

FIGURE 37.   CONNECTION FAILURE MESSAGE

The InPower Device Explorer displays the features that are available for gensets in the directory, listed under the device in the left pane. To view the genset features, make sure the genset is powered up and the genset control is awake, double click on the site (COM1, COM2, etc), and expand the genset directory.

When you double click on a site the first time after InPower is started, the Progress messages shown in **Figure 38** are displayed to show you that InPower is connecting to the device and verifying parameters. When completed, a message is displayed to inform you of the location where capture files were placed (**Figure 39**). Click on **OK** to acknowledge the message.
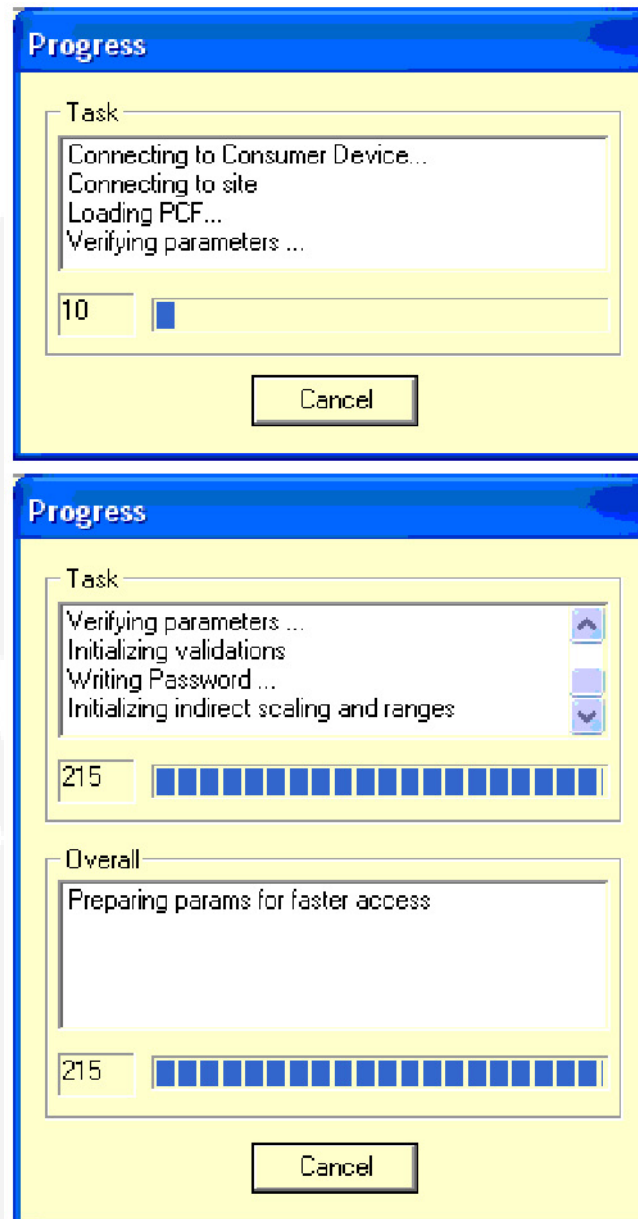
FIGURE 38.   DEVICE PROGRESS MESSAGES
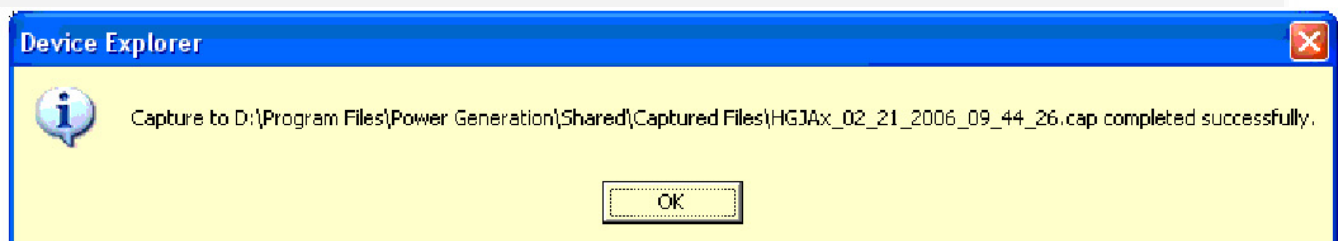
FIGURE 39.   ANNOUNCEMENT OF CAPTURE FILE LOCATION

If a connection failure message is displayed when attempting to connect to an available device, make sure the device is turned on and check all connections.

The following is a typical list of available features.

- Adjustments
- Events Configuration
- Faults
- Monitor
- Test
- CAN Control
- Events and Faults

☞   **NOTE:**   **The available features vary from genset to genset.**

When you are connected to a genset, the **Capture File** feature is enabled. This feature is used to create a copy of the gensets existing parameter values. **Always create a Capture file of the device parameters for reference, prior to making any adjustments.**

5.3   Genset Adjustments

This section describes how to make genset parameter value adjustments for trims and settings. There are a large number of adjustable trims and settings available for gensets. Not all genset models will have the same adjustments available. This section will cover typical adjustment examples, to help demonstrate basic procedures for using the adjustment features.

⚠   *CAUTION: Improper adjustment can cause equipment malfunction or damage. Adjustments must be performed by trained and experienced personnel only. Refer to the equipment's Installation and Service manuals for adjustment sequences and procedures.*

5.3.1   Adjustment Basics

To access a group of adjustments or an individual adjustment, use Device Explorer to navigate the left pane until you reach the desired folder, and click on it. The right pane will display the parameter(s) associated with the adjustments for that feature.

Figure 40 shows a list of parameters for the **Governor - Frequency selection**.

The right pane displays the **Parameter** description, **Value**, **Units** of measure and the **Last Time** that the value was **Read**.

Placing the mouse pointer over a parameter will bring up an information popup box. The popup provides a brief description of how the parameter value is used.

☞   **NOTE:**   **Some values may require that the genset is running or stopped before they can be edited. Refer to the parameter's information pop-up for details.**
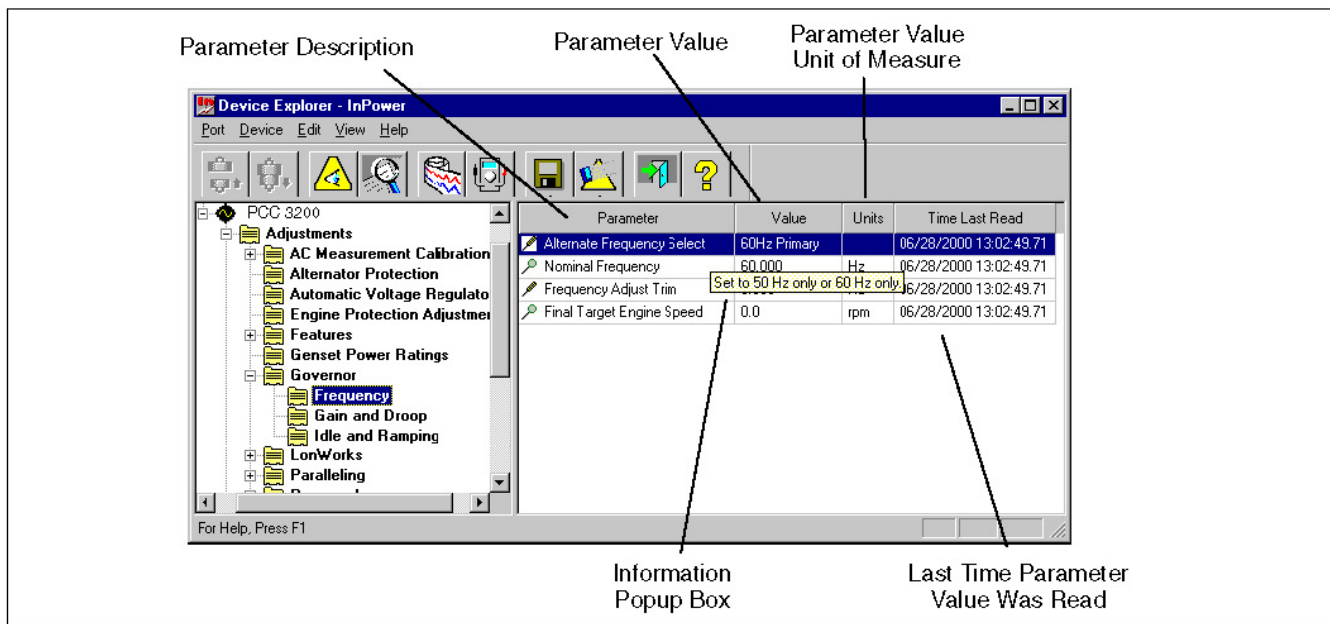
FIGURE 40.   TYPICAL PARAMETER INFORMATION

5.3.2   Adjustment Features

The groups and the contents of the **Adjustment** features can vary by genset model, control software version, and InPower version.

The **Adjustments** directory for a typical genset contains the following groups (folders) of Adjustment options:

AC Measurement Calibration: This group contains Current, Voltage and Power Factor measurement parameters for the graphical display. Also contained in this group is the calibration for Voltage Measurement for Regulation.

Alternator Protection: Contains adjustments for Over and Under Frequency, High and Low AC Voltage, and related time delay settings.

Automatic Voltage Regulator: Contains adjustments for the Voltage Adjust trim for the nominal voltage offset, overall AVR gain adjust, and the V/Hz rolloff table.

Engine Protection Adjustments: Engine protection settings for high and low temperature, pressure settings, and related time delays.

Features: This group contains several genset setup and feature settings. For example, the Exercise Setup parameter allows the user to set the genset exercise duration, in hours.

Genset Power Ratings: Contains adjustments for setting up the application information such as Standby or Prime Power, Delta or Wye alternator connection, KVA rating, line-to-line voltage and generator connection for single or three phase.

Governor: This group contains Governor adjustments for Frequency settings, Gain and Droop settings, and Idle and Ramping.

LONWORKS: This group contains network settings, Controller Identification, modem Dialout Setup, network Fault Setup and Network Setup.

Paralleling: This group contains parameters for Breaker Interface, Bus Voltage Setup, Load Share Setup, Paralleling Mode, Protection, and Synchronizing.

Passwords: This group contains three features that are used for password administration.

The **Change Passwords** feature is used to establish initial passwords and to change existing passwords.

Passwords must be 5 to 8 characters in length. They may consist of any combination of alpha or numeric characters. Do not use special characters.

The **Clear Passwords** feature allows users, with a password, to clear the password. This is typically used if you wish to permanently remove the password. If you want to change an existing password, use the Change Passwords feature.

The **Enter Passwords** feature is used to gain access to password protected parameters. Entering the password allows the user to write changes to password protected parameters.

There are two predefined groups of parameters that can be protected by passwords, these are named **User** and **Application**. When a password is established for either of these groups, access becomes password protected. Users can view password protected parameters, but they cannot write changes to them without *Entering* the password first.

The **Site Password** feature is used to provide password protection when accessing a device from a remote (dial-in) location. This feature can also be used to administer an existing site password.

Refer to the examples of changing, entering and clearing passwords, in this section.

Reset History Counters: Allows the user to reset the history records for Fuel, Power, and Starts and Runs in a genset control.

Starting: Contains parameters for setting cranking time settings and attempts, and for Start Time Delay.

Switch Setup: Contains a group of miscellaneous switch parameters for monitoring and for setting switches to a specific state. An example of switch some states are: Enable or Disabled, Started or Stopped, On or Off, Active Open or Active Closed, etc., The settings depends on the type switch selected.

Many of these features contain sub menus of additional adjustment features. Use Device Explorer to expand each of these categories to view the sub-menu of adjustments.
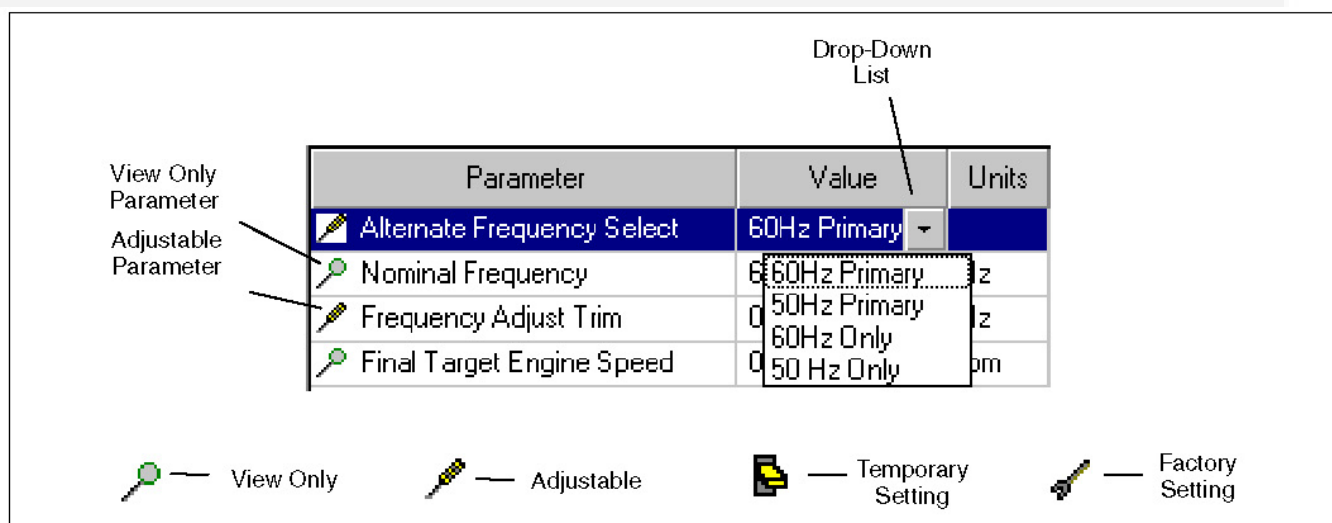

FIGURE 41.   TYPICAL ADJUSTMENT FEATURES

5.3.3 Making Adjustments

Located to the left of each parameter is an icon that indicates if the parameter can be adjusted or if it is for monitoring (refer to **Figure 41**).

The screwdriver icon is used for trims and settings that can be written permanently to the device (read and write). When the cursor is placed over a parameter that can be adjust, the range for the parameter is displayed (**Figure 42**). The magnifying glass indicates that the parameter value is being monitored (read only). The switch icon is used to display settings that can be temporarily written to a device. The wrench icon represents factory settings that are not adjustable with InPower.

Parameter	Value	Units	
🔍 Control Operational Minutes	81		02.
🖊 Displayed Operational Minutes	90	Minutes	02.
📇 Active Fault Code	0		02.
📇 Operational Status	St⌐opped Range 0.000000 to 4294967295.000000		02.

FIGURE 42.   PARAMETER RANGE

☞ **NOTE:**   **The value being monitored will not automatically update. The user can double click on the parameter to update the value field or click on the Refresh button, on the toolbar.**

Each parameter displays the current value and the units of measure for that value. Review this information before making adjustments. Parameter value trims and settings are displayed. *Trims* are numeric values that are entered directly into the Value cell. *Settings* are selected from drop down lists, and they consist of several types of values such as On/Off and Enable/Disable.

To change a parameter value, double click inside the Value cell of the parameter that you wish to change. The current value will be highlighted, if there are only a few choices, a drop-down arrow will be displayed next to the Value.

If an arrow is displayed, click on the arrow to view a drop-down list of the available settings. Click on the desired setting, and it will be entered into the Value cell.

If you do not see an arrow, begin typing the new value, the new value entry will overwrite the current value. If the value entered is above or below the range of acceptable values, an error message dialog box will be displayed (**Figure 43**). Review the information in the dialog box to see the value limits, before clicking **OK,** to close the error message dialog box.

Parameter	Value	Units	Time Last Read
🔍 Control Operational Minutes	8¯		02/17/2006 08 20:02.64
🖊 Displayed Operational Minutes	111	Minutes	02/17/2006 08 20:02.64
📇 Active Fault Code	0		02/17/2006 08 20:02.64
📇 Operation			006 08 20:02.64
📇 Control Ad			006 08 20:02.64
📇 AC Output			006 08 20:02.64
📇 Inverter Fr			006 08 20:02.64
📇 RPM			006 08 20:02.64
📇 Coolant T			006 08 20:02.04
📇 Genset Battery voltage			006 08 20:02.64

Device Explorer ❌
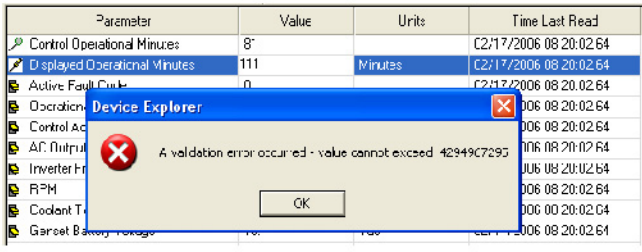A validation error occurred - value cannot exceed 4294967295
[OK]

FIGURE 43.   ADJUSTMENT ERROR

5.3.4 Saving Adjustments

Edit Mode: When selected, a parameter value remains in the edit mode (to change a numeric value or select from a drop-down list). When finished making adjustments, press the enter key or click on another parameter value to exit the edit mode.

Saving Adjustments: Adjustments are written to the device as they are entered. To make these changes permanent, click on the **Save Trims** button, on the toolbar (floppy disc) or click on the **Device** menu and select **Save Adjustments**. Changes in adjustments will immediately alter the device's performance.

After the **Save Adjustments** button is selected, a *Save Adjustments* dialog is displayed. This feature allows you to view and confirm your changes by clicking on **Save.** You can make final edits within this dialog by double clicking inside the New Value box and entering a new parameter value or you can reset all of your changes by clicking on the **Cancel** button.

Saved adjustments are written to the **Audit Trail** in the Monitor feature. Refer to the **Audit Trail** to review the record of adjustment changes.

If the user loses connection with the device before saving an adjustment, the change will not be saved.

5.4   Test

The **Test** feature is a diagnostic tool that is used to perform internal self-checks on the device (**Self Test**). Use InPower to verify inputs and outputs of the device, and test device protection functions (like Overspeed).

After changing a **Test** parameter, the user can observe or measure the results of the changes.

☞ **NOTE:**   **There are two types of Test Commands: maintained inputs and momentary inputs. When a maintained input is set to active, the input will remain active. The InPower user MUST set the input back to inactive, when they are finished with the test or before leaving the site, otherwise the command will remain active.**

Momentary inputs automatically change state to inactive after one second.

Maintained inputs generally have the screwdriver icon next to the parameter name, and momentary inputs have the switch icon next to the parameter name.

This section describes each group of tests listed in the **Test** directory. The Self Test feature can be used as a quick check to determine if the genset control is responding, by sending control inputs that should activate the control outputs. The other Tests are used for performing more specific test functions.

The Test parameter values are adjustable (**Figure 44**). Some parameters have a numeric value that can be changed while others have values that can be selected from a drop-down list.

5.4.1   Commercial Gensets

The **Test** directory for a typical commercial genset may contain the following groups (folders) of Test options:

- Fault Simulation
- Inputs
- Manual Operation
- Outputs
- Self Test
- Speed Override

- Protection Verification

- Annunciator

The **Test** directory for a typical consumer genset may contain the following groups (folders) of Test options:

5.4.2   Override Requests

This test option allows you to enable or disable an override for each of the eight devices.

5.4.3   Override Commands

For the starter, glow plugs, fuel pump, run output, status light, power latch, and inverter, this test option allows you to set the override command to On or Off. For the governor output, this test option allows you to set the range from 0 to 100%.

Pressing the Stop button disables any override. Overrides are active for 60 seconds, and then are disabled.

⚠️   *WARNING: Overriding genset command may result in damage to the genset. Only trained and experienced personnel should override genset commands.*

5.4.4   Override Status

For the starter, glow plugs, fuel pump, run output, status light, power latch, and inverter, this test option allows you to see the current state of the override status. For the governor output, this test option allows you to vary the governor output from 0 to 100%.

5.4.5   Set High Idle

While the default value is **Normal**, this variable can be used to set a mechanical High Idle Stop by setting the value to "Set High Idle."

Parameter	Value	Units	Time Last Read
Fuel Pump Override Request	Disable		03/02/2006 09:14:42.28
Fuel Pump Override Command	Off		03/02/2006 09:14:42.21
Fuel Pump Override Status	Off		03/02/2006 09:14:42.15
Glow Plugs Override Request	Disable		03/02/2006 09:14:42.09
Glow Plugs Override Command	Off		03/02/2006 09:14:42.02
Glow Plugs Override Status	Off		03/02/2006 09:14:41.96
Run Output Override Request	Disable		03/02/2006 09:14:41.90
Run Output Override Command	Off		03/02/2006 09:14:41.84
Run Override Status	Off		03/02/2006 09:14:41.76
Starter Override Request	Disable		03/02/2006 09:14:41.70
Starter Override Command	Off		03/02/2006 09:14:41.63
Starter Override Status	Off		03/02/2006 09:14:41.57
Status Light Override Request	Disable		03/02/2006 09:14:41.51
Status Light Override Command	Off		03/02/2006 09:14:41.45
Status Light Override Status	Off		03/02/2006 09:14:41.38
Set High Idle	Normal		03/02/2006 09:14:41.32
Power Latch Override Request	Disable		03/02/2006 09:14:41.26
Power Latch Override Command	Off		03/02/2006 09:14:41.20
Power Latch Override Status	On		03/02/2006 09:14:41.13
Governor Output Override Request	Disable		03/02/2006 09:14:41.07
Governor Output Override Command (in percent)	0	%	03/02/2006 09:14:41.01
Governor Output Override Status	0	%	03/02/2006 09:14:40.95

FIGURE 44.   ADJUSTABLE TEST PARAMETERS

5.4.6   Inputs

When inputs are externally activated, the **Inputs** feature can be used to monitor the inputs. The actual inputs can be measured with a multimeter and the results can be compared.

Example: To test the **Oil Pressure Input**, check the genset wiring diagram for the location of the oil pressure sender input. In this example the input is on connector 05 between pins 22 (+) and 23 (gnd). Remove the connector and insert the service breakout box. Check for voltage between pins 22 and 23.

If no voltage is present, check the harness and the sensor. If voltage is measured, and InPower and the Operator panel display no input, the connections to the control, or the control are suspect.

Figure 45 shows the results when an input voltage is present, in this example the oil pressure (approximately 26 psi) is displayed in InPower, and should also be displayed in the Operator Panel display.
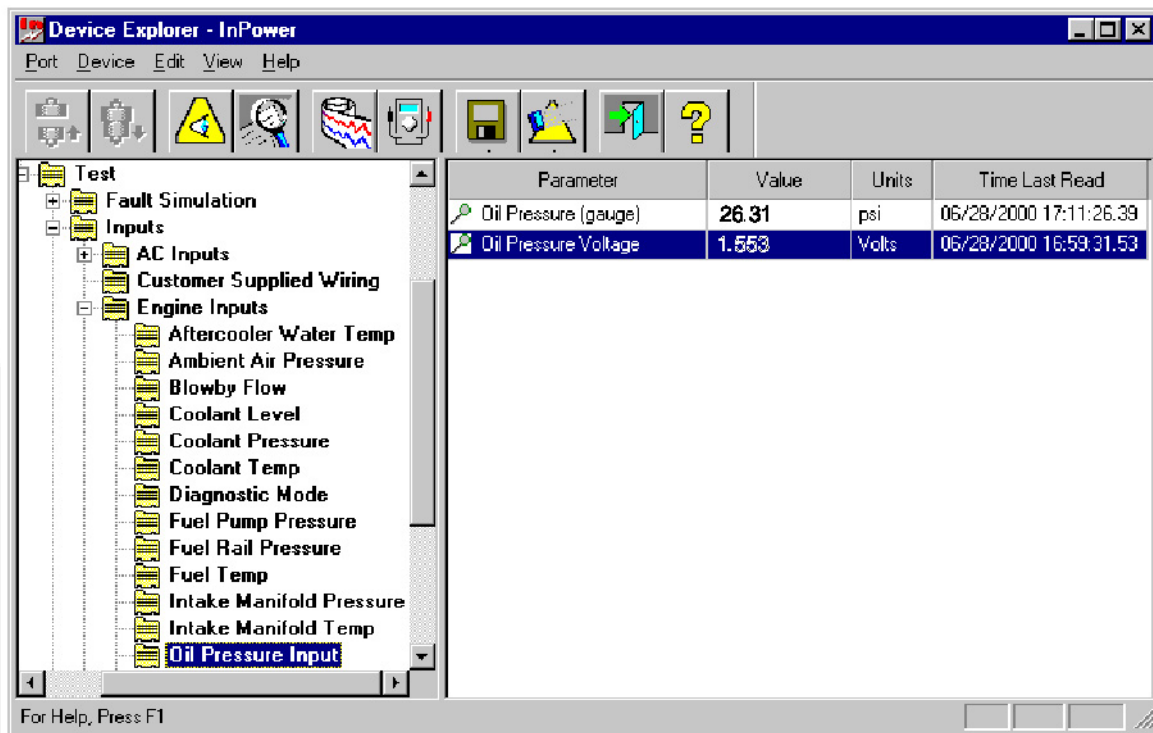
FIGURE 45.   TEST - INPUTS - OIL PRESSURE

5.4.7   Manual Operation

This feature allows the user to perform genset operations including exercising the genset, stopping the genset and bypassing the warm-up period (used if the genset is already warmed up).

Example: In this example, InPower is used to initiate a **Manual Run Command**. Make sure that the Run/Off/Auto switch, on the genset control panel, is set to **Auto**. Double click on the **Manual Run Command** Value cell, and a drop-down list arrow is displayed (refer to **Figure 46**). Click on the drop-down arrow and click on **Run**. To initiate the **Manual Run Command**, click on the **Save Trims** button, on the toolbar. To end the **Run** command double click on the Value cell again, click on the drop-down arrow and click on **Stop**, then click on the **Save Trims** button, on the toolbar.

5.4.8   Outputs

The Outputs feature allows the user to activate relay drivers without running the genset. This feature can be used to test the relays and wiring, or measure the relay driver output with a voltmeter.

Example: In this example, InPower is used to enable the **Load Dump Override Command** (refer to **Figure 47**). Make sure that the **Load Dump** parameter is set to **Driver On**. (If it is not, change it with the **Load Dump Override Command** parameter, and save that parameter setting.)

Double click on the **Load Dump Override Enable** Value cell. A drop-down list arrow is displayed, click on the drop-down arrow and click on **Enabled**. To temporarily write this output to the **Load Dump Override Relay**, click on the **Save Trims** button, on the toolbar. The override can be disabled by selecting **Disabled** in the Value cell, then click on the **Save Trims** button, on the toolbar.
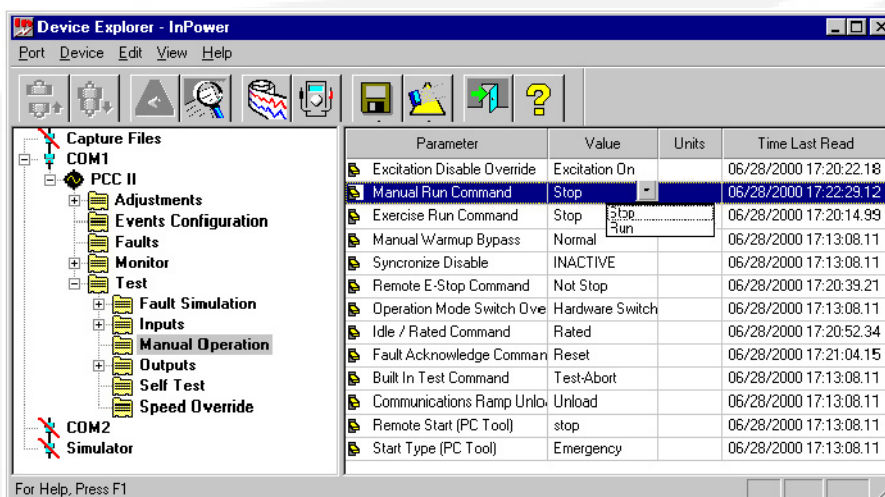
FIGURE 46.   MANUAL OPERATION - MANUAL RUN COMMAND
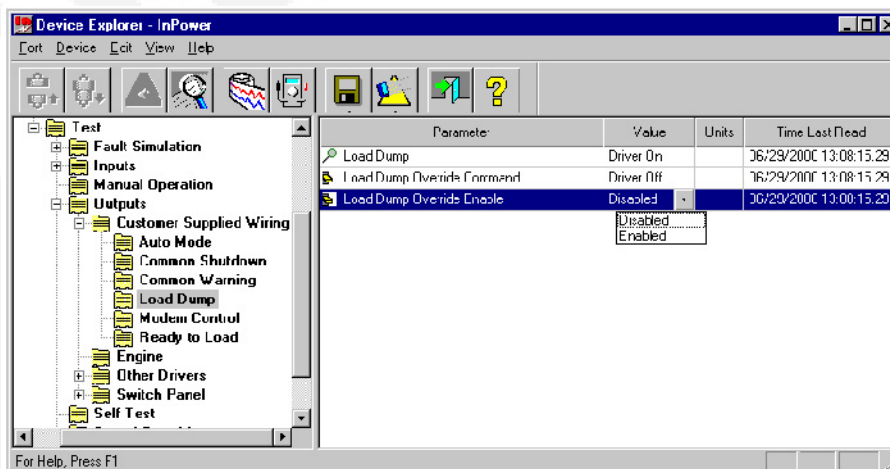
FIGURE 47.   OUTPUTS - CUST. SUPPL. WIRING - LOAD DUMP

5.4.9   Fault Simulation

This feature allows the user to test alternator protection and engine protection devices by temporarily overriding the sensor inputs and verifying that the engine shuts down. There are a large number of protection features that can be checked.

