

Pro-Link GRAPHIQ™ User's Manual



Pro-Link GRAPHIQ™ User's Manual

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Table of Contents

Safety Information	i
Safety Message Conventions	ii
Important Safety Instructions	ii
Chapter 1:	
Using this Manual	1
Manual Overview	2
Conventions	3
Special Messages	3
Notes	3
Important	3
Cautions	3
Warnings	3
Troubleshooting	4
Specialized Text	4
Chapter 2:	
Introduction	5
Device Configuration	6
Cable Ports	7
LCD (Screen)	7
Keypad	8
Multi-Protocol Cartridge (MPC)	8
PCMCIA (Application) Card Slot	8
Identification Tag	9
Chapter 3:	
Component Connections	11
Installing the Multi-Protocol Cartridge (MPC)	12
Removing the MPC	13
Connecting the Power/Data Cable	14
Using Alternate Power Sources	15

Connecting to a Vehicle	16
Installing an Application Card	18
Removing an Application Card	20
Connecting to a Printer or PC	21
Chapter 4:	
Navigation	23
Using the Navigation Keys	24
Graph	25
Arrow Keys	25
Up/Down	25
Right/Left	25
Function	25
Enter	25
Numeric	26
Special Feature	26

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Using Short-Cuts	27
Making Selections	30
Chapter 5:	
MPC Utilities.....	31
Determining the MPC Software Version.....	32
Using MPC Utilities for 2.X or Lower	34
RS-232 Serial Port	34
Using Printer Setup	35
Using Printout.....	37
Using Terminal Setup.....	39
Using Terminal Mode	42
MPC Info	45
Custom Data List.....	46
Creating a Custom Data List.....	46
Viewing/Modifying a Custom Data List.....	48
File Directory	49
Contrast Adjust.....	49
Snapshot	49
Arming a Trigger	50
Firing a Trigger Manually	52
Printing a Snapshot.....	54
Reset	56
Update PC Card	57
Updating the Pro-Link GRAPHIQ™	59

Using MPC Utilities for 3.X	62
Language	62
RS-232 Serial Port	63
Using Printer Setup	63
Using Printout.....	66
Using Terminal Setup.....	70
Using Terminal Mode	72
MPC Info	75
Custom Data List.....	76
Creating/Editing a Custom Data List	76
Viewing a Custom Data List.....	79
Deleting a Custom Data List	81
Snapshot	82
Taking a Snapshot	83
Loading a Saved Snapshot.....	93
Reviewing a Snapshot	95
Format PC Card	97
File Directory	97
Deleting Individual Files	98
Contrast Adjust.....	100
Reset.....	100
Update PC Card	101
Updating the Pro-Link GRAPHIQ™	104

Chapter 6:	
Additional Features.....	107
Freezing Data List Lines.....	108
Graphing Data.....	110
Viewing Individual Parameter Historical Data.....	112
Appendix A:	
Warranty & Service.....	115
Exclusive Warranty.....	116
Exclusive Remedy.....	117
Return Materials Authorization (RMA).....	118
Return of Goods Policy.....	120
Return Goods Authorization (RGA) Procedure.....	121
Index.....	123

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Safety Information

For your safety, read this manual thoroughly before operating your Pro-Link GRAPHIQ™ unit.

Your Pro-Link GRAPHIQ™ unit is intended for use by properly trained, skilled professional heavy-duty technicians. The safety messages presented below and throughout this user's manual are reminders to the operator to exercise extreme care when using this test instrument.

There are many variations in procedures, techniques, tools, and parts for servicing vehicles, as well as in the skill of the individual doing the work. Because of the vast number of test applications and variations in the products that can be tested with this instrument, we cannot possibly anticipate or provide advice or safety messages to cover every situation. It is the heavy-duty technician's responsibility to be knowledgeable of the system being tested. It is essential to use proper service methods and test procedures and to perform tests in an appropriate and acceptable manner that does not endanger your safety, the safety of others in the work area, or vehicle or equipment being tested.





It is assumed the operator has a thorough understanding of vehicle systems before using the Pro-Link GRAPHIQ™ unit. Understanding of these system principles and operating theories is necessary for competent, safe and accurate use of this instrument.

Before using the Pro-Link GRAPHIQ™ unit, always refer to and follow safety messages and applicable test procedures provided by the manufacturer of the vehicle or equipment being tested. Use equipment only as described in this manual.

Read, understand and follow all safety messages and instructions in this manual and on the test equipment. Safety messages in this section of the manual contain a signal word with a three-part message and an icon. The signal word indicates the level of the hazard in a situation.

Safety Message Conventions

Safety messages are provided to help prevent personal injury and equipment damage. All safety messages are introduced by a signal word indicating the hazard level.

-  **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders.**
-  **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders.**
-  **Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury to the operator or to bystanders.**
-  **Indicates a situation which, if not avoided, may result in damage to the test equipment or vehicle.**

Safety messages contain three different type styles.

- Normal type states the hazard.
- **Bold** type states how to avoid the hazard.
- *Italic* type states the possible consequences of not avoiding the hazard.

An icon, when present, gives a graphical description of the potential hazard.


Example:



Risk of unexpected vehicle movement.

- **Block drive wheels before performing a test with engine running.**
A moving vehicle can cause injury.

Important Safety Instructions

-  Risk of entanglement.
- **Do not allow cables to hang in a manner to become entangled with operator or driving controls.**
Cable entanglement can cause interference with driving and can cause injury.



Risk of electric shock.

- **Do not attempt to disassemble any battery or remove any component projecting from or protecting the battery terminals.**
- **Remove the Ground lead from the vehicle battery before removing or disassembling any vehicle electrical component.**
- **Prior to recycling, protect exposed terminals with heavy insulating tape to prevent shorting.**
- **Disconnect all test leads and turn unit off before removing end grips.**

- Do not attempt to operate this system without properly installing the end grip.
- Do not exceed voltage limits between inputs as indicated on the rating label.
- Do not apply more than 250 volts (AC or DC) between input and earth ground.
- Do not use voltmeter on household or industrial voltage sources.
- Use extreme caution when working with circuits that have greater than 60 volts DC or 25 volts AC.
- The serial port is electrically isolated from other inputs however, do not allow a voltage differential greater than 250 volts to develop between the serial port and any other input.



Risk of explosion.

- Do not use this system in environments where explosive vapor may collect, such as in below-ground pits, confined areas, or areas that are less than 18 inches above the floor.

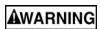
Explosion can cause injury.



Risk of poisoning.

- Use this equipment in locations with mechanical ventilation providing at least four air changes per hour. Engine exhaust contains odorless lethal gas.
- Route exhaust outside while testing with engine running.

Poisoning can result in death or serious injury.



Risk of accident.

- Two people should be in the vehicle when driving on road, one to drive and the other to attend to the equipment.

Accidents can occur when attention is not solely given to driving.



Risk of unexpected vehicle movement.

- Block drive wheels before performing a test with engine running.
- Unless instructed otherwise, set parking brake and put gear selector in neutral or park.
- If vehicle has an automatic parking brake release, disconnect release mechanism for testing and reconnect when finished.
- Do not leave a running engine unattended.

A moving vehicle can cause injury.

Save These Instructions

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Chapter 1

Using this Manual



- ▼ *Manual Overview, page 2*
- ▼ *Conventions, page 3*

This chapter provides an overview of this manual's organization and the conventions used throughout.

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Manual Overview

This manual provides basic and detailed information to support you in using the Pro-Link GRAPHIQ™ tool.

The manual is comprised of the following sections:

- *Safety Information*—provides important safety information. Please read this section before using the Pro-Link GRAPHIQ™.
- *Table of Contents*—helps you to find the Pro-Link GRAPHIQ™ information you are looking for quickly and easily.
- *Using this Manual*—provides an overview of this user's manual.
- *Introduction*—introduces the Pro-Link GRAPHIQ™ and gives an overview of its components and features.
- *Component Connections*—provides instructions on installing the Pro-Link GRAPHIQ™ components, and for connecting the Pro-Link GRAPHIQ™ to a vehicle.
- *Navigation*—provides information on navigating the read-out window of the Pro-Link GRAPHIQ™.
- *MPC Utilities*—contains detailed instructions on setting up and using the Pro-Link GRAPHIQ™.
- *Special Features*—contains instructions on using the special features provided by the Pro-Link GRAPHIQ™.
- *Warranty & Service Appendix*—provides warranty and service information.
- *Index*—provides an alphabetical listing of all major topics covered in this user's manual.