Example: In this example, InPower is used to test an engine protection feature (**Figure 48**).

The user can make a check of the current engine protection settings for low oil pressure. Double clicking on the **XY Table** Value cell for the **LOP Warning Threshold Table**. Review the oil pressure Vs. RPM chart to see where the warning threshold points are set. Note the warning levels, and then close the XY table.

Double click on the **Oil Pressure Override Command** Value cell and enter a voltage amount that will be low enough to trigger the warning (or leave the setting at the default 0 volts).

Double click on the Value cell for the **Low Oil Pressure Override Enable**. A drop-down list arrow is displayed, click on the drop-down arrow and click on **Enabled**. To temporarily write this output to the device, click on the **Save Trims** button on the toolbar.

The Alarm popup will display the active warning (**Figure 48**).
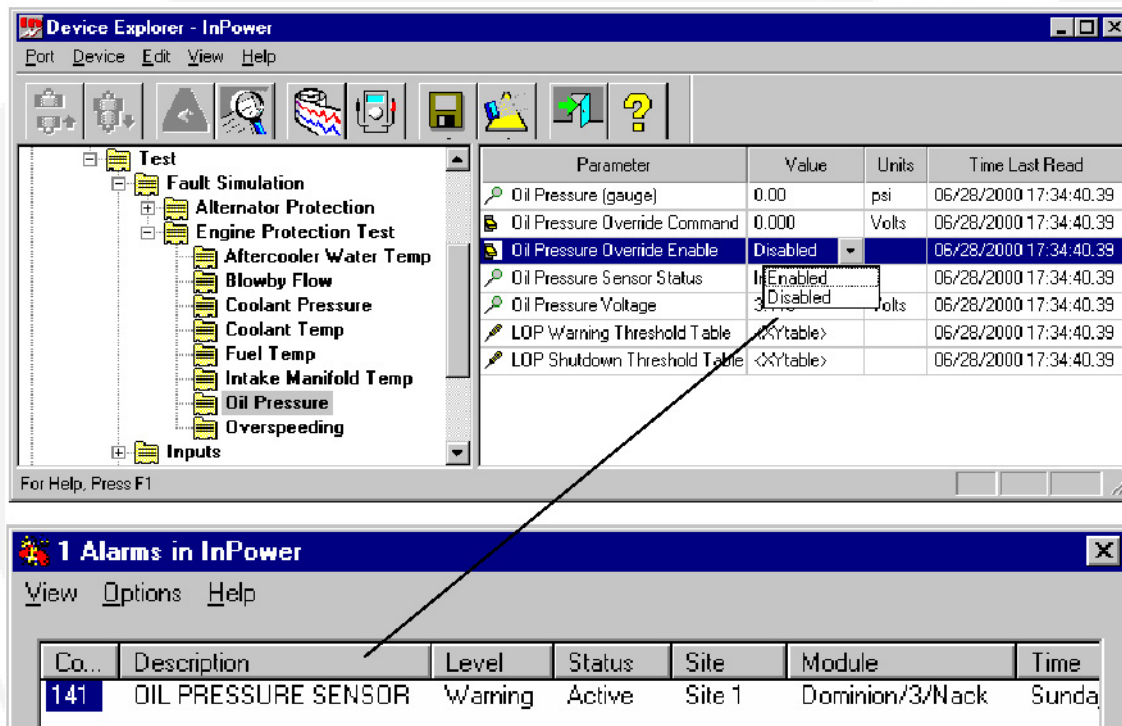
FIGURE 48.   TEST - ENGINE PROTECTION -OIL PRESSURE TEST

5.4.10 Self Test

InPower has built in tests that can be used for diagnostics. The default setting is the **Test Abort** value (not in test mode) setting. **Figure 49** shows the **Self Test** options. Double click on the Value cell, then click on the arrow to display the drop-down list of settings.

The Self Test feature has two Built In Tests (**BIT Command**). The first test, named **Test Stationary**, is used to check all sensors and output relays by activating control outputs. The user can then monitor inputs, if fault conditions occur, the event handler will popup to display faults.

⚠️   *WARNING: **Notify personnel before using the Self Test Feature to crank the engine. Severe personal injury or death can result. See the equipment Operator's Manual for important safety precautions.***

The second test, named **Test Cranking**, sends a start cranking signal to the engine to test the magnetic pick-up (MPU) speed sensors, starter relay and battery level.

The **Test Abort** setting is the default setting, indicating that a Self Test is not in process. When you are finished with a **Self Test**, or to end a test, return the **BIT Command Value** to **Test Abort**.

5.4.11 Speed Override

The speed override options are used to override the normal governor reference input to the control. The **Speed Reference Override** feature can be Enabled to override the governor reference input in order to operate the engine at another speed, for diagnostics purposes.
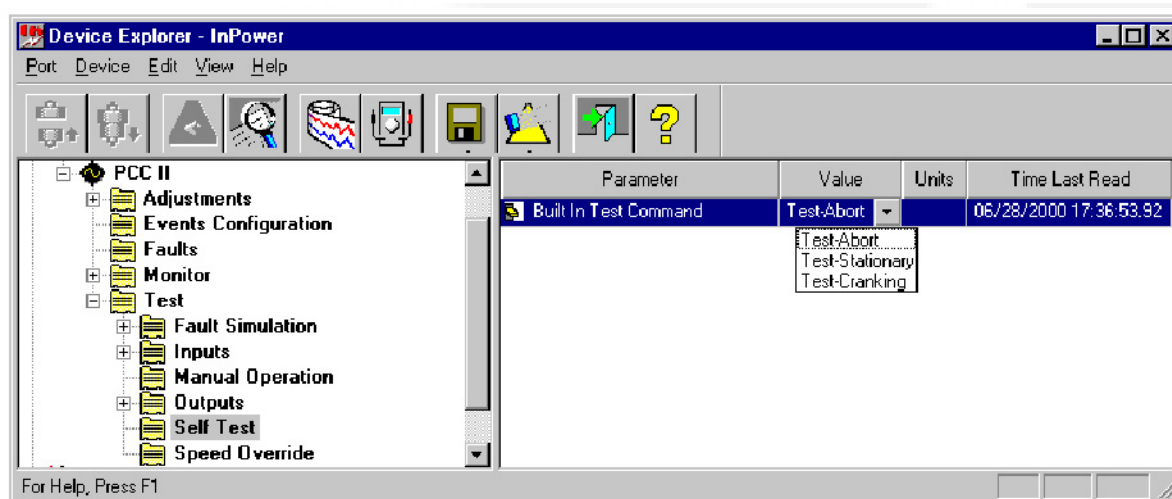

FIGURE 49.   SELF TEST - TEST -BIT COMMAND

5.4.12 Single Cylinder Cutout Test

InPower can used to cutout fueling to one cylinder at a time. This test can be used to help isolate a cylinder with fueling or combustion problems.

Example: InPower is used to perform a single cylinder cutout test (**Figure 50**). This test is used in genset applications that use QSX-15 series engines (part of DFE series).

⚠️   *CAUTION: Do not cutout fueling to more than one cylinder at a time or engine damage can result. Always change the Cylinder Cut Out Test Enable to Disabled, when finished testing. Follow these steps carefully and refer to the equipment Operator's Manual for Important Safety Precautions.*

Connect the service PC to the genset. Start the genset and operate it at rated speed with no load.

Open the **Test\Fuel System Test** parameter group. Make sure each of the six cylinder parameter values are set at 1 (enabled).

Double click on the **Cylinder Cut Out Test Enable** parameter and select **Enabled**.

Double click on the desired cylinder for testing, in this example: **Cylinder #1 Injector Fueling.** Enter 0 (disabled). Use the **Save** button on the toolbar to save the change and perform the cutout test on cylinder number 1.

When finished, always remember to return the **Cylinder Cut Out Test Enable** to **Disabled**, and return the cylinder being tested to 1 (enabled). Use the **Save** button on the toolbar to save the change.
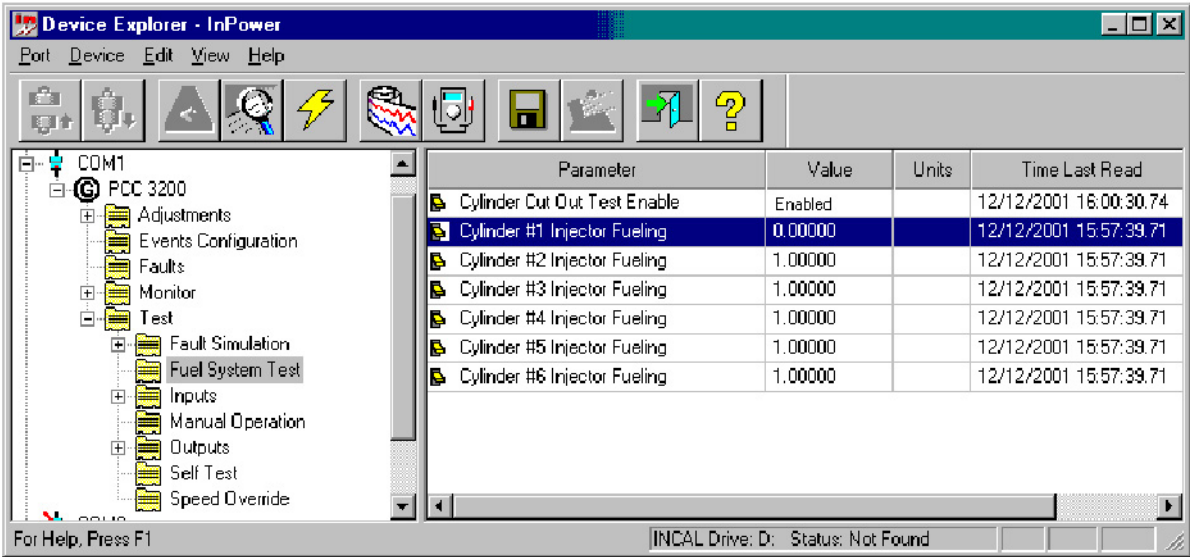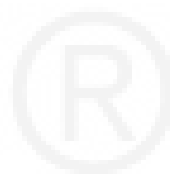
FIGURE 50.   SINGLE CYLINDER CUTOUT TEST

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6 Initial Calibration for Commercial Gensets

6.1 About Initial Calibration

The Initial Calibration feature is used to download a calibration file into a service replacement genset control (base board). This section covers the procedures for performing an Initial Calibration on commercial gensets.

Starting with version 5.5, InPower calibration files for commercial and consumer controllers can be downloaded from the InCal CD or from the CPG InCal website.

6.2 Initial Calibration

Use of a Capture File can reduce the amount of adjustment that may be required when replacing the base board. If the old base board is operational, and a capture file has not already been created, correct any active faults (if possible).

Refer to the generator set service manual for control replacement procedures. Before replacing the control, remove power from the battery charger and block heater, if equipped, and remove power from the genset control.

Complete all necessary service replacement procedures and power the control.

Reconnect power to the battery charger and block heater, if applicable.

Connect the serial communication cable from the service PC to the device.

Start InPower and launch the Alarm Popup Window by clicking on the firecracker icon, located on the lower right corner of the Windows status bar. Click on the Alarm Popup **Options** menu, then click on **AutoAnnounce** to deselect (uncheck) it. Disabling this feature prevents nuisance alarms during the calibration download.

Connect to the port by double clicking on the port that matches the COM port on the service PC being used for the genset connection (COM1, COM2, etc.). The available COM ports are displayed in the Device Explorer directory (left pane).

Select the device **DVC1** (or **PCC##00**, if the device already has a calibration file) by clicking on it (**Figure 51**).

After connecting to the device, click on the **Device** menu and click on **Initial Calibration** (**Figure 52**).

If prompted to select between G-Drive and Genset applications, select **Genset**; then select **Next**.

Refer to the genset calibration label, located inside the control housing, for the calibration part number (**Figure 53**).

This label also lists the features that were originally installed in this device.

In this example, calibration part number 0326-0264 is displayed on the label.
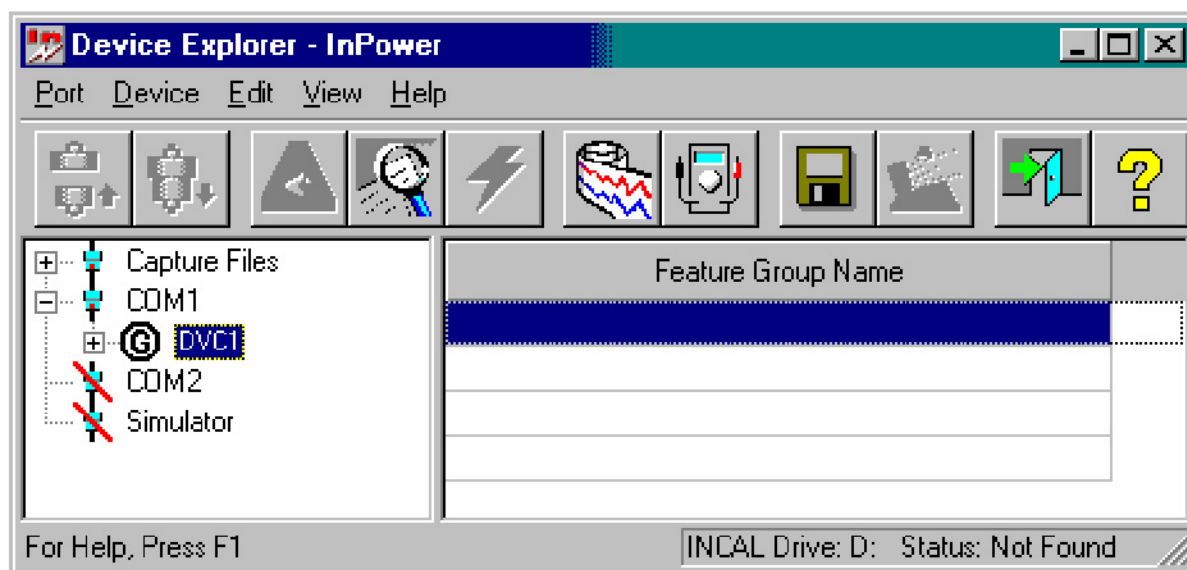
FIGURE 51.   MAIN WINDOW
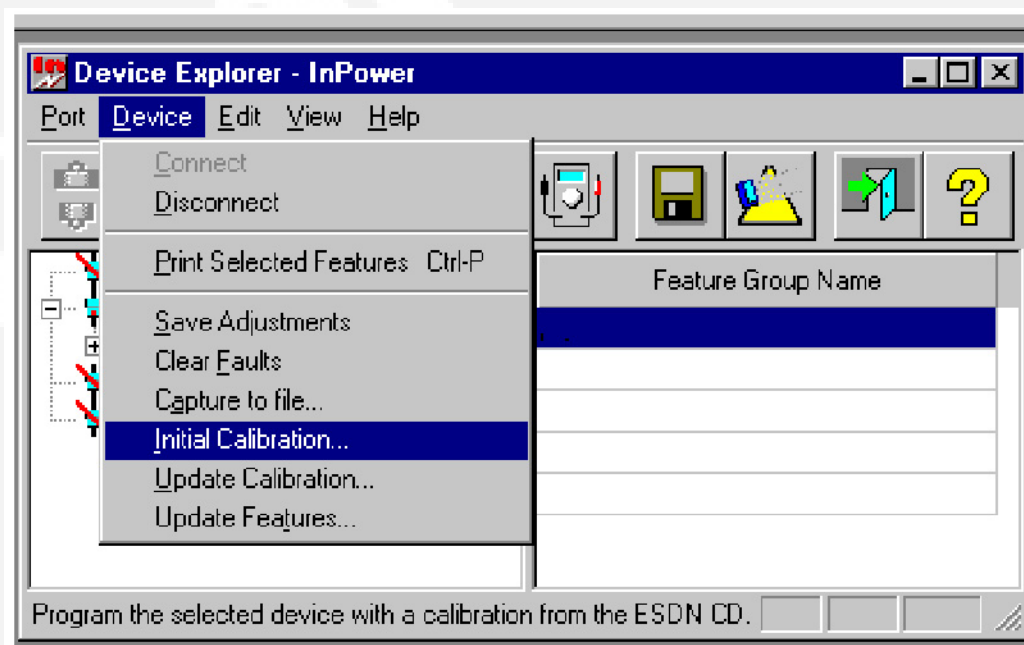
FIGURE 52.   MAIN WINDOW

FIGURE 53.   GENSET DATAPLATE AND CALIBRATION LABEL

If a pop-up message indicates that there is an error loading from the INCAL CD, either the CD drive letter was not correctly specified during InPower installation, or the CD is not installed or is defective. If the CD is in the CD drive, click on **Yes**, and specify the correct CD drive designation. If the CD is not in the drive, insert the CD and click on **No**.

The INCAL CD location can be verified by clicking on the **Port** menu and clicking on **Find InCal** (**Figure 54**). Select INCAL CD drive designation from the drop-down list, then click on **Verify INCAL Structure**. A popup message will verify the INCAL location (**Figure 55**).
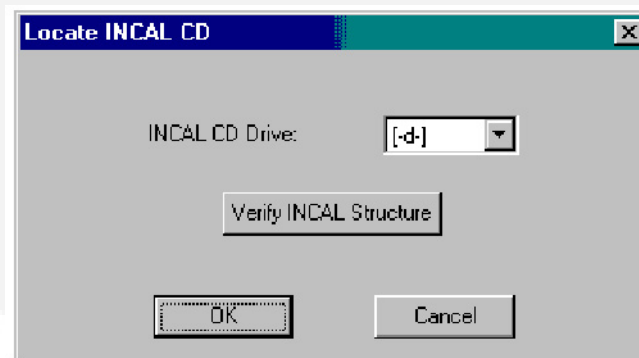
FIGURE 54.   FIND INCAL

FIGURE 55.   INCAL LOCATION FOUND

6.2.1   Selecting Calibration Part Number

The Select Calibration window (**Figure 56**). lists all of the calibration files that are available from the Power Generation INCAL CD. Also shown are the Engine Control Parts List (CPL) and Calibration Description.

Use the scroll bar to locate the Calibration Part Number that matches the calibration part number shown on the genset Calibration Label.

The data, displayed in each column, can be sorted in ascending or descending order by clicking on the column heading.

Click on the matching calibration part number to select it. When the matching calibration part number is selected, click on **Next**, to continue the Initial Calibration.
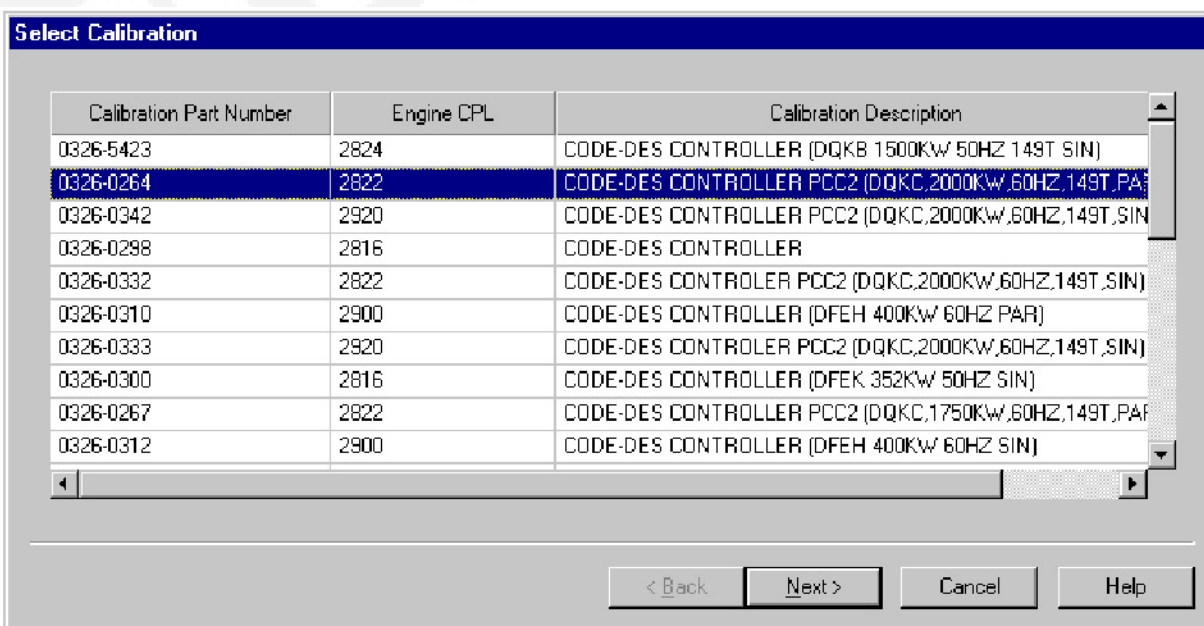
FIGURE 56.   SELECT CALIBRATION

6.2.2   History

The History window is displayed after the calibration part number is selected. This feature displays the calibration file Revision History, Calibration File (part number) and Revision Description.

If this window displays a calibration file that does not match the calibration part number on the calibration label, click on the **Back** button to choose the correct calibration file.

If History displays the calibration file part number that was previously selected, click on the **Next** button to proceed to the Save and Restore Parameters feature.

6.2.3   Save and Restore Parameters

The Save and Restore Parameters window displays the Parameter Descriptions, Value, and Units of measure information (**Figure 58**).

FIGURE 57.   HISTORY

FIGURE 58.   SAVE AND RESTORE PARAMETERS

6.2.4   Use Capture File Feature

Click on the **Set Data Plate From Capture File** button, in the Save and Restore Parameters window, to select the capture file created from the previous control (if available).

If using the Set Data Plate From Capture File button, browse to the Capture file location and select the file, then click on the **OK** button (**Figure 59**). Using a capture file, during an initial calibration, will only restore the dataplate information. To restore the remaining capture file parameter settings, click on the box next to the **Overlay Capture File After Calibration.** If this feature is not used, the capture can still used after performing the initial calibration to overwrite the parameter settings.

The Save and Restore window will display the capture file name selected (**Figure 60**).

Verify that the information displayed in the parameter list matches the information shown on the genset, alternator and engine data tags. Use the scroll bar to review all of the information. If any information needs to be corrected, double click on the data and enter the correct information.

☞   **NOTE: If a capture file is not being used, the genset serial number and Engine CPL number *must* be entered.**

After confirming that the correct information is displayed in the parameter list, click on the **Next** button.

Capture Files

Select Capture File:

G_DRIVE_28.cap
PCC2100_Site_A.cap
PCC3200_Site28.cap

OK   Cancel

FIGURE 59.   MAIN WINDOW

FIGURE 60.   CAPTURE FILE SELECTED

6.2.5   Feature List

The Feature List window displays all of the feature part numbers that are available for the selected calibration file (**Figure 61**). This screen also displays the feature descriptions.

FIGURE 61.   FEATURE LIST

Refer to the calibration label (**Figure 53**), located inside the control housing, for the list of features that were factory installed on this genset.

Click on the checkbox, next to each of the feature part numbers, that correspond to the feature part numbers on the calibration label.

If the **Finish** button is clicked, a popup window prompts the user with the question "Do you wish to calibrate the controller now?" (**Figure 62**). Click on the **Yes** button to continue.

☞ **NOTE:** **The genset serial number and the checksum are case sensitive.**
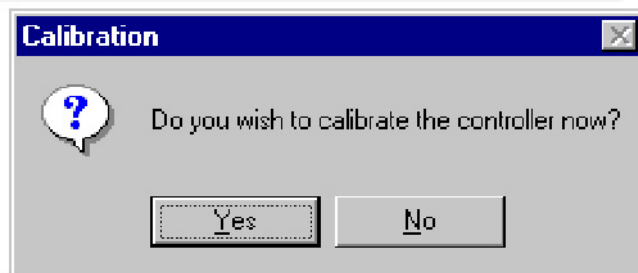
FIGURE 62.   CALIBRATION POPUP
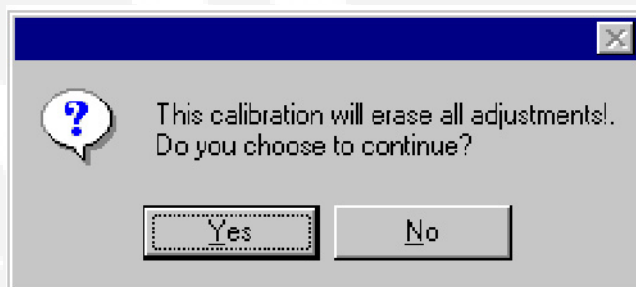
FIGURE 63.   FEATURE LIST

A popup window informs the user that the calibration file download will erase all adjustments, and it prompts the user with the question "Do you choose to continue?" (**Figure 63**). Click on the **Yes** button, to begin the initial calibration download.

☞ **NOTE:** **Pop-up messages may be displayed behind an open window. To view all open windows, including popup messages, hold down the Alt key and repeatedly press the Tab key to view each open window.**

6.2.6   Calibration Download

The calibration file download may take 20 minutes or longer, depending on the service PC and the communication port.

During the download, it is normal operation for the genset control to display warnings. Do not hit the "**Fault Acknowledge**" button during the calibration file download, or the download may be interrupted.

When the download is complete, a final popup message informs the user if the download completed successfully. If the download completed successfully, click on the **OK** button to close the popup message. (**Figure 64**).

If the popup message indicates that the download was not successful, repeat the Initial Calibration procedure. If the download is still not successful, record the error message and contact service for help.
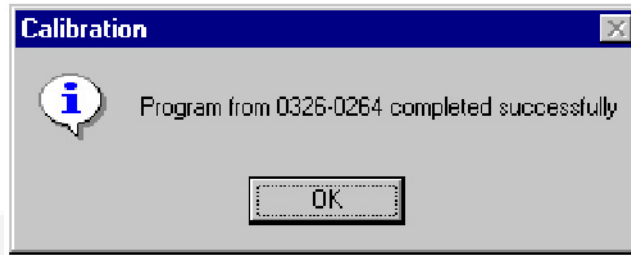
FIGURE 64.   FEATURE LIST

If a "Breaker Fail to Open" fault message is displayed, after the initial calibration, change the breaker position input to the control from a Form "B" contact to a form "A" contact. After making this change, acknowledge the fault first with the operator interface panel, and then with InPower.

If the genset is part of a utility paralleling system, the utility breaker position input should also be changed to a form "A" contact, before operating the system.

6.2.7   Correcting a Corrupted Calibration of a Control

Loss of power or a disconnection during initial calibration can result in the control's memory being corrupted. If this occurs, an error message is displayed when attempting to **Connect** to the corrupted control with InPower.

☞ **NOTE:**   **Below is the connection error message that is displayed for a PCC1302. A similar error messages is displayed for all controls that support this feature, including: PCC1302, PCC2300, PC3300, and PS0500.**
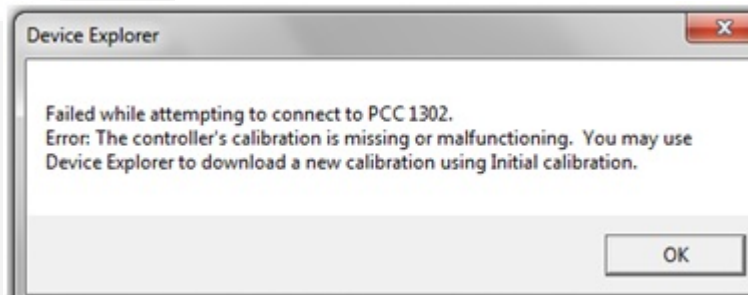
FIGURE 65.   CONNECTION ERROR MESSAGE FOR A PCC1302

To recover the corrupted control, use the control's **Initial Calibration** menu selection. After the control has been calibrated, use the **Connect** command to verify that the control has been recovered.

☞ **NOTE:**   **The following figure shows the Initial Calibration and Connect commands for the PCC1302. These commands are also available for the other controls that support this feature.**
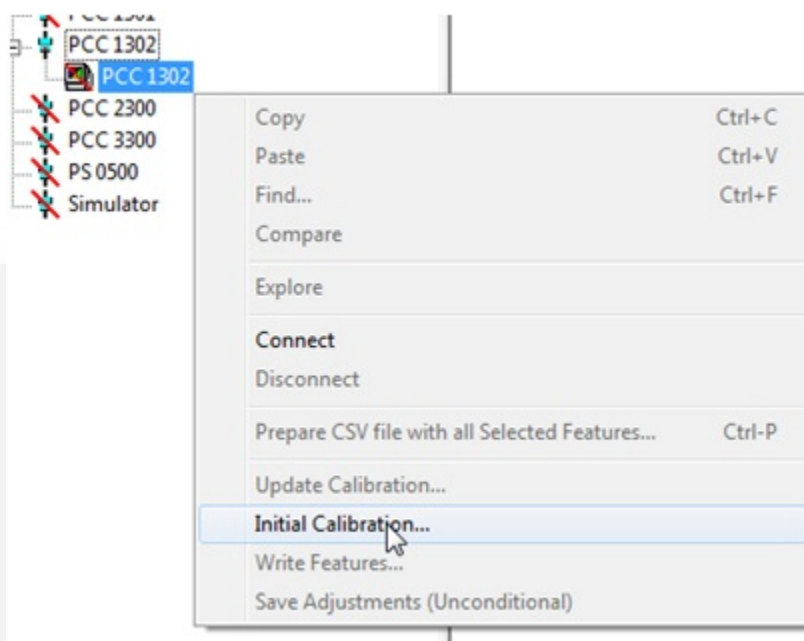
FIGURE 66. INITIAL CALIBRATION MENU SELECTION FOR A PCC1302

6.2.8 Correcting a Corrupted Calibration of an HMI

Loss of power or a disconnection during initial calibration can result in the HMI's controller memory being corrupted. If this occurs, an error message is displayed when attempting to **Connect** to the corrupted HMI with InPower.