Each chapter is introduced by an “at-a-glance” list of the chapter's contents, along with corresponding page numbers.

Conventions

This section provides descriptions of the conventions used throughout this manual.

Special Messages

Notes

NOTE provides explanations, comments, or tips related to the subject matter that is being discussed.

Example:

NOTE:



Refer to the page number provided for each described component for further details.

Important

IMPORTANT indicates a situation which, if not avoided, may result in damage to the test equipment or vehicle.

Example:

IMPORTANT:



Keep all cables clear of moving or hot engine parts.

Cautions

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury to the operator or to bystanders.

Example:

CAUTION:



Do not use the unit to perform tests on household or industrial sources.

Warnings

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or bystanders.

Example:

WARNING:



Wear gloves when handling hot engine components.

Troubleshooting

Information intended to help you to address or anticipate potential issues are presented in the following manner:



If the “Loading Application” message continuously appears, check the label on the card to verify you are using the appropriate card for the given manufacturer/ECU.

Specialized Text

The following specially formatted text is used to help you to differentiate certain elements discussed within this manual:

Emphasis: Used to draw your attention to particularly important information.

- **Feature:** Used to highlight the name of a specific feature.

Example: “Use **SNAPSHOT** to record data surrounding a specific event.”

- **Field/Line:** Used to highlight the name of a field or a line of text from a display.

Example: “The **Request Lamp** line updates to reflect the current request.”

- **Menu Items:** Used to highlight a series of menu selections.

Example: “From the Main Menu, select **MPC UTILITIES ▶ RS-232 SERIAL PORT ▶ TERMINAL SETUP...**”.

- **Screen titles:** Used to highlight the title of a screen displaying on the Pro-Link GRAPHIQ™.

Example: “The display shows the **Review Snapshot** menu, which lists the event captures at the bottom of the screen”.

Chapter 2

Introduction



▼ *Device Configuration, page 6*

Pro-Link GRAPHIQ™ is a microprocessor-based, hand-held diagnostic tool that is designed to work with specific OEM applications, allowing you to retrieve real-time diagnostic data from specific vehicle systems. Pro-Link GRAPHIQ™ presents vehicle data on a color display and allows you to view captured data in either text or graph mode.

This chapter provides an overview of the physical features of the Pro-Link GRAPHIQ™.

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Device Configuration

The following illustration shows the main components of the Pro-Link GRAPHIQ™.



Figure 2.1 Pro-Link GRAPHIQ™ Configuration—Front View

A—Cable Ports

Connects with the Power/Data and the RS-232 cable (see pg. 7)

B—LCD (Liquid Crystal Display)

Displays navigational instructions and data readouts (see pg. 7)

C—Keypad

Contains keys that allow you to navigate the display (see pg. 8)

D—MPC (Multi-Protocol Cartridge)

Slides onto the back of the Pro-Link GRAPHIQ™ (see pg. 8)

E—PCMCIA Card Slot

Holds OEM-specific application cards (see pg. 8)

Cable Ports

The following illustration shows a detailed view of the Pro-Link GRAPHIQ™'s cable ports.

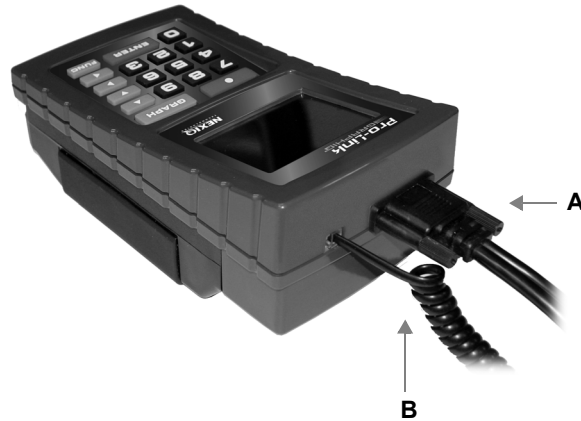


Figure 2.2 Cable Connections

A—Power/Data Port

Provides power and data to the Pro-Link GRAPHIQ™, via the Power/Data Cable (see pg. 14).

B—RS-232 Serial Port

Connects the Pro-Link GRAPHIQ™ to either a printer or a PC, via the RS-232 Coiled Cable (see pg. 21).

LCD (Screen)

The Pro-Link GRAPHIQ™ features a Liquid Crystal Display (LCD), which presents information on eight, 20-character lines. The backlit display enables you to read the screen regardless of the available light.

NOTE:



Use the **CONTRAST ADJUST** utility to lighten or darken the display, as desired. See Chapter 5, "MPC Utilities" for details.

Keypad

IMPORTANT:



DO NOT immerse the Pro-Link GRAPHIQ™ in fluids! To clean the Keypad, use a damp cloth and mild cleanser.

The Keypad contains 18 soft-touch keys, which allow you to navigate screens presented on the Pro-Link GRAPHIQ™ display (LCD) and to perform other basic functions.

Refer to page 24 for details about these keys.

Multi-Protocol Cartridge (MPC)

The Multi-Protocol Cartridge (MPC) slides onto the back of the Pro-Link GRAPHIQ™ and enables the Pro-Link GRAPHIQ™ to operate with OEM-specific application cards.

Refer to page 12 for instructions on installing the MPC.

PCMCIA (Application) Card Slot

The PCMCIA Card Slot holds OEM-specific application cards, which contain programs specially programmed to be used with the Pro-Link GRAPHIQ™. Application cards fit into the PCMCIA Card Slot located on the front of the MPC (Figure 2.1, page 6).

Refer to page 32 for instructions on installing an application card.

Identification Tag

The ID Tag, located on the back side of the Pro-Link GRAPHIQ™, provides the model number and the unit's serial number. Refer to this ID tag when contacting NEXIQ Technologies for service or repair parts.

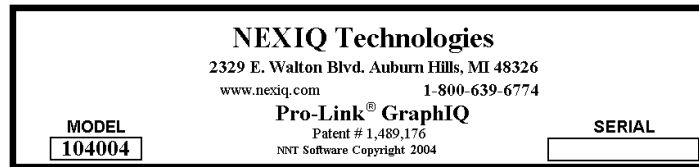


Figure 2.3 Pro-Link GRAPHIQ™ Identification Tag

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Chapter 3

Component Connections



- ▼ *Installing the Multi-Protocol Cartridge (MPC), page 12*
- ▼ *Connecting the Power/Data Cable, page 14*
- ▼ *Connecting to a Vehicle, page 16*
- ▼ *Installing an Application Card, page 18*
- ▼ *Connecting to a Printer or PC, page 21*

This chapter provides detailed instructions for installing the Pro-Link GRAPHIQ™ components, and for connecting the complete Pro-Link GRAPHIQ™ unit to a vehicle in order to begin obtaining diagnostic readouts. This chapter also provides instructions for connecting the unit to peripheral devices, such as a printer, or to a personal computer.

Installing the Multi-Protocol Cartridge (MPC)

Use the following instructions to install the MPC to the Pro-Link GRAPHIQ™.

IMPORTANT:

 Be sure that the Pro-Link GRAPHIQ™ is not attached to a power source when attaching the MPC.

To install the MPC:

- 1 Align the MPC cartridge with the back of the Pro-Link GRAPHIQ™, as shown in Figure 3.1.



Figure 3.1 Installing the MPC Cartridge

- 2 Slide the cartridge forward until it clicks into place.



If the MPC cartridge does not click into place, check to be sure that the connector is properly aligned with the connector on the Pro-Link GRAPHIQ™.

Removing the MPC

Follow the steps below to remove the MPC from the Pro-Link GRAPHIQ™.

IMPORTANT:

 Be sure that the Pro-Link GRAPHIQ™ is not attached to a power source when removing the MPC.

To remove the MPC:

- 1 Place your thumbs on the slanted surface above the keypad and your fingers on the back of cartridge.
- 2 Push the Pro-Link GRAPHIQ™ away with your thumbs while holding the MPC in place with your fingers.