☞ **NOTE:** **Below is the connection error message that is displayed for a HMI320. A similar error messages is displayed for the other HMIs that support this feature, including: HMI220 and HMI321.**
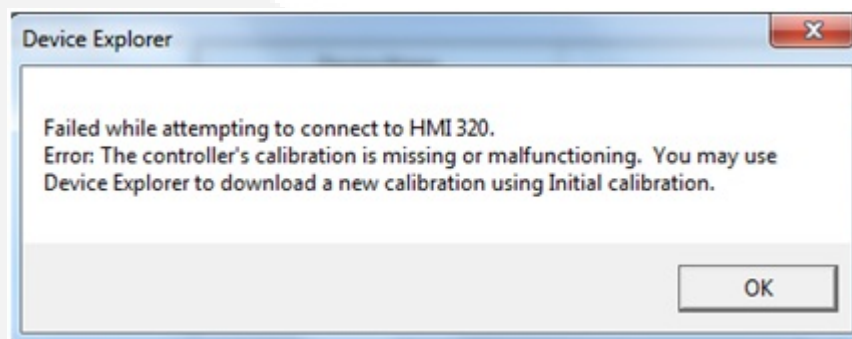
FIGURE 67. CONNECTION ERROR MESSAGE FOR AN HMI320

To recover the corrupted control, use the HMI's **Initial Calibration** menu selection. After the HMI has been calibrated, use the **Connect** command to verify that the HMI has been recovered.

☞ **NOTE:** **The following figure shows the Initial Calibration and Connect commands for the HMI320. These commands are also available for the other HMIs that support this feature.**
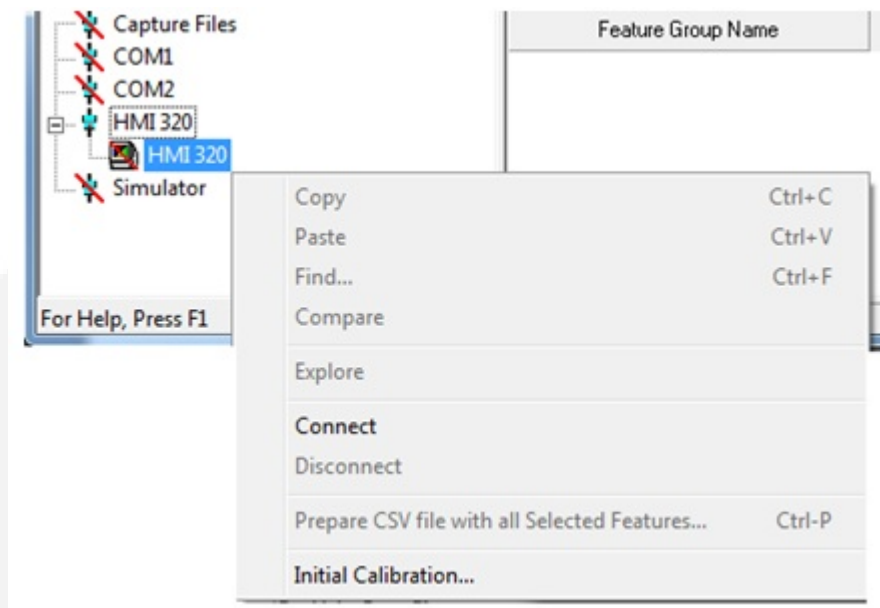
FIGURE 68.   INITIAL CALIBRATION MENU SELECTION FOR AN HMI320

6.3   Writing Adjustments From a Capture File

If a capture file was made prior to the control being replaced, and the **Overlay Capture File After Calibration** feature was not used, the capture file can still used after performing the initial calibration. The previous parameter adjustments and settings, stored in the capture file, can be written to the new control (device).

The Capture file feature is not applicable to the PCC 1100.

6.4   Final Adjustments

Prepare to start the genset and test the operation of the entire system. Refer to the genset service manual for adjustment procedures and observe all safety precautions described in the genset service manual.

After completing all necessary adjustments, make a new capture file. Store a copy of the capture file at the site and return a copy to Service for cataloging.

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7 Update Calibration for Commercial Gensets

7.1 About Update Calibration

The Update Calibration feature is used to replace a current calibration file with a newer version from the Power Generation INCAL CD or downloaded from the CPG InCal website. The new calibration file is written over the current calibration file in the genset baseboard.

Calibration updates are performed at the site, using InPower. This section covers the procedures for performing Update Calibration for commercial gensets.

Starting with version 5.5, InPower calibration files for commercial and consumer controllers can be downloaded from the InCal CD or from the CPG InCal website.

7.2 Update Calibration

After connecting to the device, click on the **Device** menu and click on **Update Calibration** (**Figure 69**). If prompted to select between G-Drive and Genset applications, select **Genset**, then select **Next**.

If prompted with the message, "Could not find a matching Calibration Part Number ...," click on the **OK** button. Use the Initial Calibration feature to update the calibration file.

After selecting **Update Calibration**, the History window is displayed.
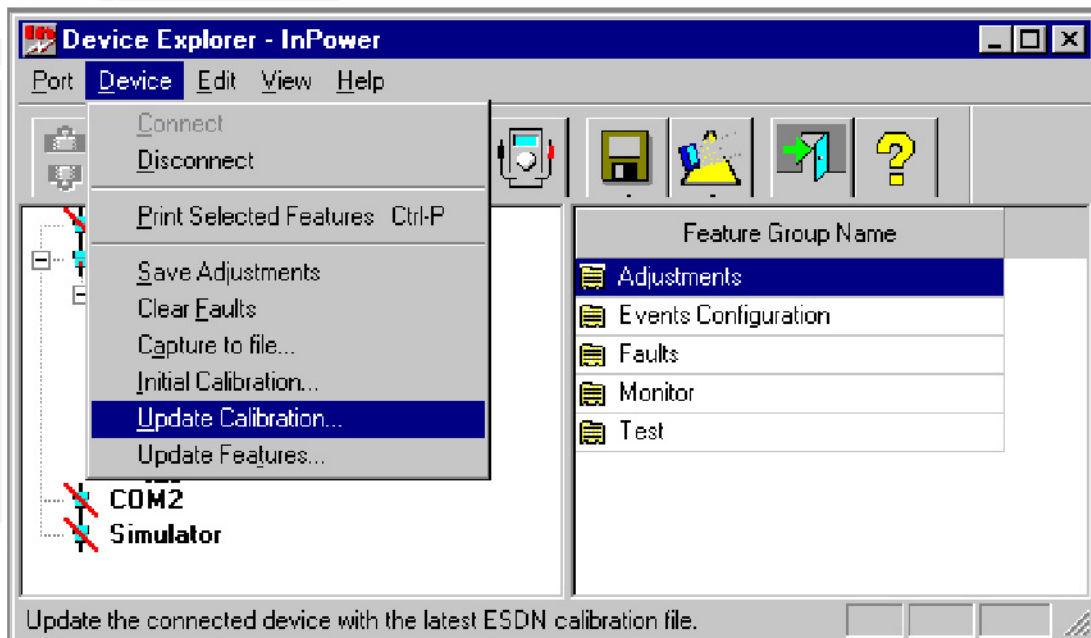
FIGURE 69.   UPDATE - DEVICE MENU
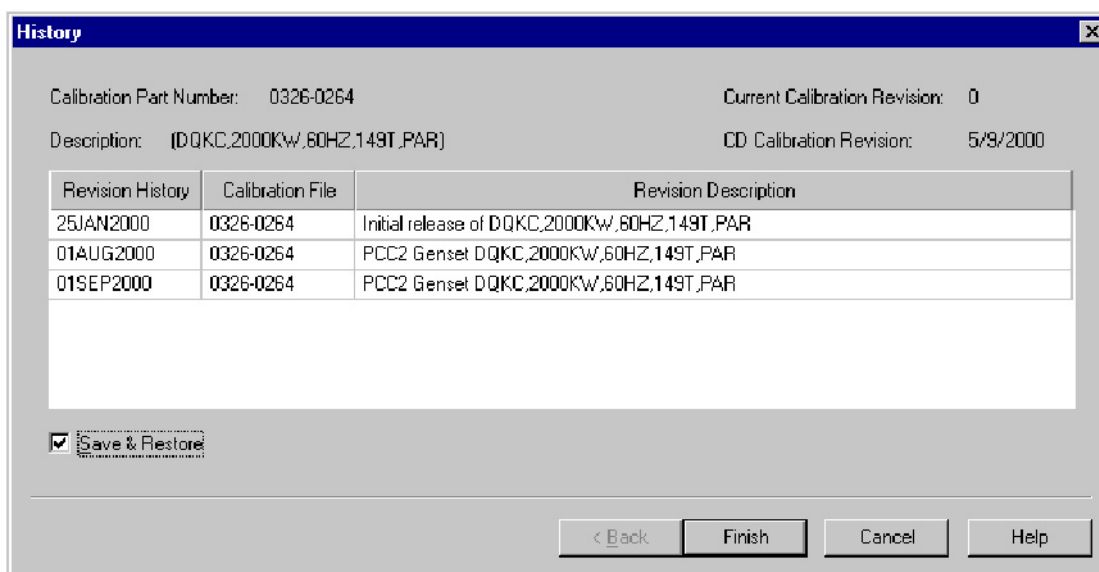
FIGURE 70.   HISTORY

7.2.1   History

The History window displays information about the currently installed calibration part number and calibration revision across the top of the window (**Figure 70**).

The History window also displays information, from the Power Generation INCAL CD, about the Revision History, Calibration File part number and Revision Description.

The **Save and Restore** checkbox is used to save the current adjustment trims and settings. Make sure the checkbox is enabled (checked) before proceeding.

Click on the **Finish** button to proceed with the calibration update.

If a newer calibration is available with INCAL, a popup window prompts the user with the question "Do you wish to calibrate the controller now?" (**Figure 71**). Click on the **Yes** button to continue.

☞ **NOTE: Pop-up messages may be displayed behind an open window. To view all open windows, including popup messages, hold down the Alt key and repeatedly press the Tab key to view each open window.**
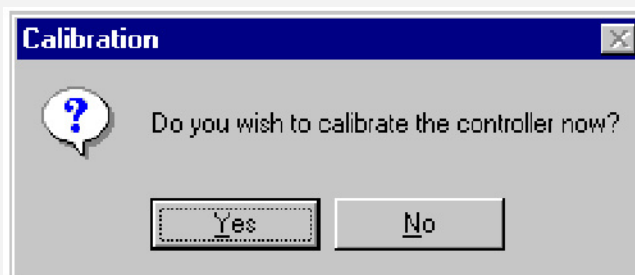
FIGURE 71.   UPDATE NOW

When the download is complete, a popup message informs the user if the download completed successfully (**Figure 72**). Click on the **OK** button to acknowledge.
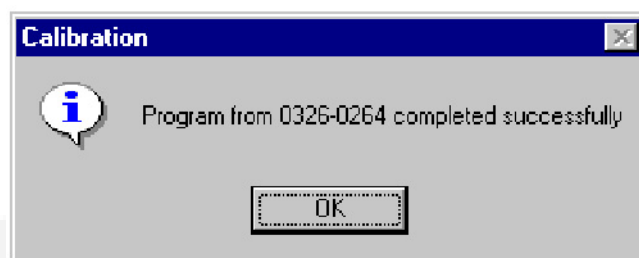
FIGURE 72.   COMPLETED

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8 Monitor

This section describes how to use the Monitor and Datalog features. There are two methods of monitoring parameters, the user can create a custom Monitor dialog for viewing selected parameters, or the user can view pre-selected parameters, based on the device type.

8.1 Monitor and Datalog

The Monitor and Datalog features are used to view and record (datalog) parameters. The user can monitor preselected parameters with Device Explorer, or they can select the specific parameters they want to monitor and record, using the Monitor Dialog feature.

InPower's Device Explorer allows the user to navigate and view preselected parameters.

8.2 Monitor Dialog

The Monitor Dialog allows the user to select the parameters they want to view, set a sampling rate and enable the data logging feature. Sampling allows realtime data viewing. Data logging stores information in a file for later use.

The Monitor Dialog is displayed when the Monitor command is launched from either the **Start** menu or the **Monitor** button, on the InPower toolbar.

8.2.1 Monitor Dialog Features

The Monitor Dialog is shown in **Figure 73**. This section describes how to use the Monitor Dialog features.

File Menu: Used to create a **New** Monitor file or to **Open** an existing Monitor file. Also used to **Save** changes to an opened file or **Save As...,** to save changes to a new file. **Recent** allows the user to view recently opened files and is used as a shortcut to open a file.
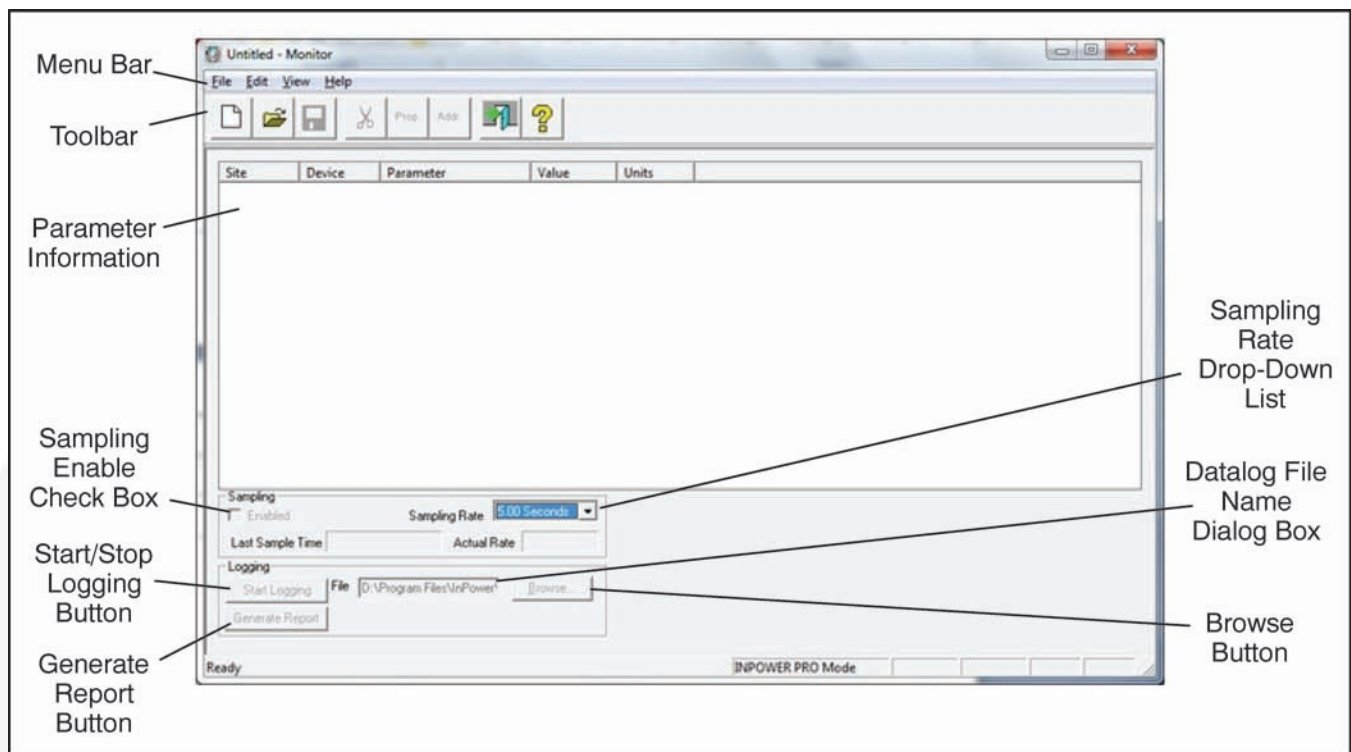
FIGURE 73. MONITOR DIALOG FEATURES

Edit Menu: Use the **Edit** menu commands to **Add**, **Delete**, **Edit**, **Cut**, **Copy**, and **Paste** parameters into and out of the Monitor Dialog.

View Menu: Use the **View** command to hide or display the **Toolbar** and **Status Bar**.

Help Menu: Provides InPower **Help Topics** and **About Monitor** help.

Sampling: The **Monitor** dialog will sample at the selected setting. To select the sample rate, click on the **Sampling - Enabled** check box (enabled when checked). Enabling the Sampling feature activates the **Sampling Rate** list box. Select the desired sampling rate from the list box. Sample rates are available from 0.05 seconds to 60 seconds.

Logging: **Logging** al lows the user to log parameter information to a .LOG file (at the selected Sampling Rate). **Sampling** must be enabled to use this feature. Before enabling data logging, enter a name in the file dialog. The log file uses the tab delimited file format. To select the **Logging** feature, click on the **Start Logging** button. When data logging begins, the button text switches from **Start Logging** to **Stop Logging**. Click on the **Stop Logging** button to stop data logging.

Data can be logged to the default (Monitor_<Time Stamp>.001.log) file where the time stamp is "MM_DD_YYYY_HH_MM_SS" (for example, Monitor_12_22_2011_13_46_10.001.log). If this file exceeds the size limit of 4 MB, a new file is created where the last digits that were 001 are incremented to 002 (for example, Monitor_12_22_2011_13_46_10.002.log).

A report can be generated if you click on the **Generate Report** button. The **Browse** button allows the user to locate and overwrite a .log file in another directory.

☞ **NOTE:** **If the list of variables is long, the actual log rate may be longer than the selected rate.**

If logging is stopped and started again, the message shown below is displayed.
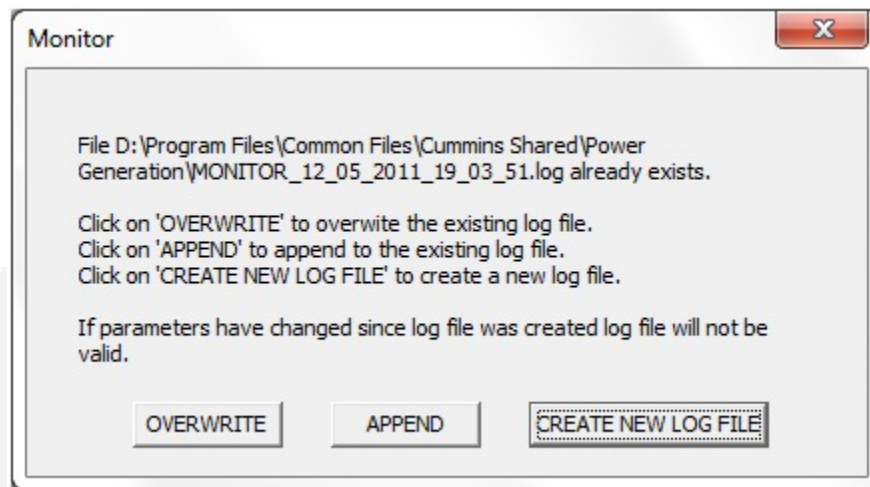
FIGURE 74.   LOG FILE ALREADY EXISTS MESSAGE

Three buttons are available.

- Click the **OVERWRITE** button if the existing log file is to be overwritten.

☞ **NOTE:**   **Because all previously saved data will be erased, overwriting an existing file is not advisable.**

If the **OVERWRITE** button is selected, the following message is displayed to remind the operator that using this feature will result in the existing file being overwritten. Click **Yes** to overwrite the existing log. If **No** is selected, the message shown above will be redisplayed.
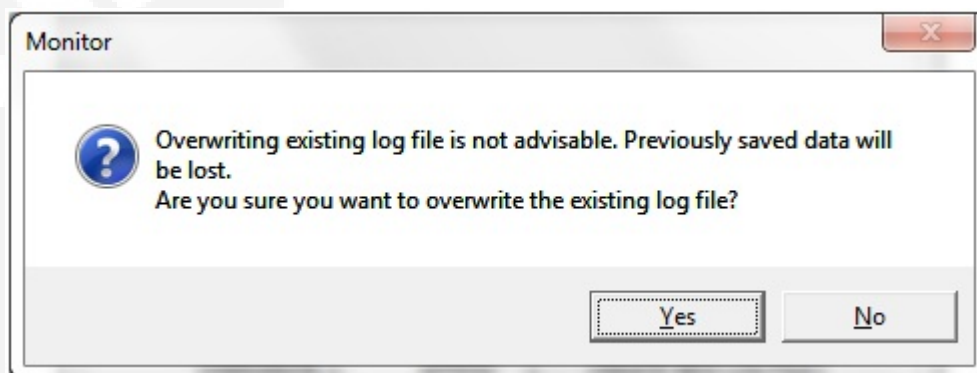
FIGURE 75.   OVERWRITE CONFIGURATION MESSAGE

- Click the **APPEND** button if the existing log file is to be appended with the new data logs.

- Click the **CREATE NEW LOG FILE** button if the data logging is to be continued in a new log file.

8.2.2   Adding Parameters

Parameters can be added to the Monitor Dialog by selecting **Edit - Add** from the Menu bar or by clicking on the **Add** button, on the toolbar. The **Add** command launches InPower. Use Device Explorer to locate, select and copy the parameters that you want to add to the **Monitor** dialog.

After selecting a parameter, use the drag-and-drop procedure to add the parameter to the Monitor Dialog. (Or use the right menu button to **Copy** it, then move the cursor to the Monitor Dialog and use the right menu button again to **Paste** the parameter into the Monitor Dialog.)

Monitor settings can be saved to a template (.TPL file). These files are saved in the Monitor subdirectory of InPower. The template file stores the COM port information, this prevents the file from working on another COM port.

Each monitor screen provides the ability to log sampled values into a tab delimited .LOG file. This file format allows the data to be imported into Microsoft Excel.

9 Faults and the Fault Information System

This section describes the fault information features available for various types of devices.

9.1 Commercial Device Fault Information

The features include a **Fault Information Window** listing all active and inactive faults for a connected device, a **Snapshot** dialog displaying additional details about those faults, and the **Fault Information System** (FIS). The FIS feature is an online manual used to help diagnose the fault.

9.1.1 Fault Information Window

Use the InPower Device Explorer to view **Faults** for a connected device. Fault information for a device is only available when you are connected to the device.

To access the **Fault Information Window**, start InPower and connect to a port, then connect to a device. Click on the **Faults** directory, listed under the device, to display fault information in the right pane of Device Explorer.

Faults can also be viewed when connected to a device by clicking on the **View Faults** button, on the toolbar. This shortcut displays the faults in the **Faults** directory.

Each fault is represented by a fault code indicating a particular malfunction or abnormal condition within the device. The Service Manual and FIS reference this fault code to identify the fault condition and facilitate diagnosis and repair.

Faults are either active or inactive. Active faults indicate that the fault condition is present now. Inactive faults indicate a conditions that are no longer active. To change an active fault to inactive, make the necessary adjustment or repair to correct the fault condition.

The **Fault Information Window** displays an entry for each fault that has been generated by the device. All active faults are displayed first, followed by all inactive faults. The most recent fault is displayed at the top of each list.

The following information describes the titles in the Fault Information dialog.

Fault Code: A numeric code that identifies the fault.

Description: A brief description of the fault.

Fault Status: Indicates whether the fault is active or inactive, at this time.

Count: Indicates the number of times that the fault has occurred since the last time the fault data was cleared.

Last Occurrence: Indicates the amount of controller on time at the last occurrence. Time is given in hours.

First Occurrence: Indicates the amount of controller on time at the first occurrence. Time is given in hours.

Effect: Displays the effect of the fault on the device. The effect can be a Warning, Derate, Shutdown with Cool Down, Shutdown, or none.

Use this information to match a specific fault to the symptoms observed by the operator. This information can help you determine which fault to address first.

9.1.2 Clearing Inactive Faults

Inactive faults can be cleared when the user is connected to the device. Click on the **Clear Faults** button, on the toolbar (or select the **Device** menu, and click on **Clear Faults**, to remove the faults). All inactive faults will be removed.

InPower does not allow removal of an individual inactive fault. If no inactive faults are present, the **Clear Faults** button is disabled.

9.1.3 Snapshot

Snapshot contains sensor and switch values that are captured when the fault occurred. Snapshot information is displayed in a separate **Snapshot** dialog.

To see snapshot information, double click on the Fault, or right click the mouse and select the **View-Snapshot** menu item. The **Snapshot** dialog has a **Previous** (<<) and **Next** (>>) button to move between the faults.

An engine related fault will have a Snapshot containing engine operating conditions at the time the fault occurred. Some faults may not have a Snapshot.

☞ **NOTE:** **COT is Controller on Time and ERT stands for Engine Run Time.**

9.1.4 Fault Information System

The Fault Information System (FIS) contains an online manual that displays troubleshooting and repair (help) files for commercial gensets.

To access the main Fault Information Window, select **Fault Trees** from the **View** menu or click the **View Fault Info.** (magnifying glass icon), on the toolbar. The main Fault Information System Window is displayed (**Figure 76**).

The FIS is designed as a standard Windows Help system. The system uses conventional Windows Help techniques to display and find information. For example, you can:

- Click on text marked by a solid underline to open the window for that topic.

- Click on text marked by a dashed underline to display a pop-up window related to the text. Click once to close the pop-up window.

- Use the buttons on the Button Bar to perform common Windows Help functions (**Contents, Search, Back,** etc.).

- Use the **Print Topic** command from the **File** menu to print information related to the current screen. (Note: pop-up windows and secondary Help windows will not print.)

Use the FIS main window to navigate to each of the systems main features as follows:

- Click on **Fault Code Diagnostics** to display descriptive information about a specific, identifiable fault, or to display a troubleshooting step to correct a specific fault.

- Click on **Symptom Based Diagnostics** when a fault code is not available and you need to diagnose and troubleshoot the problem based on your observations.

- Click on **Additional Information** text to display information about service tools and general engine servicing procedures, such as performing a continuity check.

- Click on **Component Listing** to display a list of components and a description of each component.

- Click on **Specifications** to display a list of electrical or sensor specifications.

- Click on **Theory of Operation** to view a list of available subjects. Click on the desired subject to view the basic theory of operation for the selected subject.

- Click on **Wiring Diagrams** to view a list of available wiring diagrams. Click on the desired circuit text to view the wiring diagram.
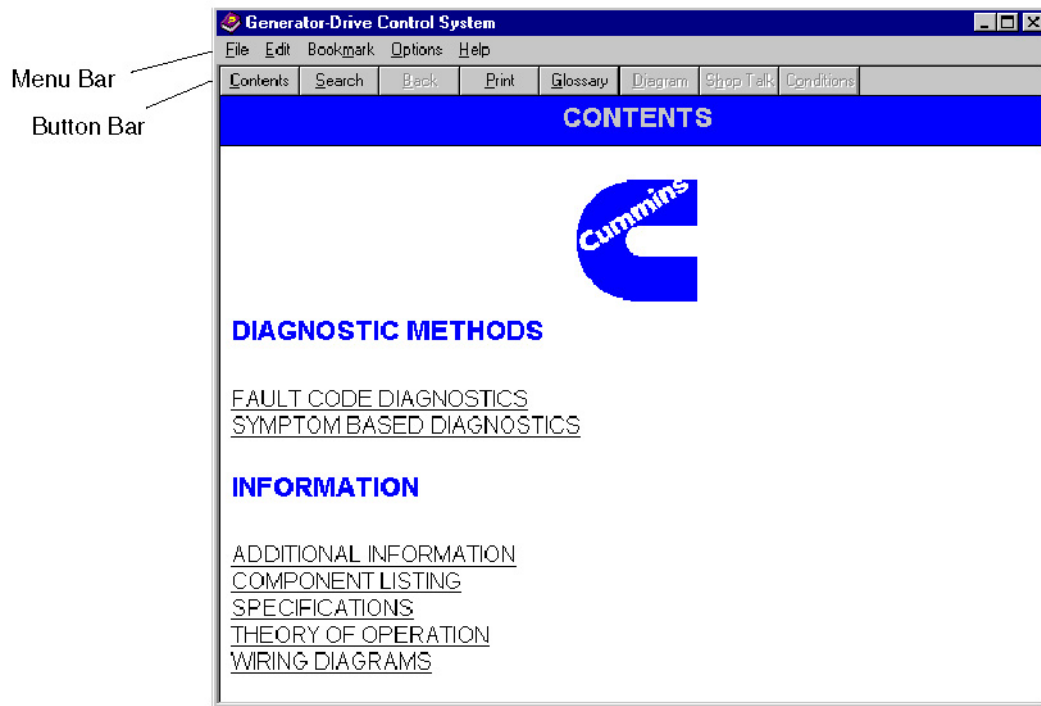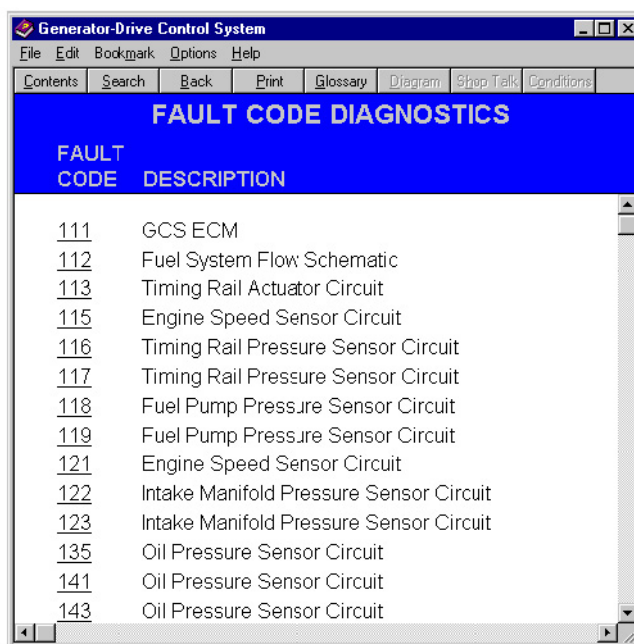
FIGURE 76.   MAIN FAULT INFORMATION SYSTEM WINDOW

9.1.4.1 Fault Code Diagnostics

Use the Fault Code Diagnostics feature to display diagnostic and troubleshooting information for a specific fault code.