Figure 3.2 Removing the MPC Cartridge

The retention latches release the outer end.

- 3 Continue sliding the cartridge straight out until the edgeboard is clear of the connector on the Pro-Link GRAPHIQ™.

Connecting the Power/Data Cable

Use the following instructions for connecting the Power/Data Cable to the Pro-Link GRAPHIQ™.

To connect the Power/Data Cable to the Pro-Link GRAPHIQ™:

- 1 Attach the DB15 Adapter end of the cable to the Power/Data Port on the Pro-Link GRAPHIQ™.

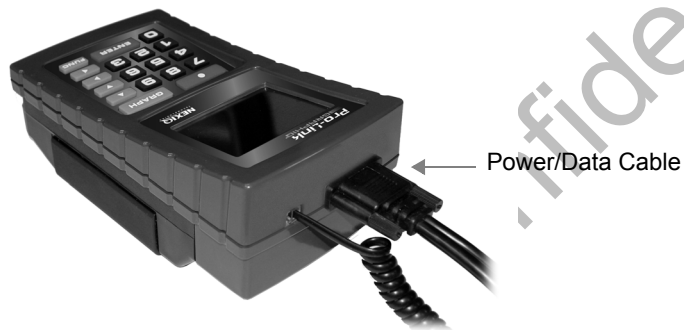


Figure 3.3 Power/Data Cable Connected to Pro-Link GRAPHIQ™

- 2 Tighten the thumbscrews until the cable is securely connected.
- 3 Connect the other end of the cable to the desired power source:
 - To obtain power from the vehicle, see “Connecting to a Vehicle”, on page 16.
 - To obtain power from a different source, see “Using Alternate Power Sources”, on page 15.

Using Alternate Power Sources

In addition to obtaining power from the vehicle's Diagnostic Connector, you can also use the cigarette lighter adapter on the Power/Data Cable assembly (Figure 3.4) to obtain power from the vehicle's cigarette lighter; or from a 12V power supply.

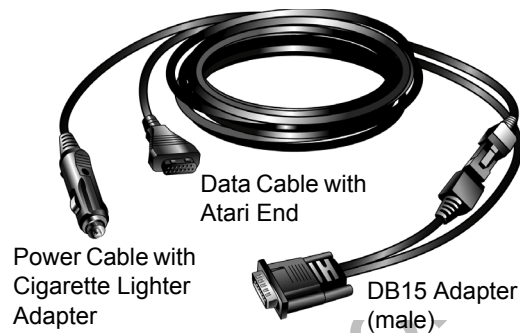


Figure 3.4 Power/Data Cable

NOTE:



Using an alternate power source may be convenient if you would like to view or print saved data from a previous session, but do not wish to connect to the vehicle's Diagnostic Connector[†].



The cigarette lighter plug on the Power Cable contains a 3-amp fuse. If the Pro-Link GRAPHIQ™ powers up with the Deutsch Adapter or another powered connection, but does not power up with the Power/Data cable, open the cigarette lighter plug and test the fuse with an Ohm meter.

[†] Applicable only to MPC Software Version 3.X. See page 32 to verify the version currently running on your system.

Connecting to a Vehicle

Pro-Link GRAPHIQ™ interfaces with the vehicle's electronic controller(s) via the 6 or 9-pin Diagnostic Connector, which is typically located under the dash or beside the driver's seat.

The following illustration shows how the Pro-Link GRAPHIQ™ components join together in order to connect to a vehicle. Refer to page 16 for step-by-step instructions.




Figure 3.5 Pro-Link GRAPHIQ™ Component Connection

To connect Pro-Link GRAPHIQ™ to the vehicle:

- 1** Attach the MPC to the Pro-Link GRAPHIQ™ (see “Installing the Multi-Protocol Cartridge (MPC)”, on page 12).
- 2** Attach the Power/Data Cable’s (Figure 3.3, page 14) DB15 Adapter into the Data Port on the Pro-Link GRAPHIQ™; tighten the thumbscrews.
- 3** Attach the Data Cable Atari End to the Atari End on the adapter you are using (see Figure 3.5 for an example).

- 4 Plug the Adapter into the vehicle's Diagnostic Connector.