After selecting **Fault Code Diagnostics**, a list of fault codes is displayed (**Figure 77**). Click on a specific underlined fault code to display more information about troubleshooting the fault.

FIGURE 77.   FAULT CODE DIAGNOSTICS

After clicking on a fault code, the **Diagnostic Method** window is displayed (**Figure 78**).
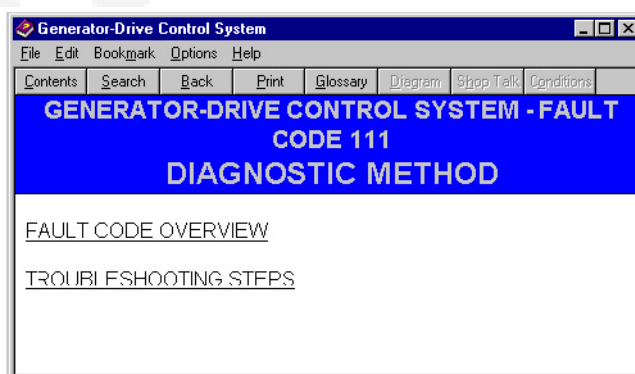
FIGURE 78.   DIAGNOSTIC METHOD

Two diagnostic methods are provided, choose one these options:

* Click on **Fault Code Overview** to display the fault code, the cause of the fault and the effect of the fault. This information will determine which fault to address first. You can display a variety of other information related to the fault including fault location, description and troubleshooting steps. (Refer to **Fault Overview.**)

* Click on **Troubleshooting Steps** to display a list of corrective actions to troubleshoot the fault. You can display various levels of detail for each troubleshooting step. (Refer to **Troubleshooting Steps.**)

9.1.4.2 Fault Code Overview

The Fault Code Overview feature is used to view summary information about the selected fault, including the fault code, reason for the fault, and possible effects of the fault.

To display the fault **Overview** window (**Figure 79**), click on the **Fault Code Overview** text in the **Diagnostic Method** window (**Figure 78**).
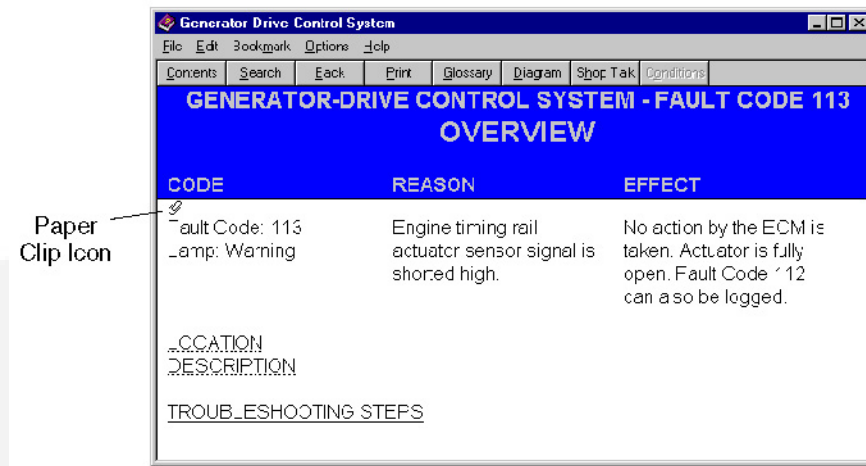
FIGURE 79.   OVERVIEW

From the Fault Overview window, you can display additional information about the fault and its symptoms:

- Click on the **Diagram** button to display a specific circuit wiring diagram for the component related to this fault.

- Click on the **Shop Talk** button to display added background information about the fault and helpful troubleshooting tips.

- Click on **Location** (marked by a dotted underline) for a pop-up diagram that shows the physical location of the part that is related to this fault.

- Click on the **Description** (marked by a dotted underline) for a pop-up description of the part related to the fault and purpose of the part.

- Click on the **Troubleshooting Steps** (marked by a solid underline) for a list of steps to help you correct this fault.

Use the **Annotate** command, from the **Edit** menu, to enter comments related to a fault. This allows you to personalize the fault information for your site.

After entering a comment, a paper clip icon displays on the screen where the information was entered. Click once on the paper clip icon to display the note.

Use the **Search**, **Back** and **Glossary** buttons, on the button bar, to find more information about each fault and to navigate through the help system.

9.1.4.3 Troubleshooting Steps

Three levels of diagnostic help are available, depending on your needs and level of experience:

To display troubleshooting steps, click on **Troubleshooting Steps** from either the **Diagnostics Methods** window or the **Overview** window.

1. **Troubleshooting Steps** are designed for trained and experienced technicians needing a quick outline of the steps to take to correct the fault. This is the first screen that displays when opening the Troubleshooting Steps window.

2. **Summary Steps** are designed for the technician wanting a more detailed overview of the major troubleshooting steps required to correct the fault. A summary topic includes the step description, a diagram, and specifications related to that step. It also provides some guidelines for taking actions to correct the fault.

3. **Guided Steps** are designed for technicians wanting the most detailed information about each step in the troubleshooting process. Guided steps provide a step-by-step path through the troubleshooting process. Simply click on an **OK** icon to proceed to the next step or click on the **Not OK** icon to receive summary information on how to correct the problem before proceeding.

This section covers each of these types of steps in detail.

⚠️ *WARNING: Troubleshooting procedures present hazards that can result in severe personal injury or death. Only trained and experienced personnel, with knowledge of electricity and machinery hazards should perform service.*

The **Troubleshooting Steps** window (**Figure 80**) provides a button bar for quick access to other related information about the fault and its symptoms:

- Choose the **Diagram** button to display a circuit wiring diagram for the component that is related to this fault.

- Choose the **Shop Talk** button to display added background information about the fault and helpful troubleshooting tips.

- Choose the **Conditions** button to display a list of pre-testing conditions or setup requirements that you should follow to make sure the best possible outcome from the troubleshooting steps.

- Click on the **Location** text (marked by a dotted underline) for a pop-up diagram that shows the physical location of the part related to the fault.

- Click on the **Description** text (marked by a dotted underline) for a pop-up description of the part related to this fault and the purpose of the part.

- Choose the **Overview** text (marked by a solid underline) for descriptive information about this fault.
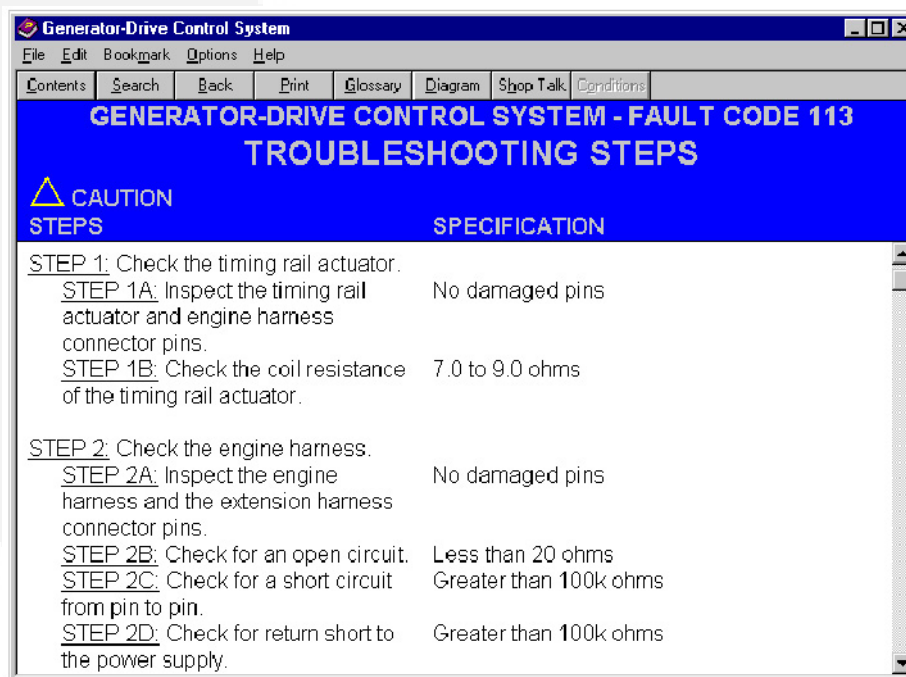
FIGURE 80.   TROUBLESHOOTING STEPS

The Troubleshooting Steps list the steps in outline format. For example, Step 1, Step 1A, Step 1B, Step 2, Step 2A, Step 2B, and so on. Any cautionary notes or warnings associated with the steps display in a pop-up box. Click anywhere outside these boxes to remove them from the display and scroll through the window. You can re-display them at any time by clicking on the **Caution** or **Warning** icon.

To display summary steps:

From the **Troubleshooting Steps** window, click on a major underlined step. For example, click on **Step 1** (not Step 1A).

The Summary window displays. It contains diagrams and specifications related to this step.

The troubleshooting procedures are organized so that a satisfactory result from each step will lead you to the next step in the procedure. For example, if Step 1A is OK, immediately proceed to Step 1B. Simply click on the Step number underlined, to go directly to it.

After performing a step and receiving unsatisfactory results, click on the **Not OK** icon in the Actions column (**Figure 81**). A pop-up window will provide summary information on what to do to correct the problem.

After reviewing the information, click on **Summary Text**, to display the next summary step for this fault or click on **Troubleshooting Steps** to display the high-level summary of troubleshooting steps.
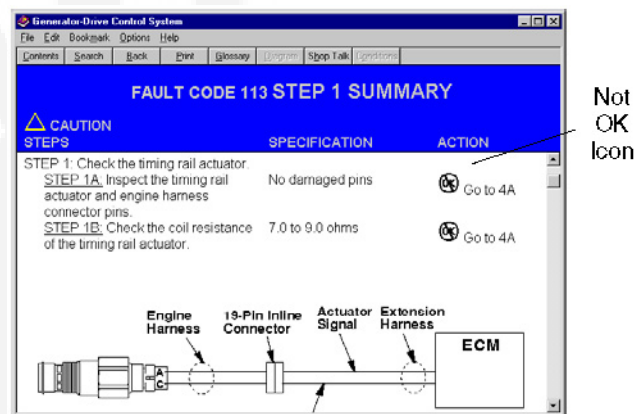
FIGURE 81.   SUMMARY STEPS

To display guided steps:

From the **Troubleshooting Steps** window, or **Summary** window, click on one of the detailed troubleshooting steps. For example, click on **Step 1A** (not Step 1).

The **Guided Step** window displays (**Figure 82**). It contains diagnostic information specific to this step.
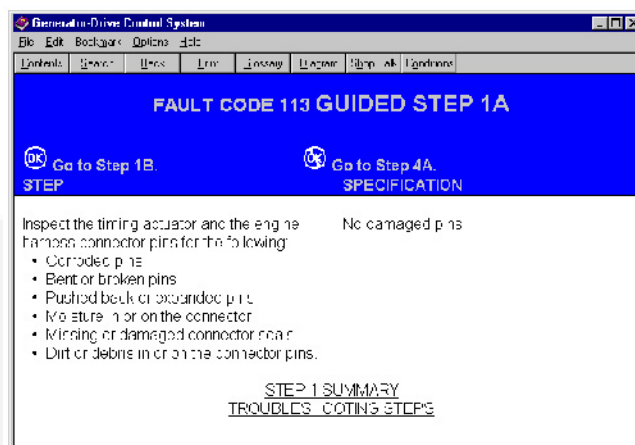
FIGURE 82.   GUIDED STEPS

Any general conditions that should be met prior to performing the steps will display in a pop-up box. Click once to remove the pop-up window from the display, then scroll through the window. You can display these pop-up messages again by clicking on the **Conditions** button, on the button bar.

If satisfactory results are received from this step, click on **the OK** icon to display the next guided step for troubleshooting this fault.

If unsatisfactory results are received, click on the **Not OK** icon. A pop-up window will provide summary information on how to correct the problem. Once the program is repaired, click on the **Repair Complete** text in the pop-up window to go to the next guided step.

Click on **Summary Text** to display the next summary step for this fault, or click on **Troubleshooting Steps** to display the high-level outline of troubleshooting steps.

9.1.4.4   Symptom Based Diagnostics

Use **Symptom Based Diagnostics** when the fault code is not known, but are aware of the symptom.

This feature displays a list of common symptoms (**Figure 83**). Click on a symptom to view a display of the possible cause of the symptom and a list of corrective actions (**Figure 84**).
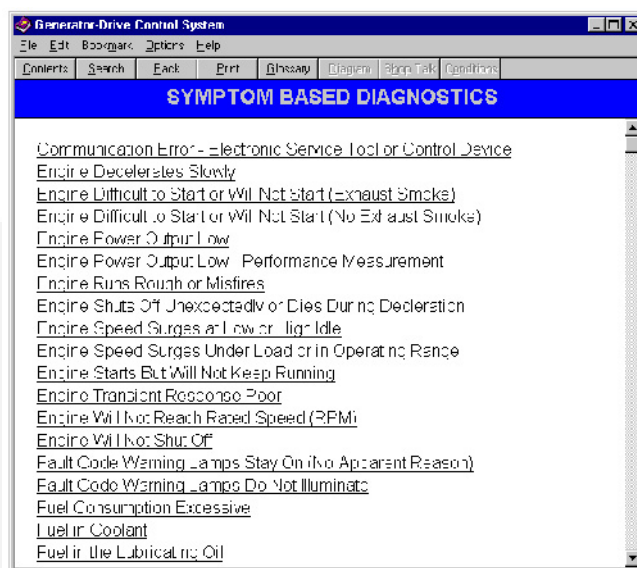
FIGURE 83.   SYMPTOM BASED DIAGNOSTICS
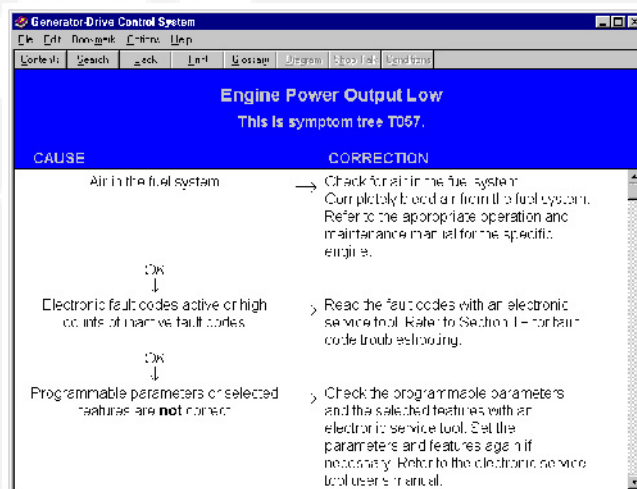
FIGURE 84.   SYMPTOM BASED TROUBLESHOOTING

9.1.4.5 Additional Information

After clicking on **Additional Information**, a list of general service topics are displayed (**Figure 85**). These topics contain general information about troubleshooting and service. Click on an entry in the list to display more information about that topic. For example, click on **How to Use a Multimeter** for basic instructions on how to use a multimeter.

When you are finished, use the buttons on the toolbar (such as **Contents**) to navigate another part of the online manual. Close the Fault Tree window to return to InPower.
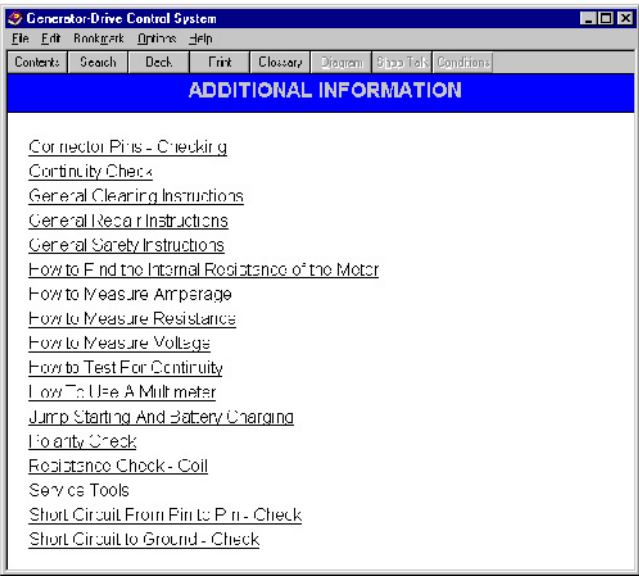
FIGURE 85.   ADDITIONAL INFORMATION

9.1.4.6 Component Listing

The **Component Listing** feature provides details about engine and control component locations and descriptions. Click on the text in the **Location** column for a pop-up description of the components location. Click on the text in the **Description** column for a pop-up description of the component (**Figure 86**).

When finished, use the buttons on the toolbar (such as **Contents**) to navigate another part of the online manual. Close the Fault Tree window, to return to InPower.
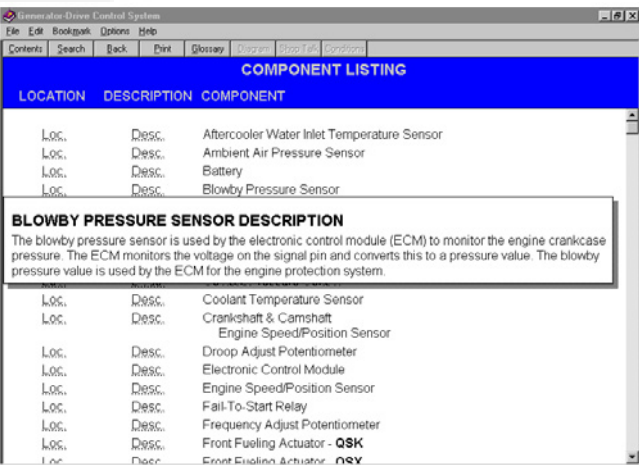
FIGURE 86.   COMPONENT LISTING

9.1.4.7 Specifications

Click on **Specifications** to display a list of the selected specifications.

When finished viewing the specifications, use buttons on the toolbar (such as **Contents**) to navigate another part of the online manual. Close the Fault Tree window to return to InPower.
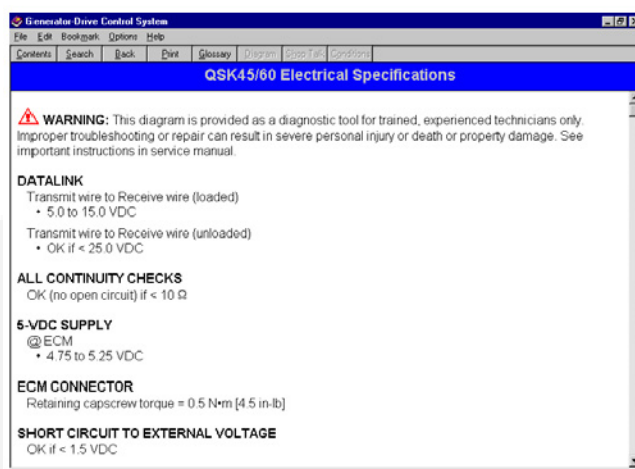
FIGURE 87.   SPECIFICATIONS

9.1.4.8 Theory of Operation

The **Theory of Operation** feature describes operation of the selected component. Use the scroll bars to view the text.

When you are finished, use the buttons on the toolbar (such as **Contents**) to navigate another part of the online manual. Close the Fault Tree window to return to InPower.
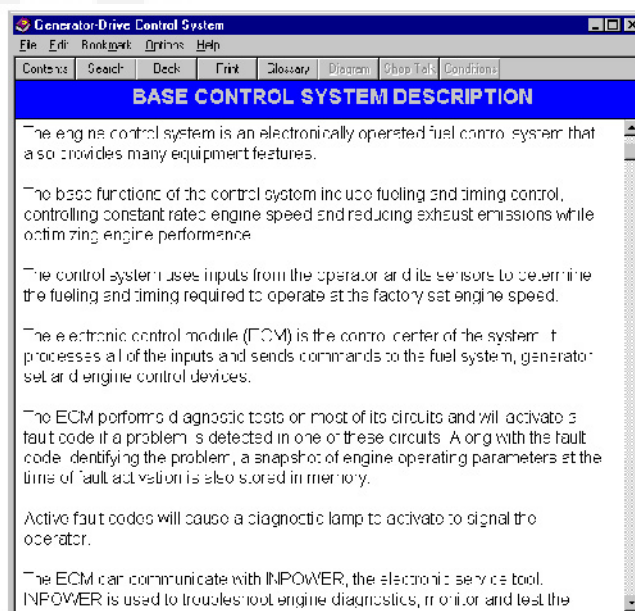
FIGURE 88.   THEORY OF OPERATION

9.1.4.9 Wiring Diagrams

The **Wiring Diagrams** feature displays a list of engine system components (**Figure 90**). Click on one of the components to view a wiring diagram for that component.

When finished, use the buttons on the toolbar (such as **Contents**) to navigate another part of the online manual. Close the Fault Tree window to return to InPower.

⚠️ *CAUTION:* *Wiring Diagrams are subject to change. Refer to the wiring diagram supplied with the equipment or in the manufacturer's service manual. Failure to use the correct wiring diagram can result in severe personal injury or equipment damage.*

9.1.4.10 Glossary

The **Glossary** contains an alphabetical listing of frequently used terms and their descriptions (**Figure 89**). Use the Search feature, or the scroll bar to locate the desired term.

When finished, use the buttons on the toolbar (such as **Contents**) to navigate another part of the online manual. Or close the Fault Tree window to return to InPower.
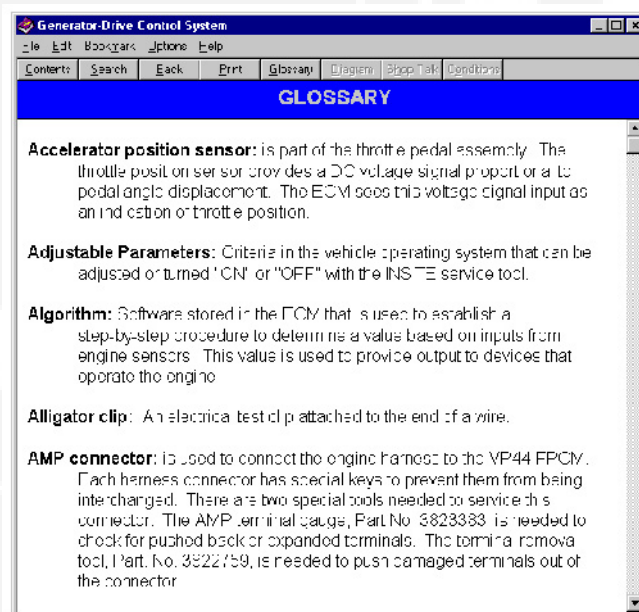

FIGURE 89.   ONLINE GLOSSARY
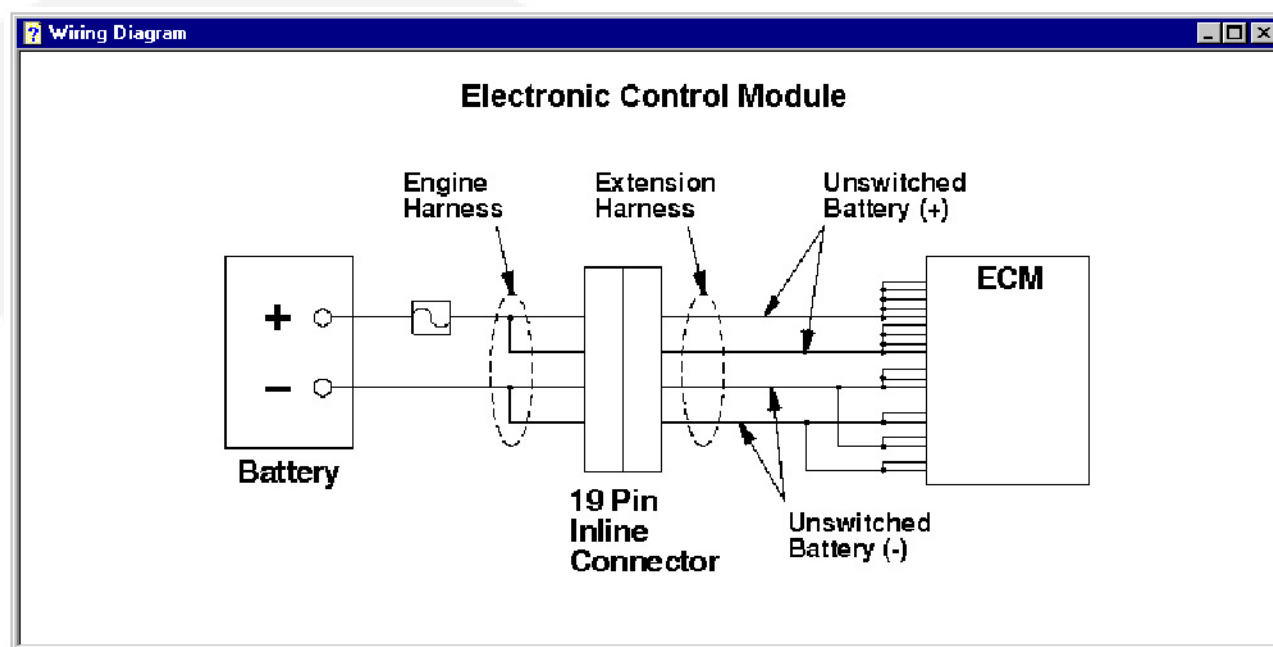
FIGURE 90.   WIRING DIAGRAM WINDOW

10 Event Handler

10.1 Receiving Events

When connected to a device, InPower will receive events, and allow the user to acknowledge events.

It is important to note that InPower is a service tool. InPower will receive and display events, but it does not acknowledge events within the device. Monitoring should be performed with operating software that is specifically designed for monitoring and event acknowledgment.

The Event Handler feature launches when InPower is started, and it closes when the InPower session is ended.

Events are displayed in the **Alarm** dialog until InPower is closed, or the user clears (acknowledges) the events. The record of event announcements is not stored from one session of InPower to the next.

Acknowledging events removes the events displayed to the InPower user only. Acknowledgement with InPower will not remove the event from the control.

InPower displays an **Alarms** popup dialog to view event information as soon as the event is received. Users can clear events, view more information about an event, or simply close the **Alarm** popup until the next time the device announces an event.

Be aware that event announcement and fault code diagnostics are not the same function. InPower provides fault code and diagnostic information that is not related to event announcement.

10.1.1 Devices That Cannot Receive Events

This feature is not applicable to PCC 1100, PCC 1300, PCC 1301, and PCC 1302.

10.2 Displaying Events

InPower will display all events that have been received in an Alarm dialog. When the **Auto-Announce** feature is enabled (default setting), the **Alarm** dialog pops up to displays of all the events it contains. Additional details about the events are available in the **Event Detail** dialog.

10.2.1 Alarms Popup

The Alarm Popup provides details about events. The **Alarms** popup dialog menu features can be used to view more details about an event, clear the event, or dock the Alarm Pop-up back to the Windows taskbar. To launch the **Alarms** pop-up from the taskbar, click on the **Alarms** button.

The Alarm Popup provides the following menu bar and button options.

View-Acknowledge All: Selects all displayed alarms and removes them from the Event popup view.

View-Detail: Displays the **Event Details** dialog of the selected event.

Options-AutoAnnounce: Displays a check box for displaying the **Alarms** Popup. If checked, (default setting) the **Alarms** popup displays each time a new event is received. If unchecked, the **Alarms** Popup will not open automatically to announce new events.

Help-Contents: Displays InPower help contents.

Help-Search: Used to searching for an InPower help topic.

Close Button: Used to dock the **Alarms** popup dialog to the Windows task bar.

Help Button: Used to access Event Announcement help.

The most recent event is added at the top of the list. One event will always be selected (highlighted). Events received while the Alarm dialog is displayed will appear in the dialog immediately.

10.2.1.1 Columns in the Alarms Popup

The **Alarms** popup provides the following columns:

Code: This displays the fault code associated with the event.

Description: This displays a textual description associated with the event. The description comes from the controller.

Level: This indicates the type of event that occurred; for example, shutdown, warning, or none. If this is not applicable to the controller (for example, a G-drive controller), the value is "None".

Status: This indicates whether the associated fault code became active or inactive in this event.

Site:

Module: This displays the type of device that reported the event.

Time: This displays the time at which the event occurred.

10.2.2 Event Detail

Events have additional detail associated with them. The user can view these details in the **Event Details** dialog by selecting an event, then selecting **View-Detail** from the **View** menu.

The **Event Details** dialog provides the following button options:

Close Button: Closes the **Event Details** dialog and returns the user to the Alarms dialog.

Navigation Buttons: The left arrow button changes the **Event Details** dialog to display the next event (down) on the Alarm dialog list. The right arrow changes the Event Detail dialog to display the previous event (up) on the Alarm dialog list.

Help Button: Used to access **Event Details** help.

10.2.2.1 Columns in the Event Details Dialog

The **Event Details** dialog provides the following fields:

In the **Alarms** section,

Description: This displays a textual description associated with the event. The description comes from the controller.

Status: This indicates whether the associated fault code became active or inactive in this event.

Level: This indicates the type of event that occurred; for example, shutdown, warning, or none. If this is not applicable to the controller (for example, a G-drive controller), the value is "None".

Code: This displays the fault code associated with the event.

Version:

Occurrences: This displays the number of times the event has occurred.

Last Occurrence: This field is blank.

Run Time Last: This displays the most recent time the event occurred.

First Occurrence: This field is blank.

Run Time First: This displays the first time the event occurred.

In the **Module** section,

Type: This displays the type of device that reported the event.

Address: This displays the network address of the device that reported the event.

In the **Site** section,

Site Id: This displays the name of the site; typically, the name of the COM port for devices or the file name type for files, such as capture files.

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11 Strip Chart

11.1 Strip Chart

The Strip Chart feature displays data in a graphical form on a real-time strip chart. Up to six parameters can be displayed in one chart. Data is scrolled from right to left, so the most recent data appears at the right.

Chart parameters can be saved to chart file (.TPL file), allowing the user to save custom parameter selections and settings. The chart file will store the charts graph settings (Y-axis limits, sampling rate, line styles, etc.) and port identification. A chart file can be used with other ports. Chart files are saved in the Strip Charts directory.

Data is not logged using the Strip Chart feature, in contrast to the Monitor feature.

11.1.1 Example of a Strip Chart
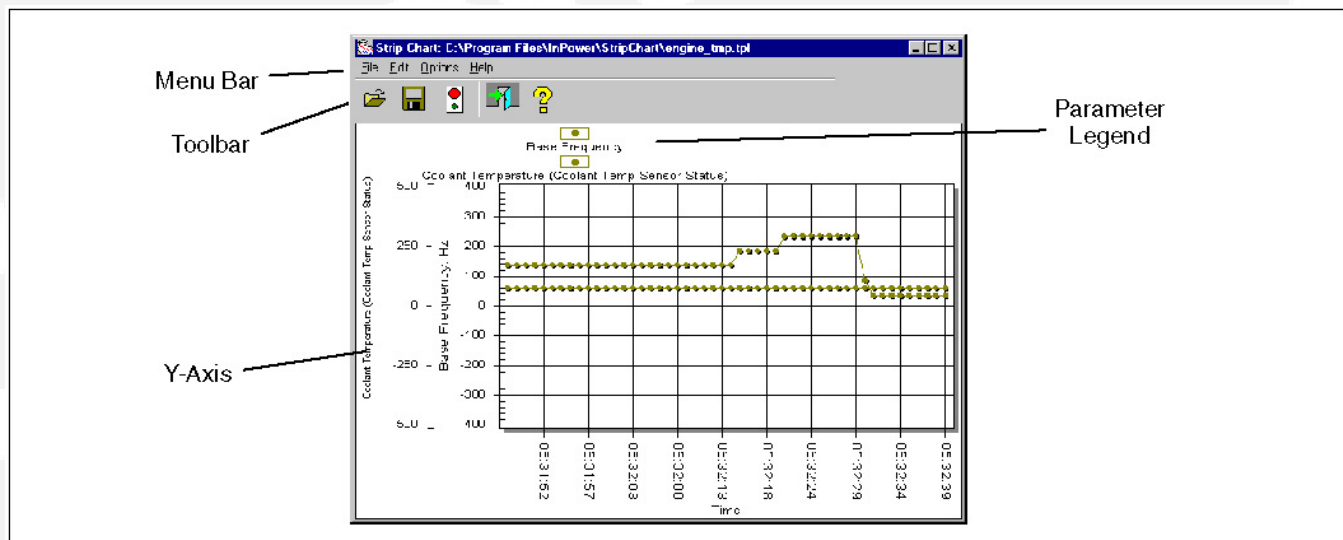
FIGURE 91.   TYPICAL STRIP CHART

This example shows a typical strip chart. Each of the parameters contained in the chart are named in the legend at the top of the chart. The **Y-Axis** displays the range of each parameter value. The **Time** that the sample was taken for each interval is displayed at the bottom of the chart.

11.1.2 Starting the Strip Chart Feature

The Strip Chart feature can be launched in two ways:

1. Launch strip chart from the Start Menu group shortcut.

2. Start InPower, connect to a device, and then click on the **Strip Chart** button, on the InPower toolbar.

Starting a strip chart from InPower, while connected to a device, allows InPower to identify the device and display the correct strip chart file type. This prevents accidentally opening a strip chart file for the wrong device type.

If the chart file does not exist, Strip Chart will display the **File-Open** screen, with a listing of chart files in the **Strip Charts** directory.

11.2   Creating a Custom Strip Chart

Strip charts can be customized by adding or deleting parameters, adjusting the sampling rate, changing line styles, changing the Y-axis limits and making format changes.

The user can customize an existing strip chart, or create a new strip chart and define each of its properties. To create a new strip chart, launch the Strip Chart feature from the **Start -> All Programs** menu, without specifying any chart file to open.
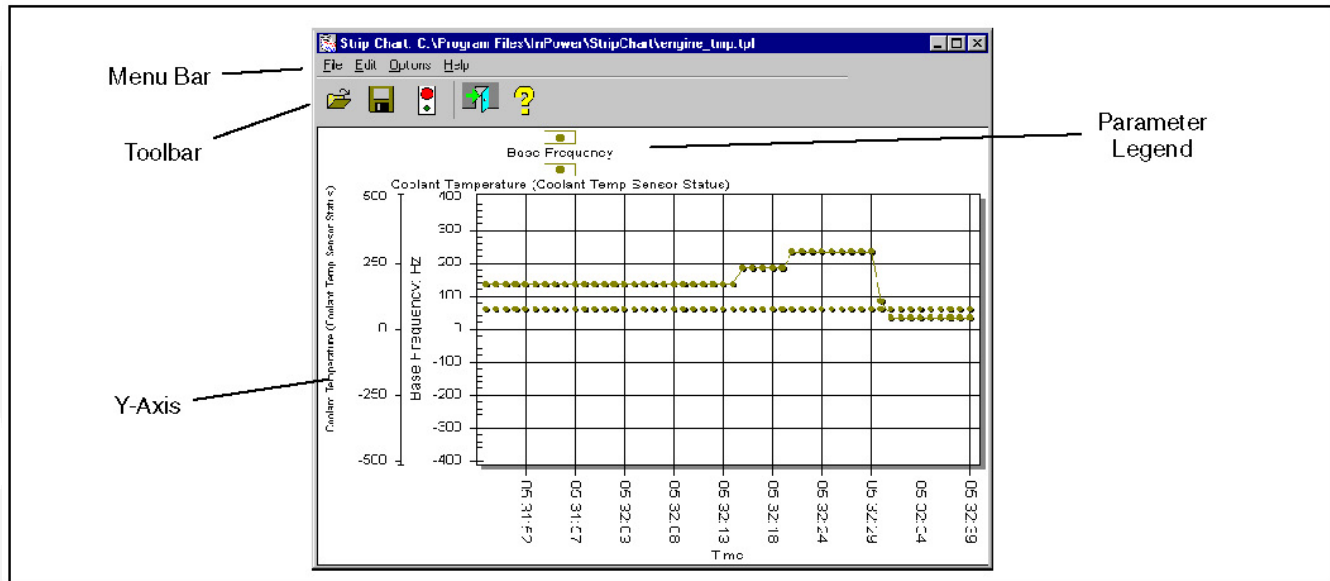
FIGURE 92.   TYPICAL STRIP CHART

11.2.1 Adding Parameters

Click on **Add Parameters**, from the **Edit** menu, to launch InPower. To add parameters to the strip chart, drag individual parameters from InPower (right pane) and drop the parameter on the strip chart. Multiple parameter selections may be dragged and dropped on the Strip Chart, to add several parameters at once. Parameters can also be added by selecting a parameter and using the **Edit - Copy** command from InPower and the **Edit - Paste** command from the Strip Chart menu bar.

Since parameters with different units of measure may be added to the graph, a separate Y-axis will be displayed for each graphed parameter.

As parameters are added to the graph, an additional Y-axis will appear, indicating the parameter's description and unit of measure. A new legend item will appear at the top of the graph, indicating the point shape and color that will be used when plotting the parameter's values, and these values will automatically begin to be displayed.

Immediately after the first parameter is added to the Strip Chart graph, the applet automatically begins monitoring parameter values at half-second intervals. The sampling rate may be modified via the **Options** dialog.

11.2.2 Parameter Properties Dialog

The **Parameter Properties** dialog, shown in **Figure 93**, is accessible from the **Edit-Properties** menu.

The **Name** combo box, at the top of the dialog, provides access to each of the parameters currently displayed on the Strip Chart. The user may delete the selected parameter from the strip chart by clicking on the **Delete** button.

The **Data Ranges** associated with the selected parameter may be modified by entering new values into the edit boxes. These new values will control the minimum and maximum data values displayed on the Y-axis of the graph.

The **Line Attributes** may also be modified by selecting a new line style from the **Style** combo box. A new line color may be selected by clicking on the **Color** button, which invokes the Windows common Color dialog. Current changes are applied after the user clicks on the **OK** button, to close the dialog.
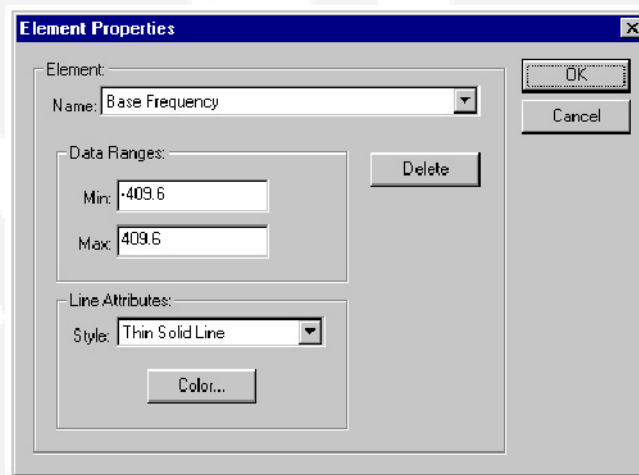
FIGURE 93.   PARAMETER PROPERTIES

11.2.3 Sampling Rate Dialog

The Sampling rate feature is available from the Strip Chart - **Options** menu. The **Sampling Rate** dialog, shown in **Figure 94**, allows the user to select the strip chart sampling rate. Sampling can be enabled or disabled using the **Sampling Enable** feature (see **Strip Chart Menu Bar Functions**).
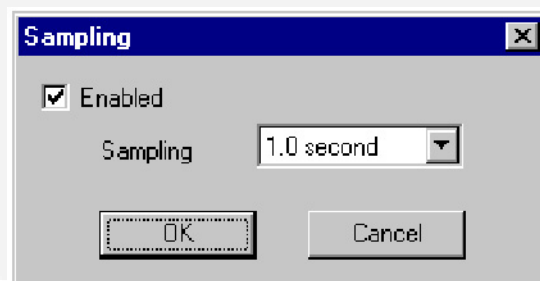
FIGURE 94.   SAMPLING RATE DIALOG

When finished customizing the strip chart, choose the **File-Save As...** menu option. Name the file and save in the **Strip Charts** directory.

☞ **NOTE:** **Saving a Custom Strip Chart saves only the chart settings, it does not save (log) data.**

See **Context Menu** for additional commands that are available for customizing strip charts.

11.2.4 Strip Chart Menu Bar Functions

This section describes each of the menu commands that are available from the Strip Chart menu bar.

File-Open: Allows the user to specify a particular chart (.TPL) file to load from the list of chart files, in the Strip Chart directory. Logged data (.LOG file) can also be opened and viewed with the Strip Chart feature.

After a .TPL file has been selected, the applet will open the file and load the parameters and settings from that file. Since parameter values will be graphed, only the first six parameters that have numeric values will be accepted.

File- Save: Allows saving the current selection of parameters to a chart file.

File - Save As: Allows saving the current set of parameters to a new chart file name and/or location.

File-Close: Closes the Strip Chart

*Edit-Add Parameter:* Allows adding parameters to the Strip Chart graph from InPower. This command opens InPower, allowing the user to select parameters to be added to the Strip Chart. Drag individual parameters from InPower and drop the parameter on the Strip Chart graph.

Edit-Paste: Allows pasting the parameter(s) from the Windows clipboard into the strip chart. The **Paste** menu option will remain disabled until one or more parameters have been cut or copied to the Windows Clipboard.

Edit-Properties: Opens the **Element Properties** dialog. (This feature can also be activated by double clicking on the parameter names in the strip chart's legend.) The **Element Properties** dialog allows the user to perform a variety of commands relating to the display properties of the Strip Chart.

Options-Sampling: This option displays the **Sampling Rate** dialog, which allows the user to change the strip chart sampling rate. The sample rate is adjustable from 0.05 seconds to 60 seconds.

Options-Sampling Enable: This option is used to enable or disable the collection of sample data. A check mark is displayed next to **Sampling Enable** on the **Options** drop down menu to indicate that the feature is enabled. Click once on **Sampling Enable** to stop collecting sample data. Click on it again to start collecting sample data again.

Options-Logging: This option provides you with a means to assign a location for storing strip log files. The default file location is listed on the menu (**Figure 95**). If necessary, select the **Browse** button to select another location. Logging can be enabled from this menu. When all adjustments are completed, click on the **OK** button.
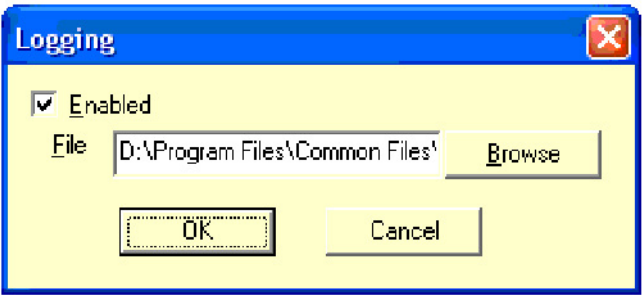
FIGURE 95.   LOGGING DIALOG

Options-Logging Enabled: This option is used to enable the logging option to save a file at the location set up with the Logging dialog. If a strip chart log has already been created, the message shown in **Figure 96** is displayed.
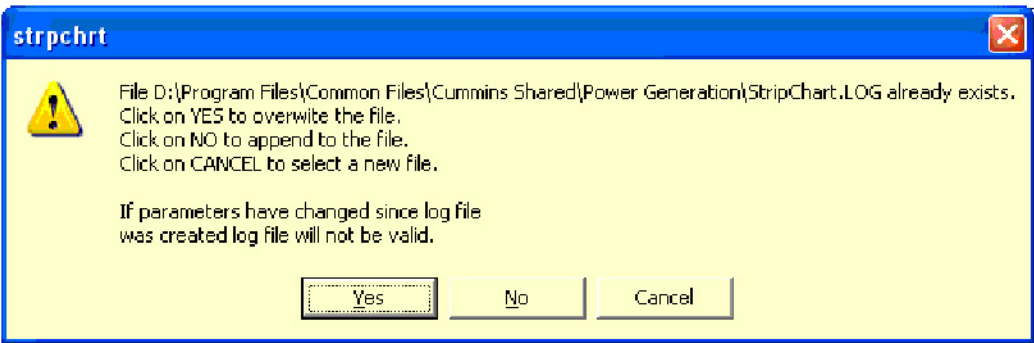
FIGURE 96.   LOGGING MESSAGE

11.2.5 Context Menu Features

The **Context Menu**, shown in **Figure 97**, may be accessed by clicking on the right mouse button (or equivalent pointing device button) while the cursor is inside the graph. This set of menu items provides the users with additional customization features.
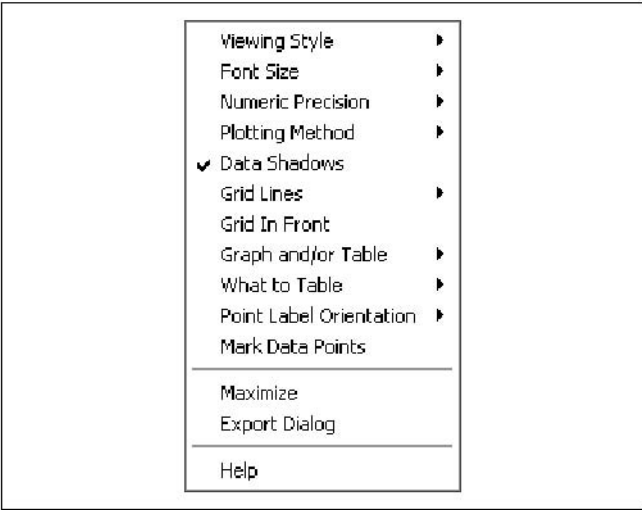
FIGURE 97.   CONTEXT MENU FEATURES (RIGHT MENU BUTTON)

Viewing Style: This controls the viewing style of the object. Possible values include color, monochrome, or monochrome with symbols.

Font Size: This controls the font size used in the graph's image creation process. The font sizes available are large, medium, or small.

☞ **NOTE:** **It is recommended that the user change the Font Size to the Medium setting or Large setting if only a few parameters are being monitored. This selection will make it easier to read the parameter legends.**

Numeric Precision: This controls the number of decimal places associated with the graph's data. Possible values include zero, one, two or three decimal places.

Data Shadows: This controls whether shadows will be placed behind plotting method graphics. The shadows add depth to the images; however, they will slow image creation significantly when graphing many subsets and/or points.

Grid Lines: This controls the horizontal and vertical lines that make up the graphs grid. Possible values include horizontal and vertical grid lines, horizontal grid lines only, vertical grid lines only, or no grid lines.

*Grid In Front:* This controls whether the graphs grid is placed behind or in front of the plotting method graphics.

Graph and/or Table: This controls what is displayed in the graph's area. Possible values include graph, table, or graph with table.

What to Table: This controls what information is included in the objects table. Possible values include tabling those subsets that are graphed or tabling all subsets.

Point Label Orientation: This controls the orientation of the point labels. Possible values include automatic, horizontal, or vertical.

Mark Data Points: This controls whether data-points are marked with a small circle.

Maximize: This function maximizes the graph display. To return to the default display size, click inside the solid bar at the top of the window or use the **Esc** key.

Customization Dialog: This function displays the chart Customization dialog.

Export Dialog: Graphs can be exported in the formats shown in **Table 3**, for the listed destinations. This dialog allows the user to print a Strip Chart.

TABLE 3.   GRAPH EXPORTABLE FORMATS

FORMAT	DESTINATIONS
Metafile	Clipboard, File, and Printer
Bitmap	Clipboard and File
OLE Object	Clipboard
Text / Data	Clipboard and File

Help: Displays graph-related help topics.

11.2.6 Chart Customization Dialog

An additional level of editing is available that allows the user to customize the chart dialog. To access this feature, double click within the chart to display the **Customization** dialog. This dialog has tabs for each of the editable features.

Click on the desired tab to view the available settings for that feature. These features can be used to enhance the chart by changing border colors, text size and colors, and many other chart display features.
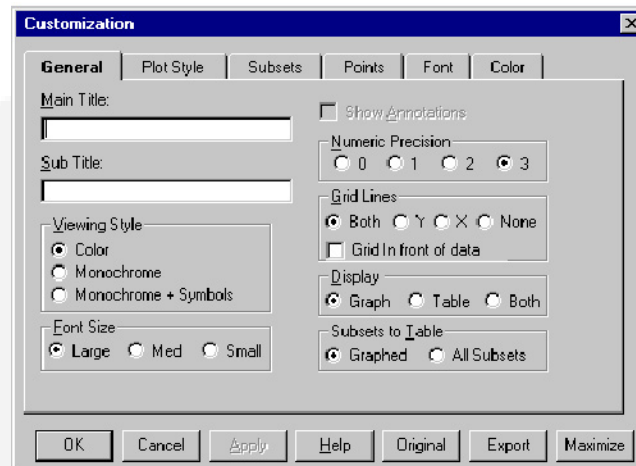
FIGURE 98.   CHART CUSTOMIZATION DIALOG

11.2.7 Printing a Strip Chart

A Strip Chart can be printed by using the Export dialog (**Figure 99**). Use the right menu button to access the Export Dialog, then select the **Printer** radio button and select the **Print** button.
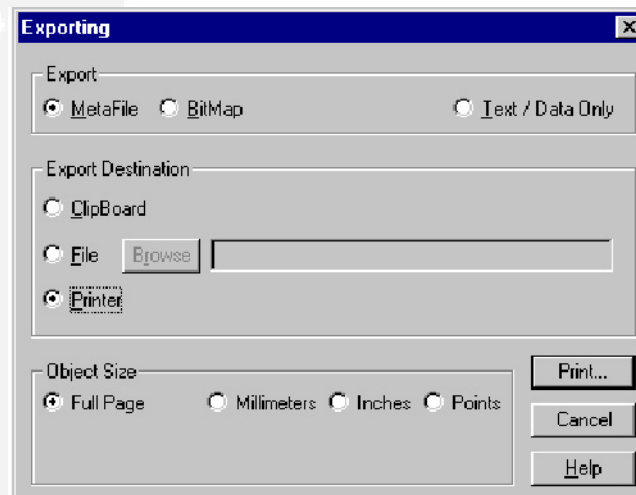
FIGURE 99.   EXPORT - PRINT DIALOG

11.2.8 Viewing Logged Data

Logged data, created with the Monitor feature can be displayed with the Strip Chart feature. Select **Open** from the Strip Chart **File** menu. Enter the .LOG file location and name.

Strip Chart will display the logged data. Since the data is not being displayed on a realtime basis, the data is static. Use the left and right arrow buttons located on the keyboard to navigate the data within the .LOG file.

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12   Capture File

12.1   Capture File

InPower provides a method of extracting (capturing) a device's parameter values. Capturing saves device information in a file that is identified with a .CAP extension. The files are saved in the **Capture Files** directory.

Capture files are used to store a copy of a device's parameter values, History and Faults. Capture files are read only files that can be viewed after disconnecting from the device. Capture files can also be used as a template to write the captured settings to another device of the same type.

12.2   Creating a Capture File

Capture files can be created by selecting the **Capture to File** command from the **Device** menu. This feature displays the **Capture File** dialog, which is similar to **Save As** dialog.

The user names the file, and InPower appends the file name with the .CAP extension. Capture files are not editable by InPower (read-only). A capture file can be overwritten, allowing the user to re-capture parameters and settings to the same file.

12.2.1 Creating a Capture File Automatically

A Capture files will be automatically captured each time you connect to a site or you will be prompted to create one, depending on your setup selection.

If **Capture to File** is selected, a default filename will be created. This filename can be changed.

12.3   Viewing a Capture File

To view a capture file, the user must connect to it using InPower. Double click on the Capture file name in the **Capture Files** directory structure. Capture file contents can be viewed, like devices, using Device Explorer.

12.4   Writing to a Device

Capture files can be used to overwrite the parameter values of a connected device (of the same device type) with the parameter values from a capture file. One capture file can be used repeatedly (like a template) to configure many devices of the same type.

When a device has password protected parameters, the password protection applies when writing a Capture file to the device. The user must enter the required password(s) before the password protected parameters can be changed with the Capture file.

To write to a device you must have registered software of the correct device type.

To write from a Capture file, connect to the Capture file first, then click on the target device, and connect to it. Next, select the Capture file and drag-and-drop the Capture file onto the target device.

The **Edit - Copy** and **Edit - Paste** features can also be used to write parameter settings from a Capture file to a device. This feature can be used to copy the entire Capture file, or individual folders or parameters.

Start by connecting to the Capture file, Use **Edit - Copy** to copy the desired information from the Capture file. When copying a folder or individual parameters, use Device explorer to display the desired folder or parameters in the right pane. Hold down the Control key while selecting the desired folder (s) or parameter(s) then use the **Edit - Copy** command. Connect to the target device and use the **Edit - Paste** feature to overwrite the target device's parameters with the parameter settings from the Capture file.

☞ **NOTE:**   **A capture file from a genset (for example) can be copied to another genset, but it cannot be copied to a transfer switch control, or any other device type.**

13 Simulator

InPower provides a means of demonstrating the service tool without connecting to an actual device. A Capture file is used for simulation. This file contains most of the information that is normally displayed when you are connected to a device.

Any capture file(s) used for simulation are added during InPower installation. These files are device specific, for example, if you install a genset InPower product, you will only receive genset Simulator files.

Simulator files are read only, although during simulation, the user will be allowed to make editorial changes, to help demonstrate the tool. Any changes made during simulation will not be saved.

If an arrow is displayed, click on the arrow to view a drop-down list of the available settings. Click on the desired setting, and it will be entered into the Value cell.

The simulator file(s) are stored in the **Simulator** directory. To run an InPower simulation, double click on the **Simulator** directory and then double click on the desired simulator file (*.CAP file).

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14   Reports

This section describes how to create, save and print reports. Reports consist of parameter groups and their values at the time the report was created. Reports can be printed directly from InPower, or they can be saved to a file for use in a spreadsheet, database, or word processing program.

14.1   Creating a Report

Start InPower and connect to a port, then connect to a device (or file). Use the Device Explorer (tree view) to locate and select the information you wish to include in the report.

☞   **NOTE:**   **When selecting parameters for a report, be careful to avoid selecting too many parameters. If a folder is selected that contains additional folders, the parameters of all of the folders in the group will be selected.**

You can create a report from a single group of parameters or from several groups of parameters. A few smaller reports are generally more manageable than a very large report.

To create a report for a single group of parameters: Select the group folder, if it contains additional folders, double click on the folder to expand it. Select the desired folder and use the mouse or keyboard menu button to display the pop-up menu (**Figure 100**). Select **Print Feature** from the pop-up menu, to create a report for the selected folder and display the **Parameter List Report** window (**Figure 101**).

To create a report with more than one group of parameters: Select each folder individually, use the mouse or keyboard menu button to display the popup menu, click on **Select Feature**, in the popup menu. Each folder selected will be marked with a check mark, to indicate that it has been selected for use in the report (**Figure 100**).

After selecting the desired parameter groups, use the **Prepare CSV file with all Selected Features** menu pick from the InPower **Device** menu to create a report and display the **Parameter List Report** window (**Figure 101**).

☞   **NOTE:**   **If you only want to create a report on one feature, select the feature, right-click and select the Prepare CSV file for Feature menu pick.**

Selected folders can be deselected by clicking on a folder with a check mark, then use the mouse or keyboard menu button to display the pop-up menu, click on **Deselect Feature**, in the pop-up menu.

The **Parameter List Report** window allows viewing the report contents. Each selected parameter group is shown.

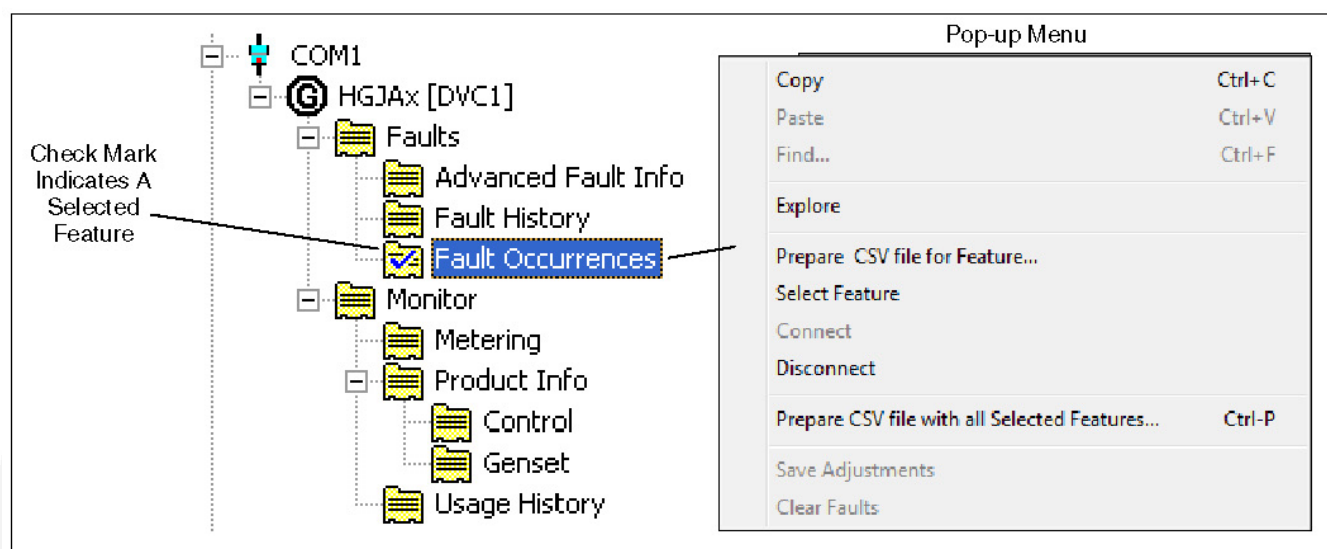**FIGURE 100.   SELECTING FEATURES FOR A REPORT**

FIGURE 101.   PARAMETER LIST REPORT WINDOW

14.2   Support Reports

A Support Report can be created and Emailed.

To create a Support Report,

1. Select **Help** > **Send Support Report**.
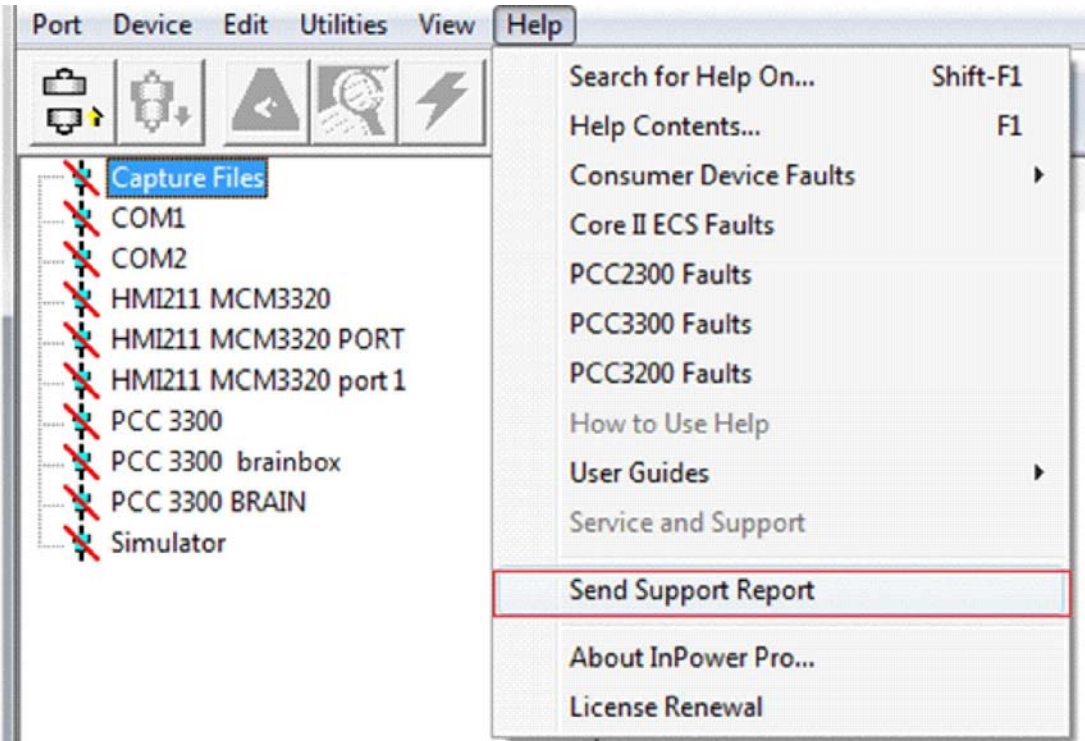
FIGURE 102.   LAUNCHING THE SEND SUPPORT REPORT FEATURE

2. When the **ETools Support Report Utility** dialog is displayed, enter an Issue Title and Issue Description.
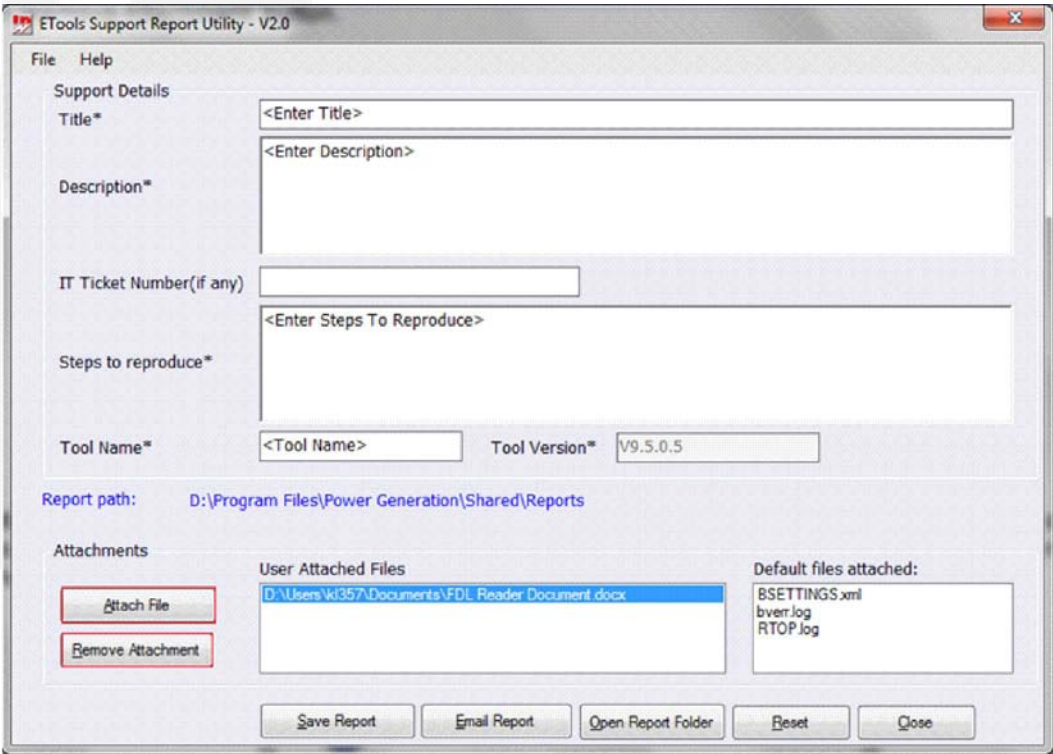
FIGURE 103.   ETOOLS SUPPORT REPORT UTILITY DIALOG

If these fields are not filled in, the following error message is displayed when attempting to save the report.
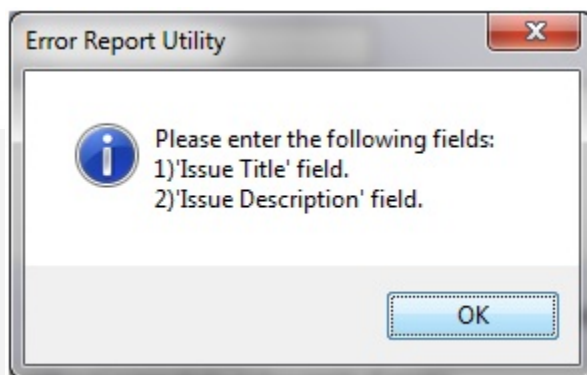
FIGURE 104.   ERROR REPORT UTILITY MESSAGE

3. Click **Save Report**. The following message is displayed. Click **OK**.
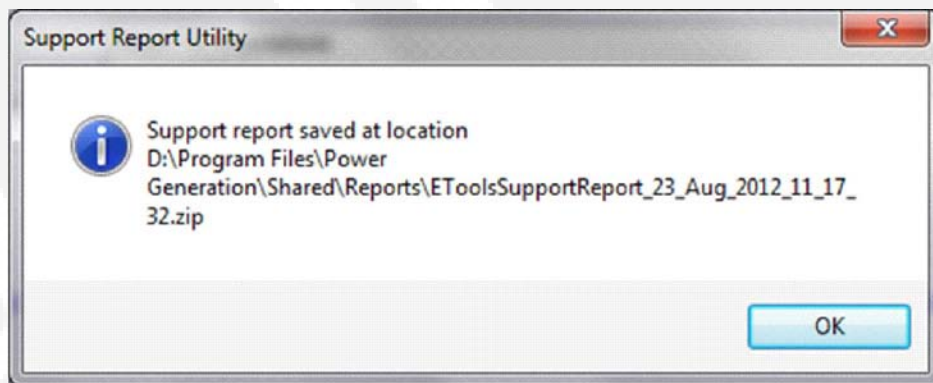
FIGURE 105.   SAVED REPORT MESSAGE

4. If you wish to attach additional files, click **Attach File**. Navigate to the location the file is stored, select it, and click **OK**. The total attachment size cannot exceed 2MB. If this limit is exceeded, the following message is displayed.
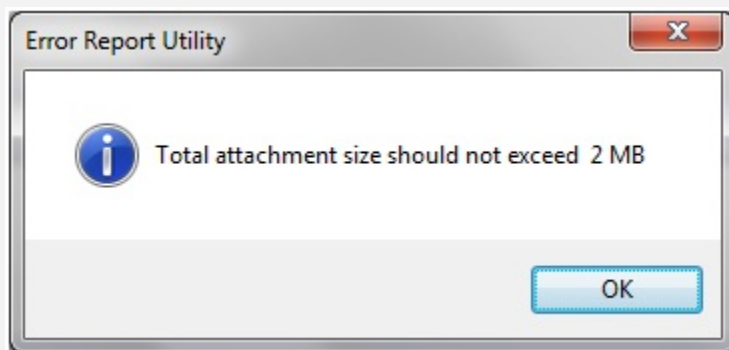
FIGURE 106.   ATTACHMENT SIZE EXCEEDED MESSAGE

☞ **NOTE: A file can also be removed by using the Remove Attachment button.**

If, after creating a Report, you wish to Email it,

1. Click **Email Report** on the ETools Support Report Utility dialog box. The report is saved in ZIP format at the default location.

2. Once the Report is saved, an Email message with the default mailbox location for Cummins InPower support is displayed. Click **Send**.
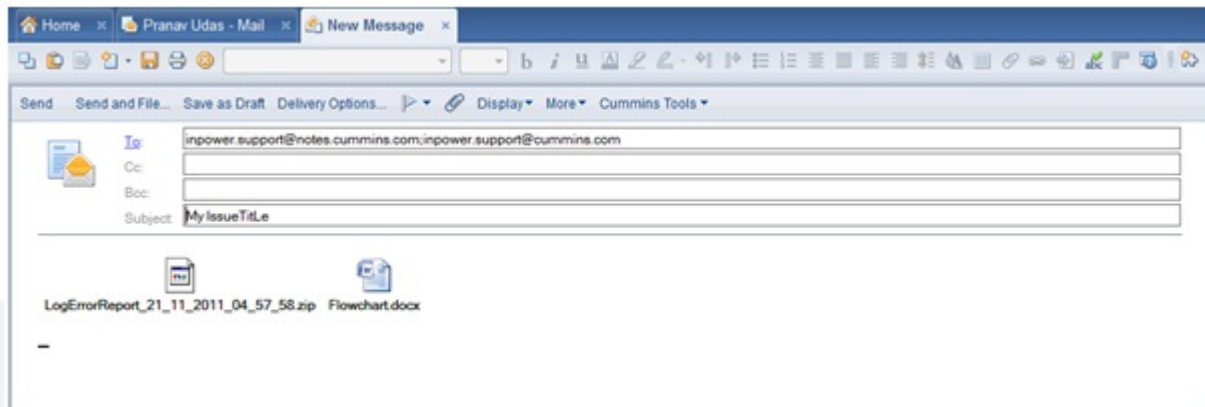
FIGURE 107.   EMAIL FOR ERROR REPORT

If you wish to view an existing report, click **Open Report Folder** on the Error Report Utility dialog box. The default error report location (D:\Program Files\Power Generation\Shared\Reports) is displayed.
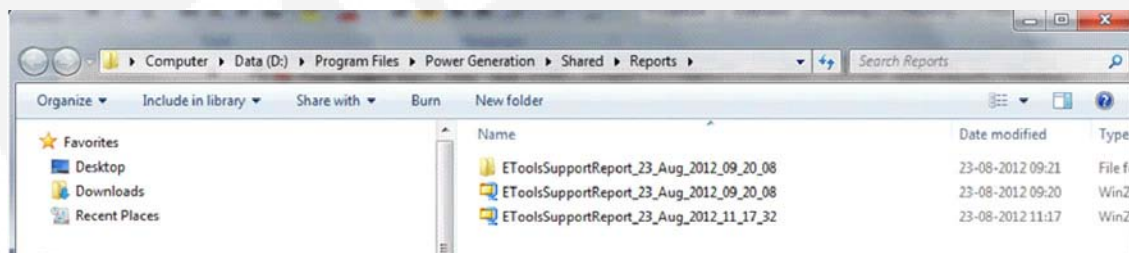
FIGURE 108.   ERROR REPORT DEFAULT LOCATION

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15   Event Configuration

This section describes how to use the Events Configuration feature. This feature is only used with genset applications. Event Configuration allows the InPower user to configure both the Fault Effect and the Notification settings for Faults.

The term *events* refers to status changes that can be viewed on a control display or with InPower. There are two types of events, fault events and non-fault events. The Event Configuration feature is used to configure fault events (Faults). Faults represent genset operating conditions that are outside the normal operating range or setting.

Start InPower and connect to the port (COM1, COM2, etc.) being used for connection to the device.

Click on the **Events Configuration** folder to view the Events Configuration parameters (**Figure 109**). This group displays all of the genset Faults numerically, by Fault Code. Also displayed are the Fault Descriptions, current Fault Effect settings and current Notification settings.

15.1   Devices That Do Not Support Event Configuration

This feature is not applicable to PCC 1100, PCC 1300, PCC 1301, PCC 1302, and MCC 3320.

15.2   Fault Effect

Fault Effect is used to configure the action taken when a fault becomes active. All faults are pre-configured with a fault effect.

The severity of the effect generally cannot be decreased. For example: Engine Overspeed cannot be changed from Shutdown to Warning.

In genset applications, there are five possible Fault Effect settings.

None: When a Fault Effect is set to None, there is no effect when the fault becomes active (including no dialout notification).

Warning: A warning message is delivered to the control display and to InPower when InPower is connected to the device.

Derate: Faults configured for Derate will act like a Warning when the fault is active. If a parameter has a factory set derate percentage the genset will derate to that setting when the fault is active.

Shutdown: Faults configured for Shutdown will cause the genset to shutdown immediately when the fault is active.

Shutdown Cooldown: Faults configured for Shutdown Cooldown will shed the load (if available) and shut the genset down after a cooldown period, when the fault is active.

To change the effect of a fault, double click on the **Fault Effects** value cell, for the desired fault. A drop-down arrow will be displayed. Click on the drop-down arrow to display the setting choices (**Figure 109**). Click on the desired effect, to select it.. Click on the **Save Trims** button, on the toolbar, to write the new value to the device.

FIGURE 109. FAULT EFFECT

15.3 Notification

Notification refers to annunciation of the fault for remote monitoring. In order to remotely monitor genset faults, the Fault Notification setting must to set to **Dial Out**.

There are two possible settings for Notification as follows:

Don't Dial Out: When Notification is set to Don't Dial Out, the control will not attempt to dial out when the fault becomes active.

Dial Out: When Notification is set to Dial Out, and remote site(s) are configured, the control will attempt to dial out to annunciate the fault to one or more remote locations. The modem must be enabled, a valid dialout number must be entered, and the fault Effect must not be set to None.

To change the Notification setting for a Fault, double click on the **Notification** value cell, for the desired fault. A drop-down arrow will display, click on the drop-down arrow to display the setting choices (**Figure 110**). Click on the desired effect, to select it. Click on the **Save Trims** button, on the toolbar, to write the new value to the device.
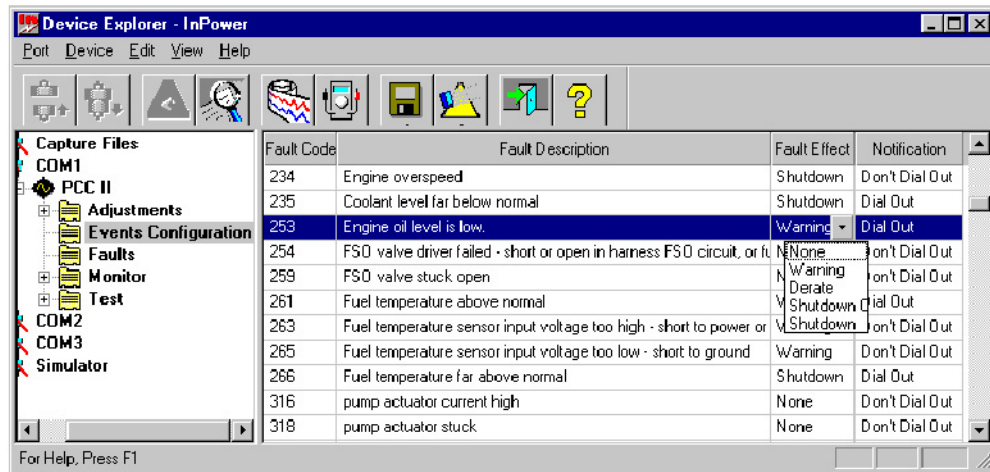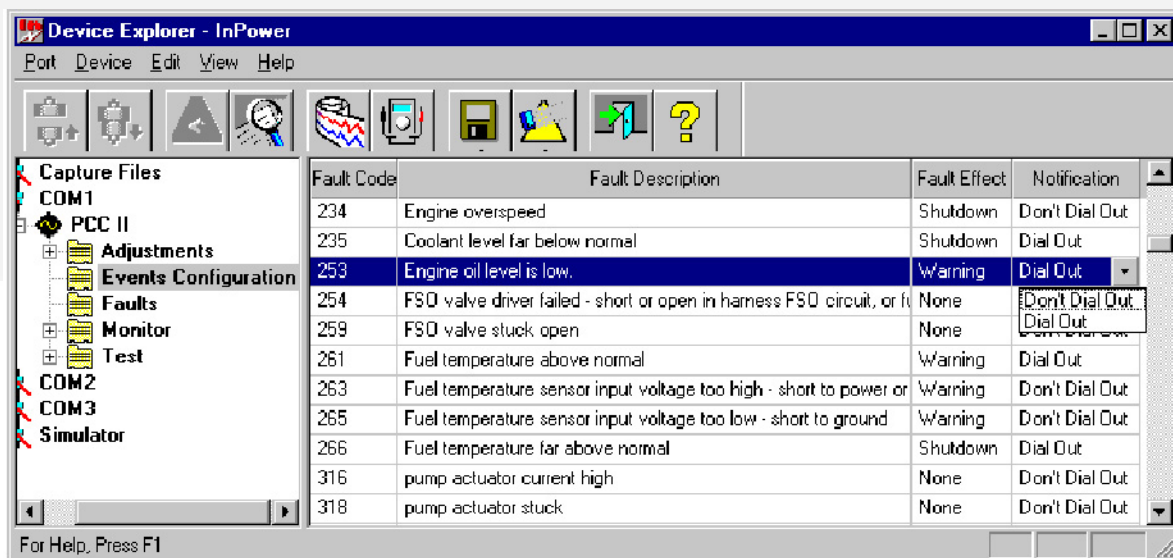

FIGURE 110. NOTIFICATION

16   Remote Communication

This section describes how to setup and use InPower for remote communication with a PowerCommand® controlled genset.

InPower cannot be used to remotely monitor Automatic Transfer Switches. Use the optional network module for remote communication with an Automatic Transfer Switch.

⚠️   **WARNING: Electrical shock and moving parts can cause severe personal injury or death. Notify personnel before starting a generator set and before performing load transfer on a transfer switch. Refer to the equipment Operator's Manual for important safety precautions.**

InPower can also be used to configure a genset to dialout events for remote monitoring with monitoring software or with InPower.

Read through this entire section to become familiar with the remote communication features and uses before configuring a genset control for remote communications.

16.1   Remote Connections

Figure 111 and **Figure 112** show typical remote connections. Two modems are available for use with InPower, a standard modem and one designed for mounting to a DIN rail.
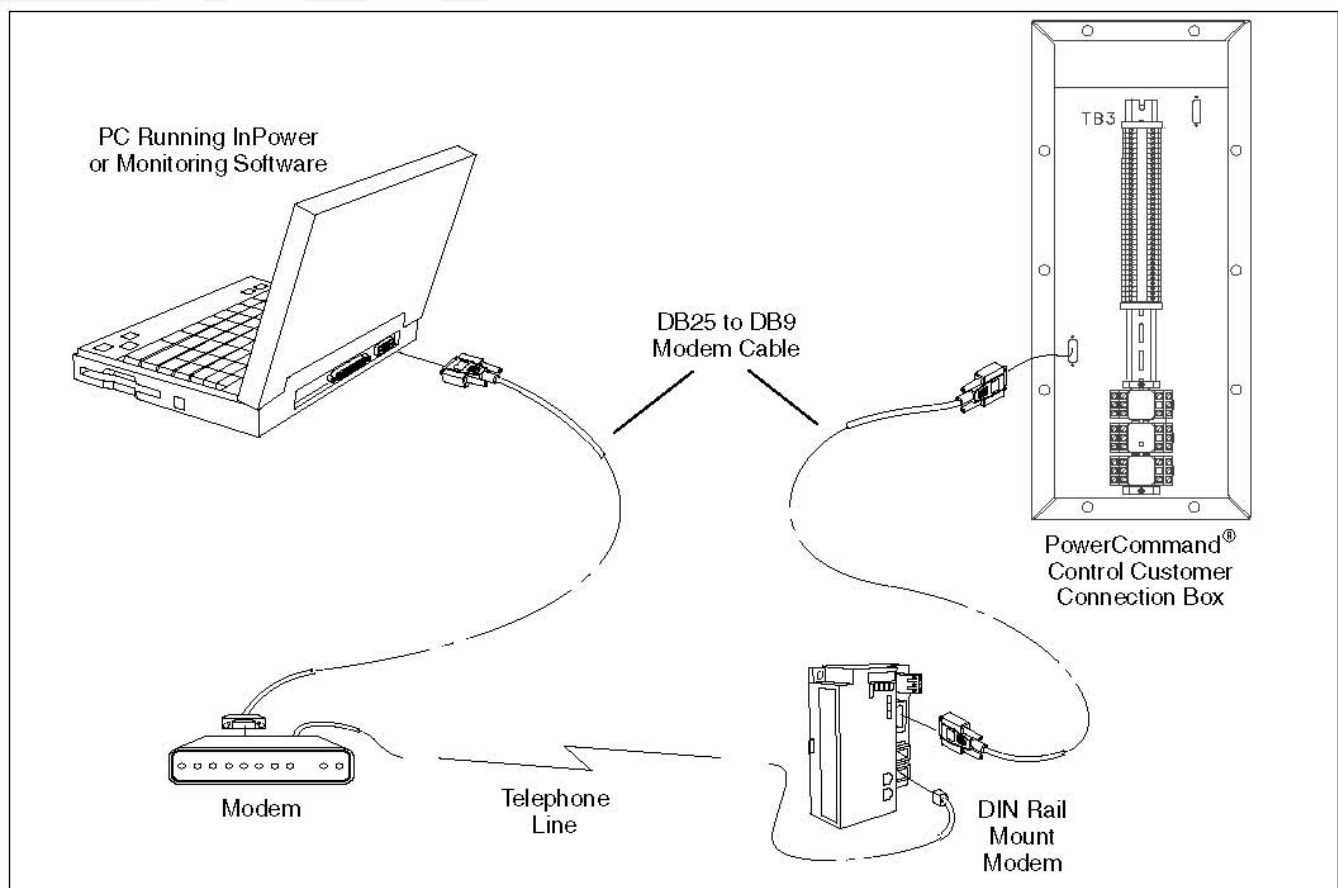
FIGURE 111.   INPOWER SERIAL CONNECTION (TYPE 1 CONNECTION BOX)
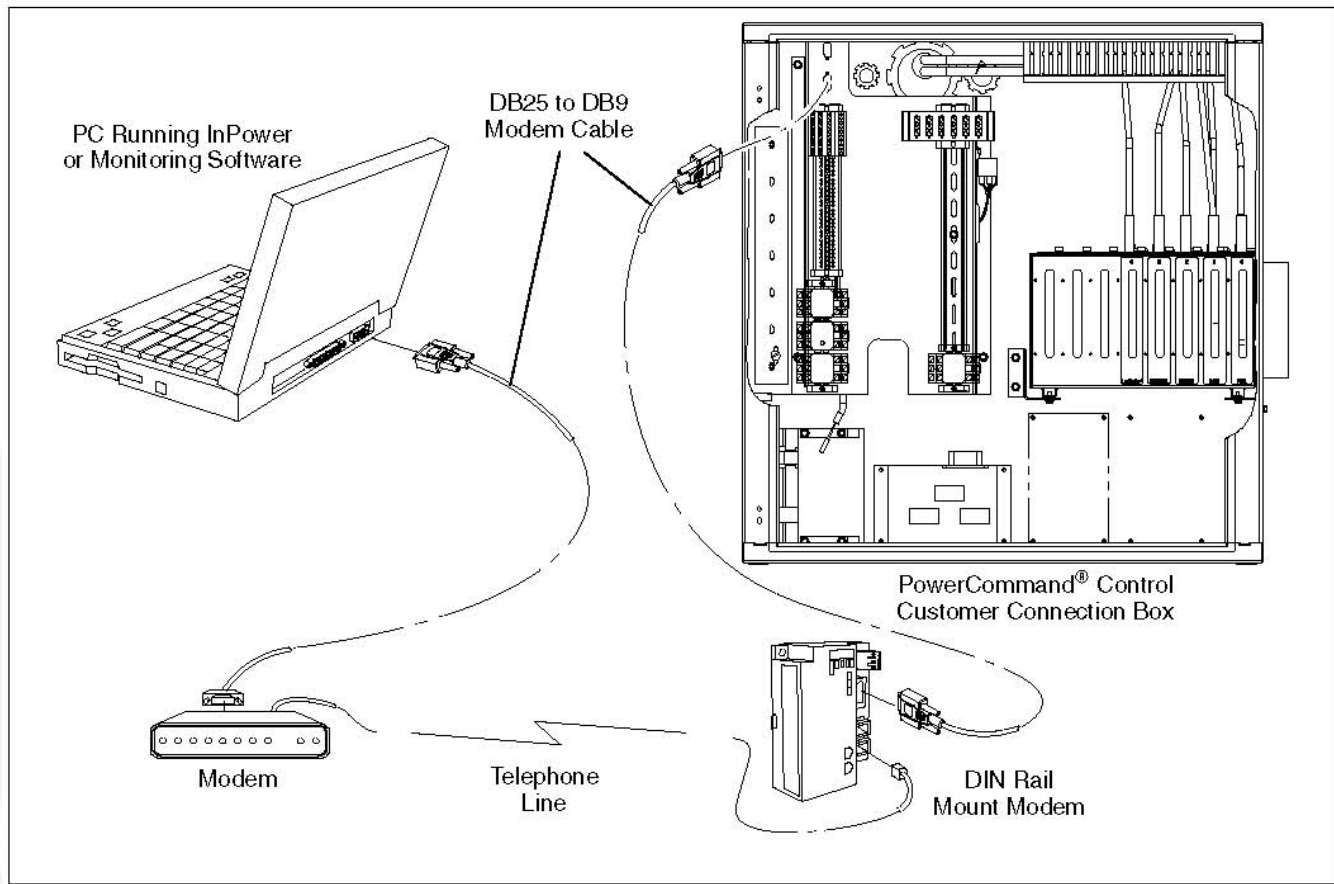
FIGURE 112.   INPOWER SERIAL CONNECTION (TYPE 2 CONNECTION BOX)

16.2   Remote Site Setup

The following procedures describe how to setup InPower for remote communication.

The **Setup** feature is accessed from the **Start** menu by clicking on the **Power Generation - InPower** program group. Click on **Setup**, to launch the Setup dialog.

If a TAPI Error message appears, you may be using Windows 95 operating software. InPower does not support remote communications with Windows 95.

The user will need to define a new site, then add a device for that site and apply the changes.

16.2.1 Site Setup

Click on the **Site Setup** tab to access the **Site Setup** dialog (**Figure 113**). Click on the **Add** button, to display the **Create Site** dialog (**Figure 114**).

16.2.2 Create Site

Enter the following information in the dialog to create a new remote site:

Site Type - Select **Physical** from the drop down list.

Site ID - Enter a port name, use **Remote** in this example.

Protocol - Select **goal** as the protocol from the drop down list.

Location - Enter **Remote,** from the drop down list.

Telephone Number: Enter the telephone number of the phone line connected to the modem at the site location.

Click on the **OK** button to save the new site. This establishes the port, next, setup a device for this port.
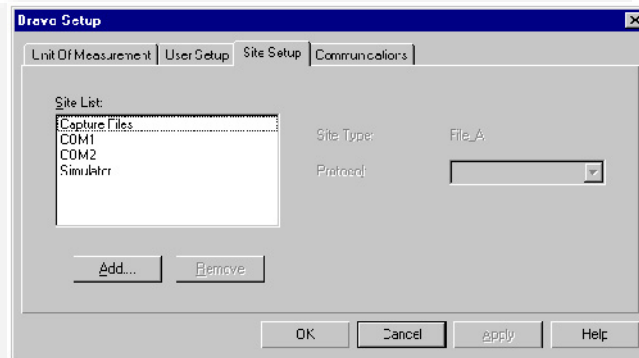
FIGURE 113.   SITE SETUP DIALOG
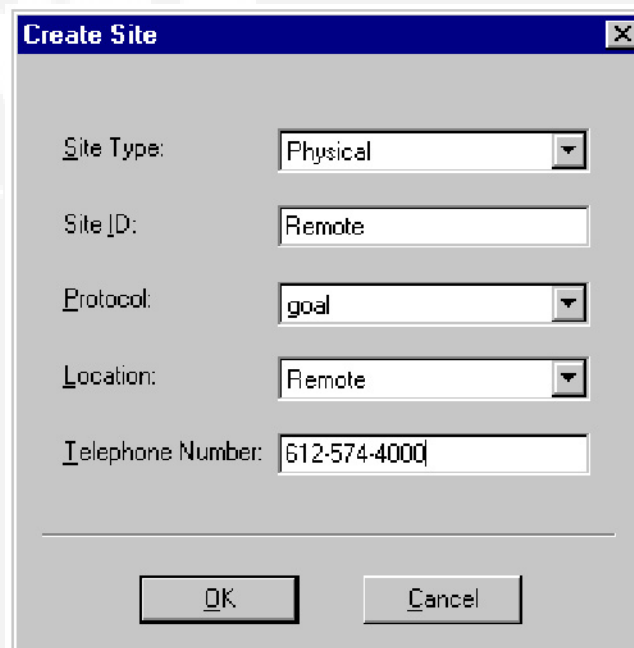
FIGURE 114.   CREATE SITE DIALOG

16.2.3 Device Setup

Click on **Remote**, in the Site List, then click on the **Device Setup** button to access the Device Setup dialog. Click on the **Add** button to access the Create Device dialog (**Figure 116**). For remote communication, enter the following information in the **Create Device** dialog:

Device ID **-** Enter **Remote**.

Device Name - Enter **Genset**.

Device Type: Click on the drop-down arrow, then scroll to and select **pcf_dvc.**

Click on the **OK** buttons for the Create Device and Device Setup dialogs, then click on **Apply** to save the settings. Click on **OK** to complete the setup and close the **Site Setup** dialog.
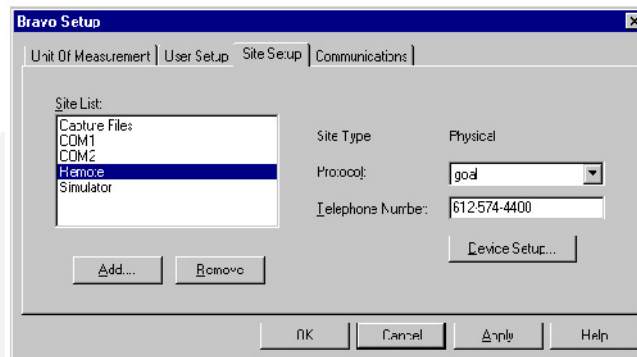
FIGURE 115. DEVICE SETUP
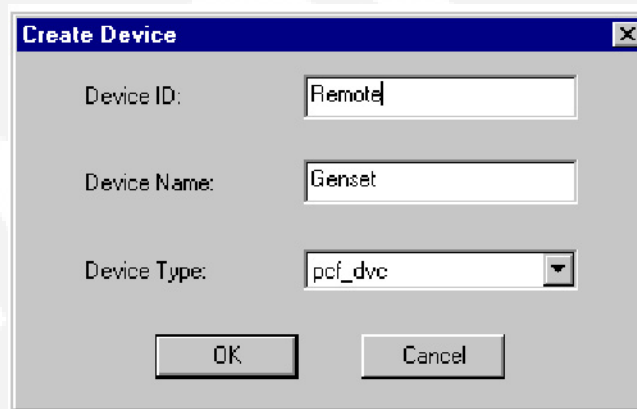
FIGURE 116. CREATE DEVICE DIALOG

16.2.4 Communications Setup

The **Communications** setup feature is used to enable incoming calls for remote InPower Users.

Enable this feature by clicking on the **Allow incoming calls** checkbox. (Check mark appears in checkbox when the feature is enabled.)

In the **Incoming Calls Use modem** combo box, select the desired modem. Only one modem can be selected.

In the **Remote Connections Use modem** combo box, select the modem to use for outgoing calls (for remote sites). The names of all modems currently installed on the system will be listed in the drop-down list. The **First Available** selection allows the Windows TAPI program to select an available modem.

When available, Local or Remote **LON Network Connections** can also be set.
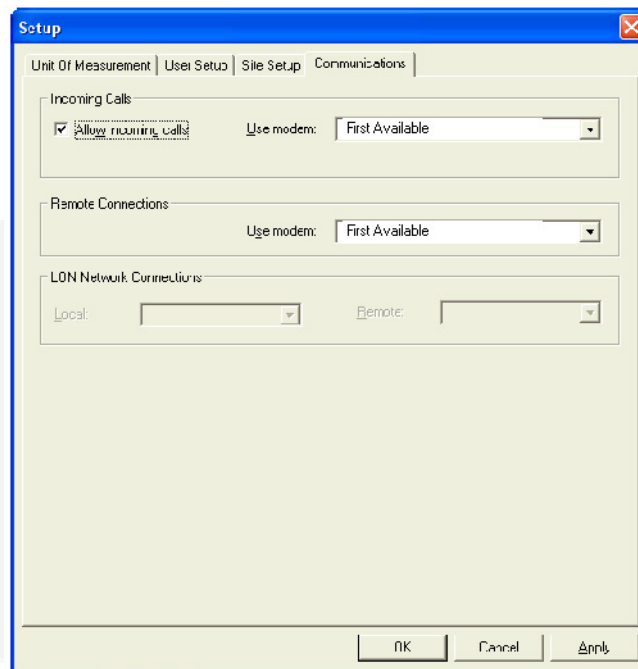
FIGURE 117.   COMMUNICATIONS SETUP

16.3   Remote Connection with InPower

InPower can be used to remotely connect to a genset. Before attempting remote communication, perform the Remote Site Setup steps and make sure that the modem is enabled.

Start InPower and connect to the site that was used for remote connection (named *Remote* in this example).

A dialing status window is displayed during dialout. When connected to the device, InPower Device Explorer opens and displays the device the same way it does with a local connection (**Figure 118**).

To write to a device you must have registered software of the correct device type.

When a device has password protected parameters, the password protection applies when using a remote connection. The user must enter the required password(s) before the password protected parameters can be changed.
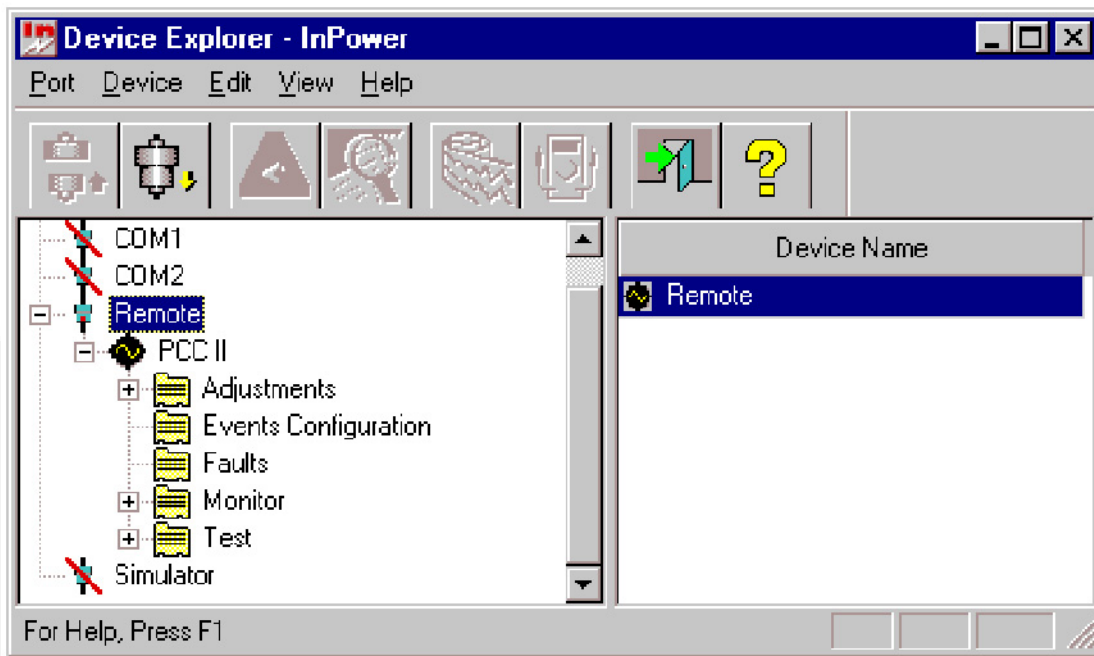
FIGURE 118.   REMOTE CONNECTION

16.4   Dialout Configuration

This section describes the modem setup parameters used for dialing out. To configure the device for dialout, the service PC must be directly connected to the device (Dialout Configuration cannot be done remotely).

Start InPower and connect to the port (COM1, COM2, etc.) that matches the COM port on the service PC, used for connection to the device. Double click on the COM port (or click on the COM port and then click on the **Connect** button, on the toolbar).

The modem setup parameters are located in the **Adjustments** - **Features** folder. Double click on these folders to display the **Direct Connect Modem Setup** folder. Click on this folder to view the modem setup parameters (**Figure 119**).

The following list describes the modem setup parameters:

Modem Hangup Delay: Enable this feature to remain connected for two minutes after delivering a dialout message.

Modem: This feature must be Enabled in order to use the modem.

Dial Out Attempts: Used to set the number of times a number will be dialed while attempting to deliver a dial out message. The default setting, zero, is equal to one attempt. (The recommend setting is 10.)

Modem Configuration String: Used to enter the modem configuration string for the specific modem in use. See **Section 16.5** for the modem init strings for each of the modems that are used with InPower.

☞   **NOTE:**   **The modem configuration string is preconfigured when one of the optional modems is factory installed.**

Dialout Numbers 1 through 4: These are the dialout numbers for the location(s) that are monitoring the device. Use a comma (,) to pause, and start with a P for pulse dialing.

Dial Out Retry Delay: Enter the time delay between dialout attempts (in minutes).

Clear Undelivered Events: This feature clears all pending dialouts.

Dialout Break: When enabled, this feature breaks the connection after two minutes in order to complete a dialout.

Set the modem parameters, then click on the **Save Trims** button, on the toolbar, to write modem setup values to the device.
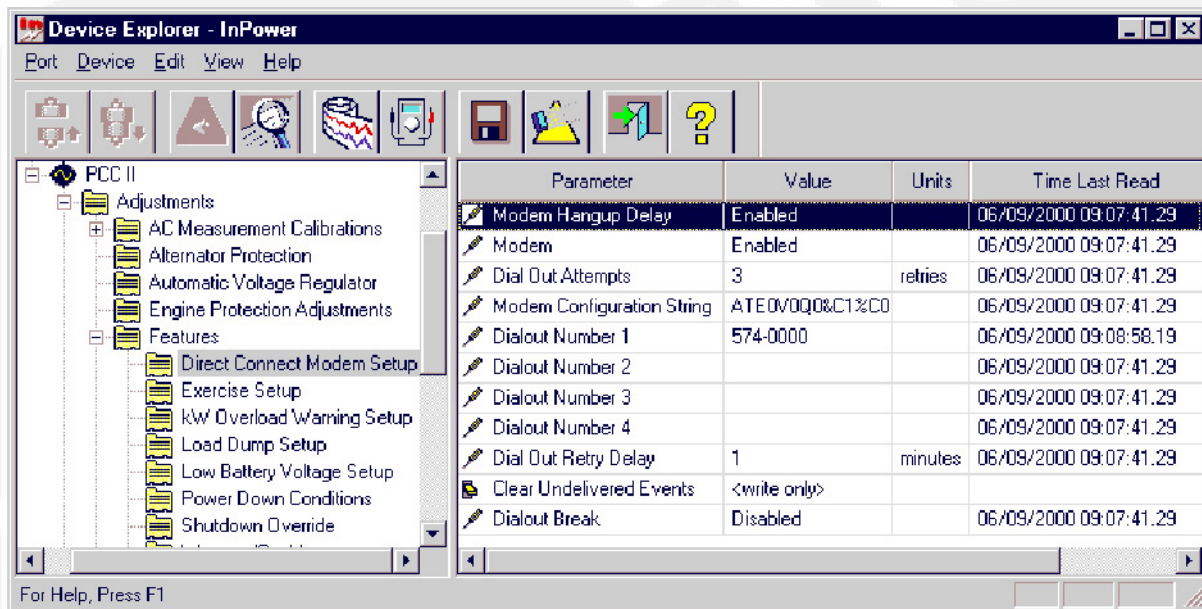
FIGURE 119.   DIRECT CONNECT MODEM SETUP

16.5   Modems

There are two modems that can be used with InPower. The two modems each have a unique init string (Modem Configuration String). When a modem is installed in the field, it is important to identify the modem brand, and enter the proper init string using InPower.

Both of these modems can be powered with a DC power supply.

When using InPower locally, do not remove the modem connection from the serial port until after the modem power has been turned off. Do not re-apply power to the modem until after it has been reconnected to the device's serial port. Failure to follow this sequence can result in loss of the modem configuration string.

⚠ *CAUTION: The modem configuration string can be lost, preventing dialout of important messages if power to the modem is not turned off and on in the proper sequence. Whenever the dialout modem is disconnected for access to the device's serial port, the modem first must be turned off. The modem should not be turned on again until after it has been reconnected.*

The modem used for dialout should be connected through the normally closed contacts of the modem power relay. This is required because when the control is off (and the driver is off) the modem has to be able to receive dial-in calls, to wake up the controller.

16.5.1 Modem Configuration Strings

Use the following information for configuring one of the two available modems for use with InPower:

Multitech Model MT3334ZDX

Modem Configuration String:

ATE0V0Q0&C1%C0&D0&K0N0\N0$SB9600S0=1S25=25S37=9&W0

Industrial Modem Model VT-Modem-1US by Sixnet.

Modem Configuration String:

ATE0V0Q0&C1%C0&D0&K0N0\N0S0=1S25=25S37=9&W0

16.6 Remote Monitoring

PowerCommand controlled Gensets can be monitored from a remote location. Use InPower to perform the Setup and Dialout Configuration. Make sure that the **Allow incoming calls** feature is enabled, in the Communication setup.

After making the necessary remote connections (**Figure 111** and **Figure 112**), the monitoring software is used to receive dialout events from the genset control.

Using InPower for remote monitoring:

Start InPower, but do not connect to a port. Double click on the Alarm Popup icon (exploding fire cracker icon) located on the Task Bar in the lower right corner of your monitor. Enable the **AutoAnnounce** feature in the Alarm Popup **Options** menu.

When enabled (checked), the **Alarms** Popup displays each time a new event is received. If unchecked, the **Alarms** Popup will not open automatically to announce new events. InPower must remain running when it is being used for monitoring a remote genset. The InPower program can be minimized to the Task Bar.

The most recent event is added at the top of the list. One event will always be selected (highlighted). Events received while the Alarm dialog is displayed will appear in the dialog immediately.

17   Network Applications

This section describes how to use InPower to configure network settings and how to configure devices over a commissioned network.

17.1   Network Configuration

A **LonWorks** folder has been added in the **Adjustments** directory for PCC 3200, PCC 2100 and PowerCommand transfer switch controls. This group of parameters is used to configure network settings. Each device type has a unique group of settings.

PCC 3100 controls use a GCM for network applications. Network settings for this device are available through a plug-in, used with LonMaker.

The service PC, with InPower version 3.0 or later, must be connected to the genset or ATS, in order to configure the network settings.

17.2   Network Connection Setup

InPower, beginning with version 3.0, can configure devices over an FT-10 network. The service PC must be setup for connecting to a network and the network must be commissioned and operating.

The service PC must have LonMaker for Windows version 3.1 installed. This program is available from Echelon. The service PC will need a gateway driver (either PCC-10 or SLTA-10, depending on the device being used). Also, a copy of the network site database must be obtained from the network, and installed on the service PC.

This section covers the required service PC setup steps for local and remote network connections.

Familiarity with LonMaker for Windows and the SLTA Link Manager program would be helpful for creating a backup of the network site database and for troubleshooting connection problems. This experience can be gained thorough LonMaker for Windows training and from PGA FT-10 Networks training.

Install LonMaker for Windows software on the service PC following the instructions provided by Echelon.

- Gateway Driver Installation and Setup

If the network gateway driver, has not already been installed, follow these instructions:

A copy of the SLTA-10 gateway driver is included on the LonMaker for Windows CD. Gateway drivers are also available from the Echelon web site at (www.echelong.com). Install the driver that matches the gateway device type that will be used to connect to the network.

Most applications will use either an SLTA-10 external gateway, or a PCC-10 gateway card, in the service PC.

In this example the SLTA-10 installation and setup will be described.

1. Locate the SLTA-10 gateway driver on the CD, double click on the **slta10....exe** file to begin the driver installation.

2. From the Setup window, select **Next** to view the license agreement.

3. Review the license agreement and select **Yes,** to accept the terms of the agreement.

4. In the Choose Destination Location window, select **Next**, to use the default destination (recommended).

5. In the Select Program Folder window, select **Next**, to create the program folder.

6. Select **No** to the option of accessing the file from DOS.

7. Click on the **Finish** button to complete the installation setup.

17.2.1 Gateway Settings

Launch the SLTALink Manager from the **Start** menu (or the taskbar icon). Click on the Link menu and select **New**. To operate correctly, the name must be entered exactly as shown.

Local Setup: For a local network application, enter a name and type for the link, **Name: LocalSLTALON1** and click on the **Local** button, click on the **Update Identifier** box to select it, then click on **Next** (**Figure 121**).
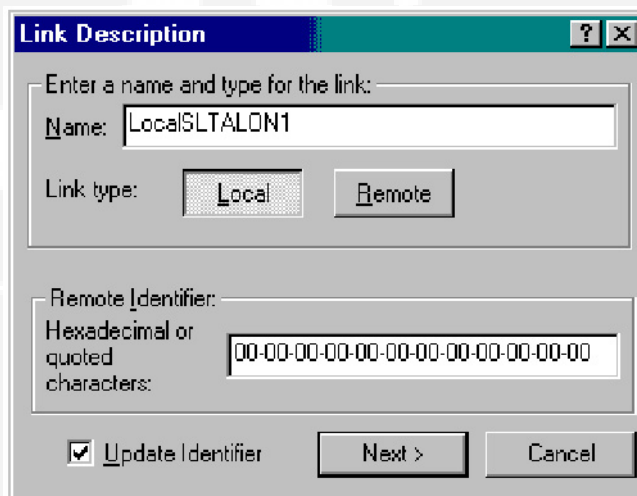
FIGURE 120. SLTA LOCAL SETUP

Use the **Serial Port** drop-down arrow to select the serial port that the SLTA is attached to on the monitoring PC. Use the **Speed** drop-down arrow to select **38400** as the communication speed, click on **Next** to continue.
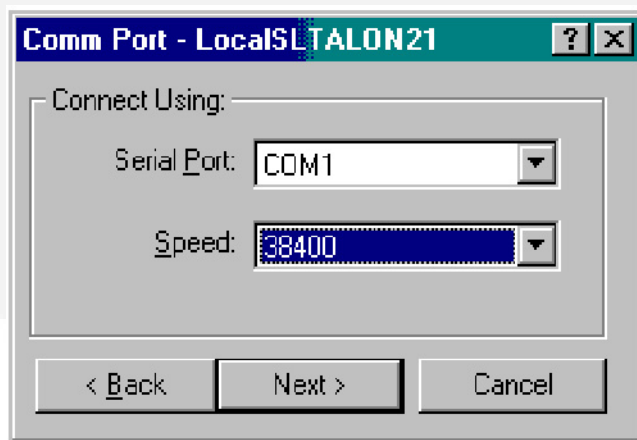
FIGURE 121. SLTA SETUP SPEED

Remote Setup: For a remote network application, enter a name and type for the link, **Name: RemoteSLTALON1** and click on the **Remote** button. Enter the network site name in single quotes. Click on the **Update Identifier** box to select it, then click on **Next** (**Figure 122**).

FIGURE 122.   SLTA REMOTE SETUP

Use the Dialing Address dialog to enter the area code (if applicable) and phone number of the phone line that is connected to the modem at the remote site. Skip the Configure Line setting, connection speed will be set automatically. Click on the **Next** button and then the **Finish** button to complete the setup.

FIGURE 123.   SLTA REMOTE DIALING ADDRESS
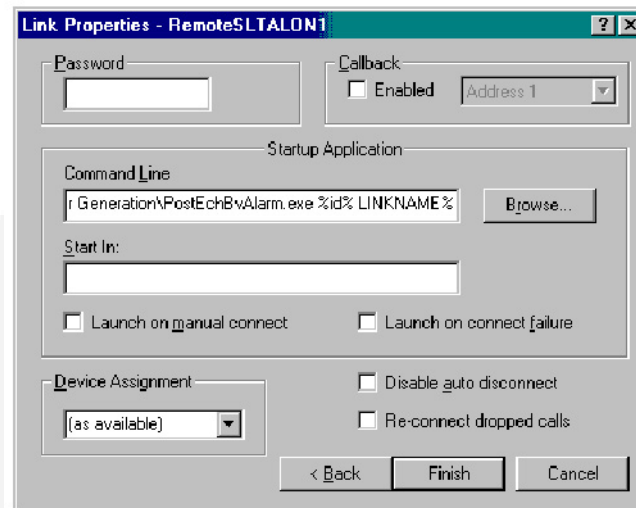
FIGURE 124.   SLTA LINK PROPERTIES

17.2.2 Alarm Settings

After making the initial local or remote gateway settings, a Link Properties dialog box is displayed. This feature is used to setup the gateway for delivering alarms.

Setup the Command Line by clicking on the **Browse** button. Navigate to and select the a file named **PostEchBvAlarm.exe**. This file is located in the following directory:

C:\Program files\common files \cummins shared\power generation

Double click on each folder, beginning with the Program Files folder, until you reach the **PostEchBvAlarm.exe** file. Double click on this file, and the directory path and file will be added to the **Command Line**.

The **Command Line** needs to be appended with additional instructions. Refer to **Figure 124**. Click inside the **Command Line** and use the right arrow key, to reach the end of the Command Line. Enter the following text, including spaces, enter a space before the first percent symbol:

%id% %LINKNAME%

Click on **Finish** to complete the Link Properties settings.

17.2.3 Importing the Network Site Database

The network site database is created by the network installer. A backup copy of the database can be created from the PC used to install the network. Use the LonMaker for Windows Backup feature, with the **Backup Database** selection. LonMaker for Windows creates the backup copy of the network site, as a compressed (ZIP) file.

☞ **NOTE:**   **The network name (site ID) must consist of no more than seven characters. The characters can only be upper case letters, numbers and underscores. Make sure the network installer does not use lower case letters, special characters, or spaces for the network name.**

Obtain the network site database from the network installer. If the site database is not available, and you are able to connect to the network site with Lonmaker for Windows, use the **Recover Database from Network** selection, displayed after selecting **New Network**.

The site backup database file is usually small enough to be transferred to a floppy disk. Locate the site backup file (*sitename*.**zip**) using Windows Explorer. Double click on the file to launch the **WinZip** utility.

Extract the file to the root directory where LonMaker for Windows is installed (typically C:/). When finished extracting the file, close the WinZip program and close Windows Explorer.

17.2.4 Local Network Site Setup

The following procedures describe how to setup InPower for local communication.

The **Setup** feature is accessed from the **Start** menu by clicking on the **Power Generation -> InPower** program group. Click on **Setup**, to launch the Setup dialog.

In this example the user will define a new site for a local network application.

17.2.5 Site Setup

Click on the **Site Setup** tab to access the **Site Setup** dialog. Click on the **Add** button, to display the **Create Site** dialog (**Figure 125**).

17.2.6 Create Site

Enter the following information in the dialog to create a new local site:

Site Type - Select **Network** from the drop down list.

Network - Use the drop-down list and select the name for the network you want to connect to. (If the network name is not present in the drop-down list, cancel the setup and import the network site database first.)

Site Name - Enter the name as it appears in the preceding **Network** name.

Location - Enter **Local,** from the drop-down list.

SLTA Password: This feature is typically not used. If the SLTA has a password, enter it here.

Click on the **OK** button to save the new site. This establishes the site, in network applications it is not necessary to create devices for the site because the devices that are at the site are imported from the network database.

FIGURE 125.   CREATE SITE DIALOG
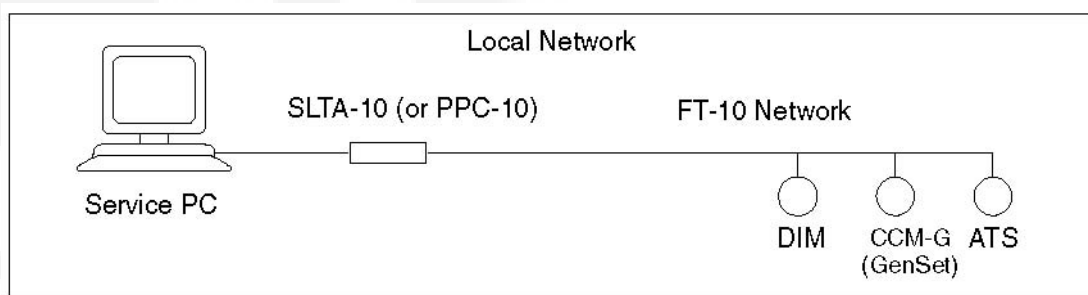
FIGURE 126.   TYPICAL LOCAL NETWORK CONNECTION SETUP

17.2.7 Remote Network Site Setup

The following procedures describe how to setup InPower for remote communication.

The **Setup** feature is accessed from the **Start** menu by clicking on the **Power Generation - InPower** program group. Click on **Setup**, to launch the Setup dialog.

In this example the user will define a new site for a remote network application.

17.2.8 Site Setup

Click on the **Site Setup** tab to access the **Site Setup** dialog. Click on the **Add** button, to display the **Create Site** dialog (**Figure 127**).

17.2.9 Create Site

Enter the following information in the dialog to create a new remote site:

Site Type - Select **Network** from the drop down list.

Network - Use the drop-down list and select the name for the network you want to connect to. (IF the network name is not present in the drop-down list, cancel the setup and import the network site database first.)

Site Name - Enter the name as it appears in the preceding **Network** name.

Location - Enter **Remote,** from the drop-down list.

Telephone Number: Enter the telephone number of the phone line connected to the modem at the site location.

SLTA Password: This feature is typically not used. If the SLTA has a password, enter it here.

Click on the **OK** button to save the new site. This establishes the site, in network applications it is not necessary to create devices for the site because the devices that are at the site are imported from the network database.
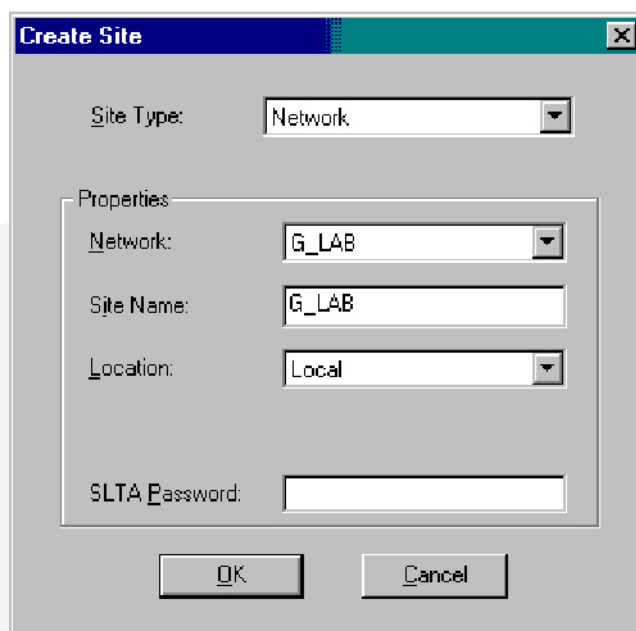

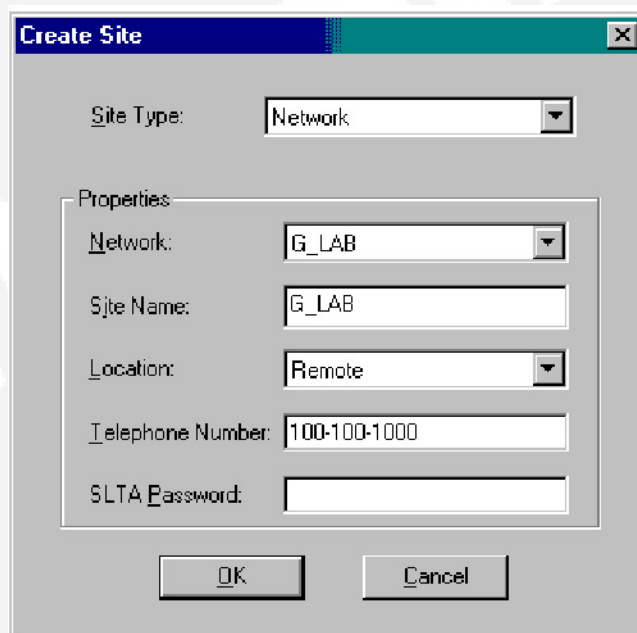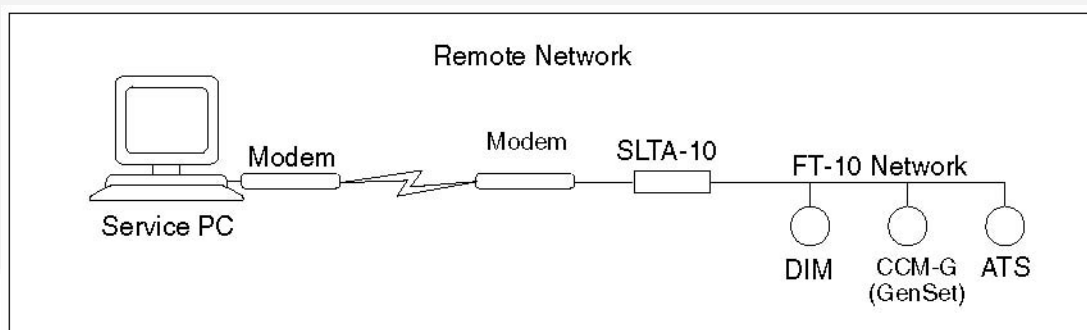**FIGURE 127.   CREATE SITE DIALOG**

FIGURE 128.   TYPICAL REMOTE NETWORK CONNECTION SETUP

17.2.10 InPower Communications Setup

After setting up InPower for either a local or remote network site, the Communications setup needs to be completed.

Click on the **Communications** setup tab, then establish a Lon Network Connection for Local or Remote, or both if you plan to make local and remote network connections.

Local: Click on the drop-down arrow and select **SLTALON1** from the list (or use **PCCLON1** if using PCC-10 card). Click on the **Apply** button (**Figure 129**).

Remote: Click on the drop-down arrow and select **SLTALON1** from the list (or use **PCCLON1** if using PCC-10 card). Click on the **Apply** button.

Click on the **OK** button when finished.
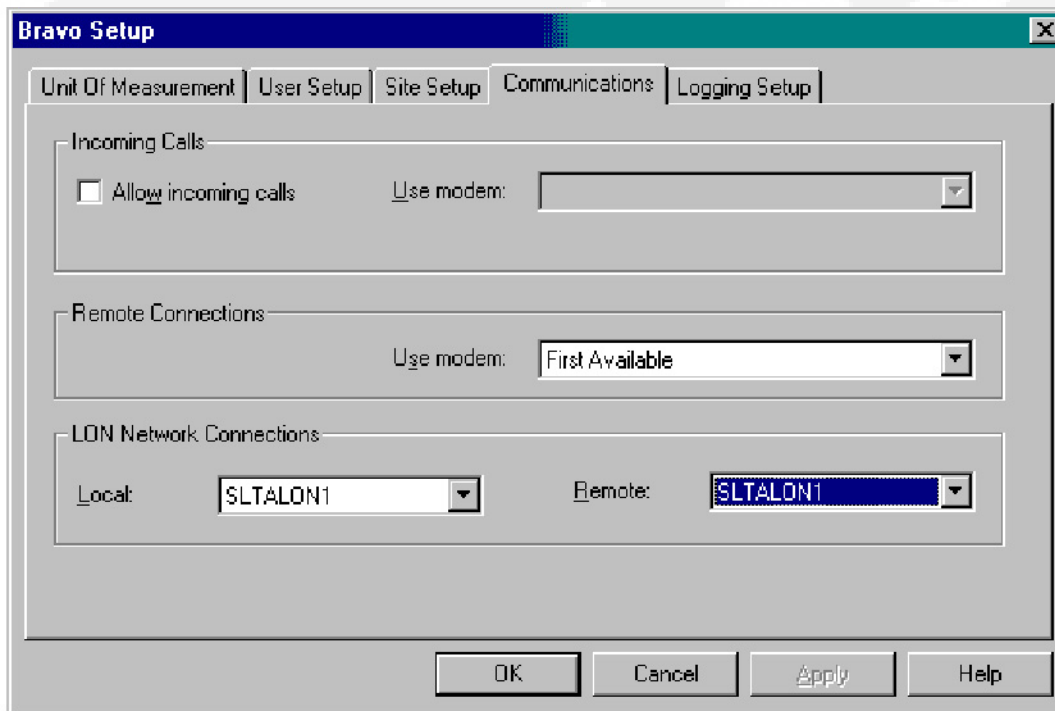
FIGURE 129.   NETWORK COMMUNICATION SETUP

17.3   Network Connection Example

Start InPower and connect to the port (typically the site name created in Site Setup). All of the devices on the network will be displayed in the Device Explorer directory (**Figure 130**).

If the connection is not made, check the SLTALink Manager, to view the status of the connection of the service PC to the gateway. Launch the **SLTALink Manager** from the **Echelon** folder in the **Start** - **Programs** menu, or from the Taskbar.

If the service PC is not connected to the gateway, select the gateway device from the **Select/Action** menu pick, in the **Link** menu, and click on the **Connect Now** button.

If the gateway is connected, and the network site still does not open, make sure the network is operating. It may be necessary to resynchronize the network using LonMaker for Windows.

In this example, the network settings for the Controls Communication Module - Genset (CCM-G) are accessed over the network. Open the **Adjustments** folder, and then open the **Network** folder (**Figure 131**).

This section describes how to use each of the adjustable parameters, in the CCM-G Network directory.

Network Wink: Use this feature to test a network module. Click on the **Value** cell and select **Active** to send a test signal to the device. The service led will wink when the message is received, indicating that the network connection and the network module are working.

InPower Timeout: If displayed, do not adjust, this parameter will be removed.

Site ID: The **site ID** must consist of no more than seven characters. The characters can only be a combination of upper case letters, numbers and underscores. Do not use spaces, special characters, or lower case letters for the Device Site ID.

Device Name Tag: The **Device Name Tag** is used when sending system data. Provide a different name for each device on the network (up to 16 characters).

(Network) Test Interval: Use to set the send time for the network test interval. The default 10 second interval is recommended.

Minimum Send Time: Use to set the send time for the analog data network variables. The default 2 second interval is recommended.

Network Configuration: Displays the device network application. Self installed devices read **Local** (factory default) and are not available to InPower for adjustment or monitoring. Devices that are self installed are configured using the dip switches on the device.

When the self-installed feature is not used, the configuration is **External** and the device is available to InPower.

After making any necessary adjustments, click on the **Save Trims** button, on the toolbar, to write the settings to the device.
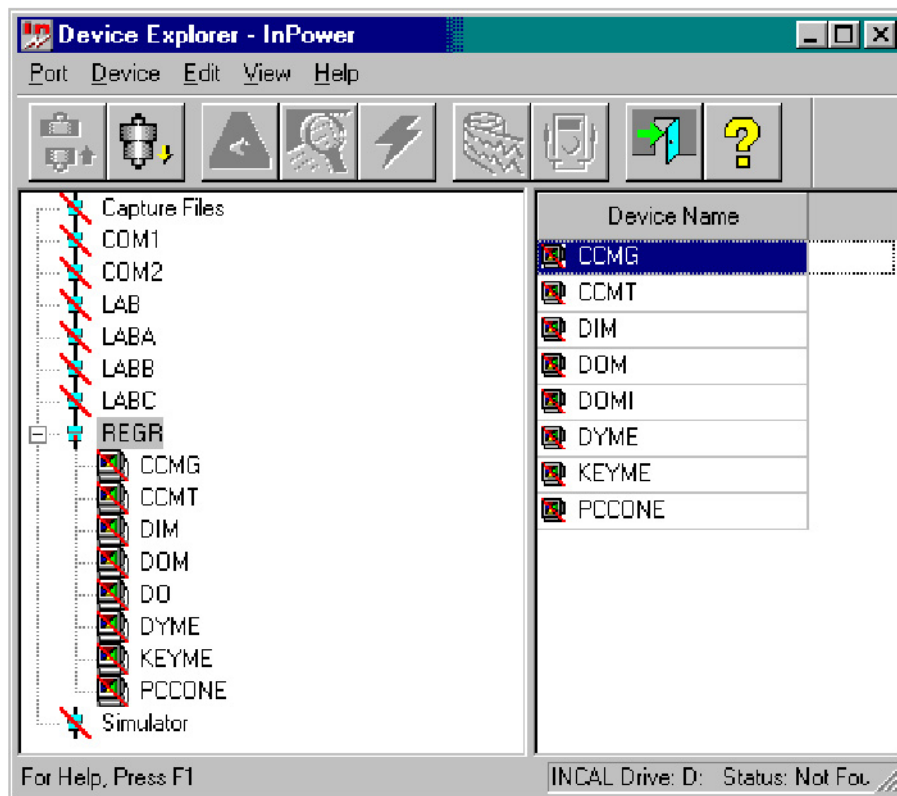
FIGURE 130.   NETWORK CONNECTION

FIGURE 131.   CCM-G - NETWORK FOLDER

17.3.1 Setup Dialout

The Dialout group of parameters allows the customer to configure the dialout settings for remote monitoring of devices on the network. Use these settings as follows:

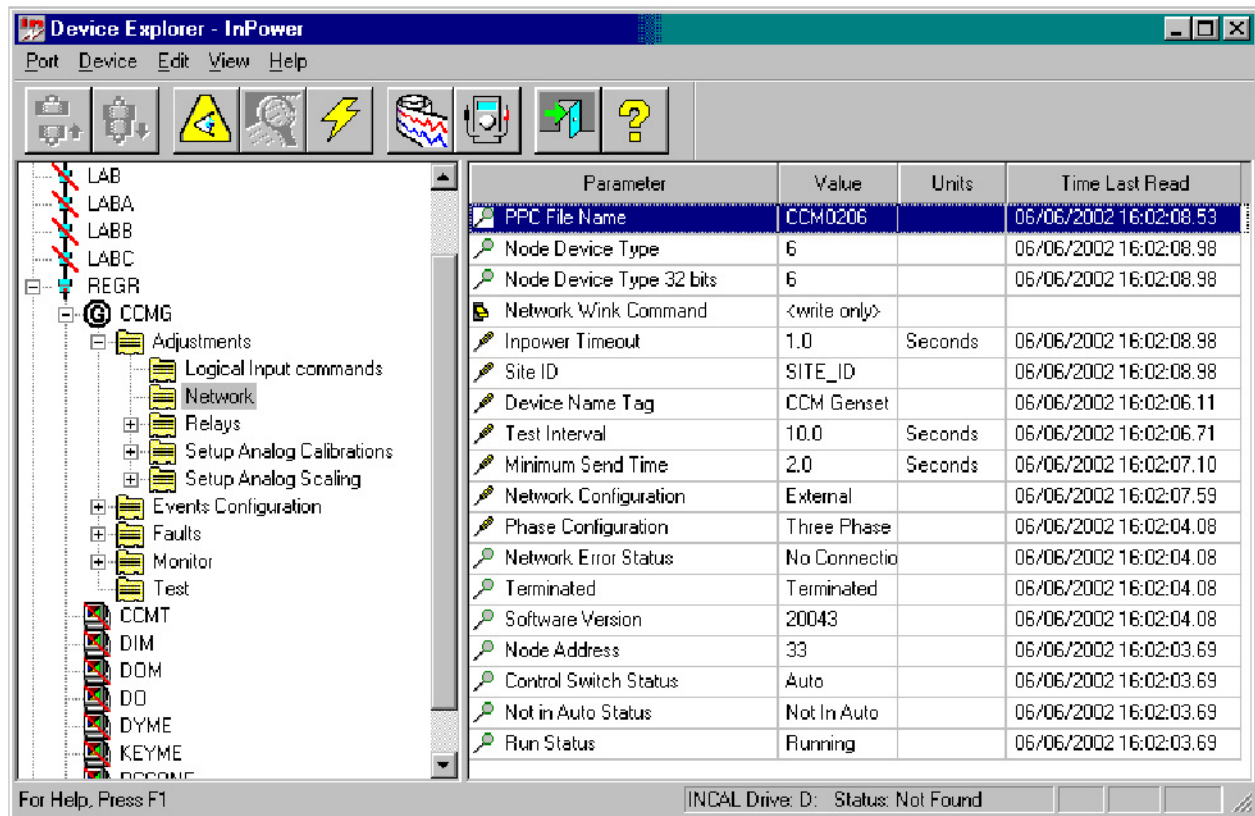*Redial Attempts:* Used to set the number of dialout retries, if the first alarm dialout fails while attempting to deliver a dial out message. The default setting 10, is the recommended setting. A setting of zero, is equal to one attempt.

Redial Delay: Enter the time delay between dialout attempts. The default, 60 seconds, is the recommended setting.

Dialout Site 1 thru 5: Enable the number of remote monitoring sites (hosts) that you want to send alarm messages to. Click on the value cell and select **Enabled** from the drop-down list.

Dialout Break: When enabled, this feature breaks a current connection after two minutes in order to complete a dialout.

Connection Timeout: After a dialout command has been sent to the modem, this feature specifies how long to wait for the site to connect to the remote monitoring location. The default setting is 60 seconds.

If the site does not connect with the remote monitoring location, it will dialout to Host 2, Host 3, etc. (if additional hosts are enabled) until it connects. If it still does not connect, it will repeat the process, beginning with Host 1, based on the number of retries that have been set.

After making any necessary adjustments, click on the **Save Trims** button, on the toolbar, to write the settings to the device.

In this example, InPower is connected to an Annunciator over the network. Open the **Adjustments** folder, and then open the **Setup LED's and Horn** folder (**Figure 133**).

The **LED Index** (number) for each LED is listed in the first column. The **Color**, **Horn** and **Flash** columns are all adjustable to the desired type of annunciation. The Status column indicates if the input is active.

To change the setting for the color, the horn or to enable the LED flash setting, Click on the value cell for the desired item. The item selected will be displayed in the edit box, in the upper right of the dialog. Click on the drop-down arrow and a list of the choices will be displayed. Click on the desired option. Click on the check mark to enter the selection in the Data Table. Repeat this process until all of the desired settings have been chosen.

Click on the **Save** button, to update the Data Table changes. Click on **Close**, when you are finished adding fault codes or making changes.

After making any necessary adjustments, click on the **Save Trims** button, on the toolbar, to write the settings to the device.
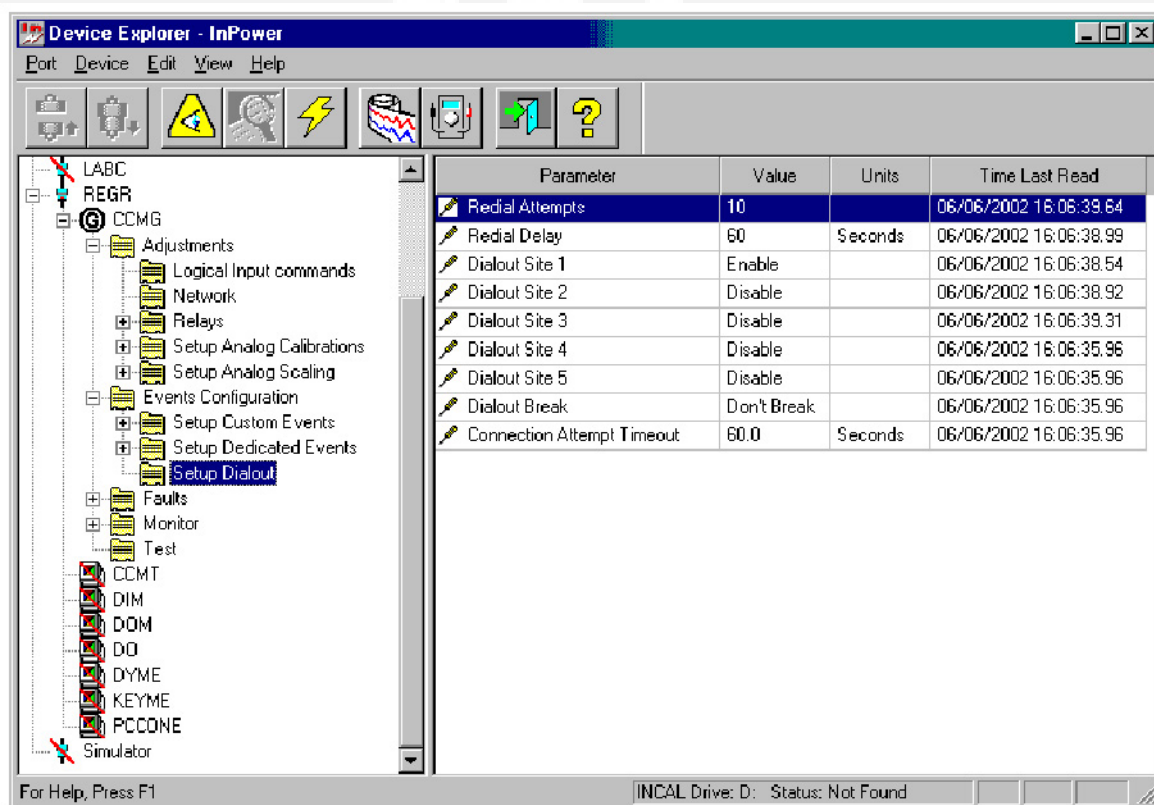

FIGURE 132.   CCM-G - SETUP DIALOUT
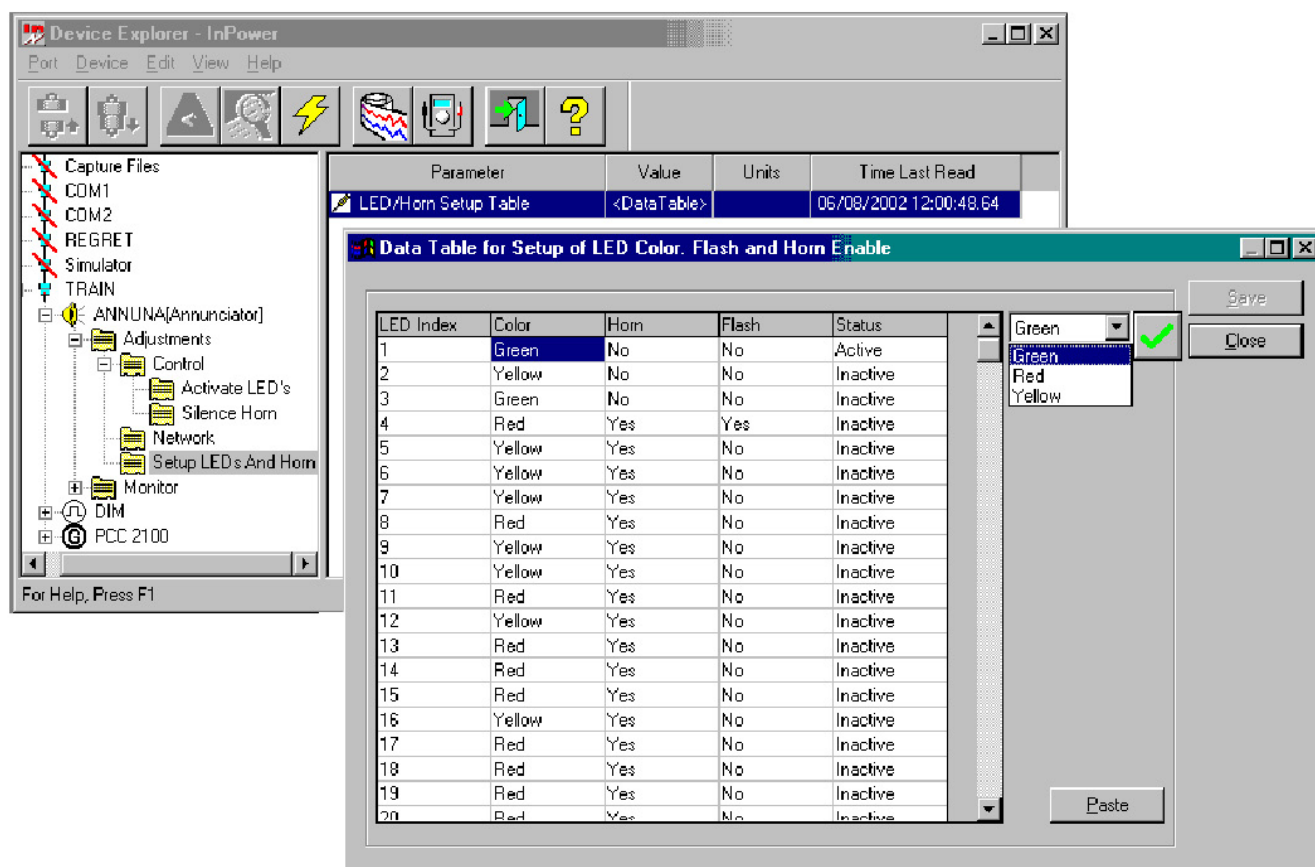
FIGURE 133.   ANNUNCIATOR - SETUP LED'S AND HORN

In this example, InPower is connected to a DIM module, with an expansion board, over the network. Open the **Adjustments** folder, and then open the **Activate Delays** folder (**Figure 134**).

The first column displays the first eight relays from the DIM and the second eight relays (9 through 16) on the expansion board. This feature adds a delay between the time the input becomes active and when the relay is energized. Entering a delay time (in seconds) into the value cell for the relay, and saving the change, activates the delay.

To activate or change a delay, double click on the **Value** cell for the desired relay, the current value will be highlighted. Enter the desired delay time in seconds.

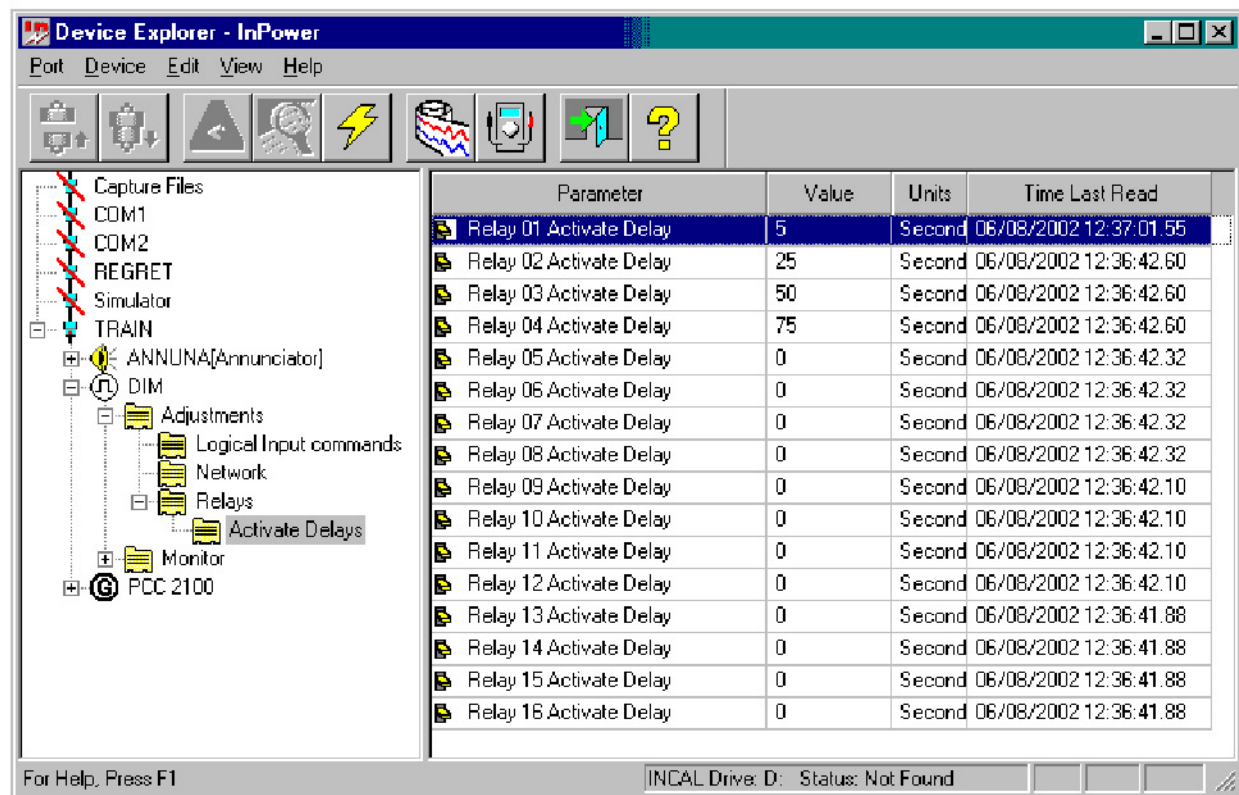Click on the **Save Trims** button, on the toolbar, to write the new value to the device.

FIGURE 134.   DIM - ACTIVATE DELAYS

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18   Help

Use the Help menu to find information about using InPower, to find Service and Support information, and to find out about the installed InPower product type and software version.

18.1   Search for Help On...

The Help - Search for Help On... feature allows searching for help on a specific topic or keyword (standard Windows Help format). Access this feature by clicking on the Help menu, then click on Search for Help On... .

18.2   Contents

The Help - Contents feature provides access to the list of subjects in the InPower help file (standard Windows Help format). Access this information by clicking on the Help menu and then clicking on Contents.

18.3   How to Use Help

The Help - How to Use Help feature displays the standard Windows Help Topics dialog. Use this feature to find answers to basic Windows operation questions. Access this information by clicking on the Help menu, and then click on How to Use Help.

18.4   Service and Support

The Help - Service and Support feature lists information about where to call for InPower product support. To view this information, click on the Help menu, then click on Service and Support.

18.5   About Device Explorer

The Help - About... feature initiates the About Device Explorer box. This box displays the product type and software version. The expiration date for the software is also shown. To view this information, click on the Help menu, and then click on About....

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19 Glossary

Applet - A sub-set of software functions that may be included in one or more Tools. They provide the building-blocks from which the Tools are constructed.

ATS -Acronym for Automatic Transfer Switch.

Automatic Voltage Regulator (AVR) -An electronic unit used to control the output voltage of a genset.

BIT -Acronym for Built-in Test.

Calibrating -The process of reprogramming a device. This requires the ESDN version of InPower.

Calibration -Term used to describe the program and factory settings for a device.

Calibration Table -Name used to refer to a Data Table, XY Table, or XYZ Table that contains one or more calibration variables.

Calibration Variable -Data that is stored in the controller's non-volatile memory, and which may not be altered after sale by either a customer or service technician.

Capture File -A capture (.cap) file contains all of the trim values, monitor values, and table values of a given device (e.g. Generator set). This file can be thought of as a "template" for configuring other devices of the same type, or it can be used as a backup file.

Channel - A channel is the physical communication media that connects the devices and the properties of these media (such as transmission speed).

CSV File - Comma Separated Value file (same as a comma delimited file). The file format used by InPower to save datalog information. Allows the file to imported into Microsoft Excel.

Data Table -Data table is a structure containing a variable in each of the columns. The data cells are viewed and edited in spreadsheet format.

Device -As used in InPower, refers to any one of a series of application controllers used in Power Generation applications. These include: Generator-drive engine controllers, Genset controllers and Automatic Transfer Switch controllers.

Electronic Control Module (ECM) -The hardware residing on an engine which carries out all the engine management functions (e.g. timing, fueling).

Electronic Software Database & Network (ESDN) -A worldwide Cummins corporate database of released electronic software. It provides calibration files reprogramming devices.

Genset Open Architecture Link (GOAL) -A proprietary protocol developed by PGG to support the communications functions of Power Generation Group controls.

Graphical User Interface (GUI) -A term used to describe the way in which a user interacts with the software program.

HBF -Acronym for High Blowby Flow.

Initial Calibration -Manually select software to download.

InPower -Name given to the Power Generation Products based service tool. This tool is similar to INSITE in function, but it has a significantly different architecture.

MON -A communications protocol for one device connected to the service tool using RS-485 and RS-232 serial communications. All devices can communicate with the service tool.

MONNet -A communications protocol for more than one device connected to the service tool using RS-485 communications only.

Network Connection -This term is used to describe a connection using the MONNet protocol and an RS-485 adapter.

Parameter - This term is used with InPower to refer to properties whose *values* determine the behavior of a *device.* With InPower there are two main types of properties; trims that have a range of numeric values, and settings that consist of a small number of predefined values such as On or Off.

Physical Connection -This term is used to describe a connection using the MON protocol and no RS-485 adapter.

Port -As used in InPower, it refers to the channel by which a connection can occur. Port connections can occur with COM ports, or with Simulator or Capture files in the InPower directory structure.

PowerCommand® Control (PCC) -A microprocessor based genset monitoring, metering and control system with integrated AVR and engine governing.

Protocol -Protocol is a language that each node on a network knows how to speak and interpret. The protocol is what allows devices to exchange messages with one another.

Save Trims -Term used with InPower to indicate the process of permanently storing parameter changes to a device.

Site -The name of a connection setup (COM1, COM2, etc).

TAPI (Telephony API) -A programming interface that allows Windows client applications to access voice services on a server. Designed to provide interoperability between PCs and telephone equipment.

Template -1. View template in InPower describes how to display data table information. 2. Template can also describe the Capture (.CAP) file that contains trim values that can be used to configure multiple-devices (e.g. genset controllers).

Tool -A set (or bundle) of software applets that are targeted at a specific customer or end-user function.

Trim -Data that is stored in the controller's non-volatile memory, but which may be altered after sale by either a customer or service technician.

Update Calibration -Automatically updates software, saves user information, and transfers to a new control.

Volatile/Non-volatile Memory -The contents of volatile memory is lost following a loss of power to the controller. Data stored in non-volatile memory is retained.