NOTE:

 The Diagnostic Connector is typically located under the dash on the driver's side or behind the driver's seat.

- 5 Turn the vehicle's ignition key to the "ON" position.

Once the Pro-Link GRAPHIQ™ powers up, the screen prompts you to insert a PC (Application) card.



- 6 Insert the application card, with the NEXIQ label side facing down (see page 18 for details).

Installing an Application Card

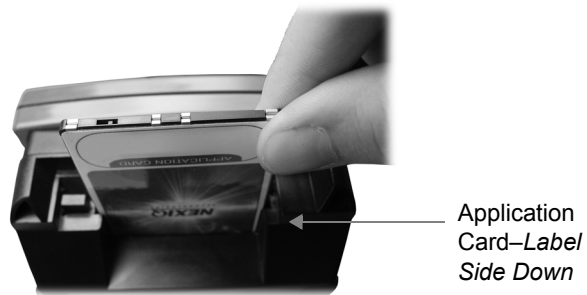


Figure 3.6 Inserting Application Card into PCMCIA Slot

To install an application card:


- 1 Be sure that the Pro-Link GRAPHIQ™ is properly connected to the vehicle and is powered up (see page 16).

The screen prompts you to insert the PC card.



- 2 Insert the application card (*label side facing down*) into the PCMCIA card slot.

IMPORTANT:

-  Do not attempt to force the card into place. Be sure that the label side of the card is facing down.

- 3 Push the card into place until the eject button pops outward (Figure 3.7).

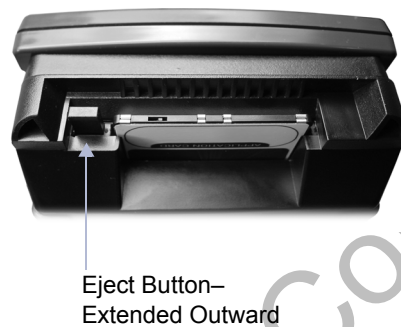




Figure 3.7 Card Inserted into Slot

 The card fits into the slot only one way. If the eject button does not pop out when pushing the card into place, the card is not properly seated.

 If the “Loading Application” message continuously appears, check the label on the card to verify you are using the appropriate card for the given manufacturer/ECU.


 If you receive a “REMOVE CARD AND SHIFT WRITE PROTECT TAB” error, remove the card and use an ink pen to flip the W/P switch located opposite the edge connector (side with holes). Refer to Figure 3.8.



Figure 3.8 Write-Protect Switch on Application Card

Removing an Application Card

Follow the steps below to remove the application card from the MPC.

NOTE:



Removing a card halts the system; re-inserting the card re-starts the system.

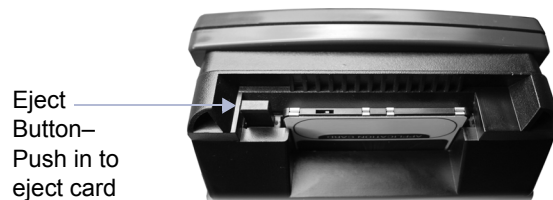


Figure 3.9 PCMCIA Card Slot—Eject Button

To remove the application card:

- 1 Push in the eject button, located to the left side of the PCMCIA slot (Figure 3.9).


The application card pops out, while the eject button remains pushed in.

- 2 Pull the card out of the slot.

Connecting to a Printer or PC

Use the following instructions to connect the Pro-Link GRAPHIQ™ to a printer or PC, via the RS-232 cable port.

NOTE:

 For information about configuring the printer and the Pro-Link GRAPHIQ™ with the proper settings, refer to Chapter 5 for more information.

To connect to a PC, terminal, or printer:

- 1 Locate the smaller connector end of the Coiled Cable, then insert into the Pro-Link GRAPHIQ™ RS-232 serial port.




Figure 3.10 RS-232 Cable Connected to Pro-Link GRAPHIQ™

- 2 Insert the other end of the Coiled Cable into one of the following adapter types:

- 25-pin Printer Serial Port (male)
- 9-pin Printer Serial Port (male)
- 25-pin PC/Terminal Com Port (female)
- 9-pin PC/Terminal Com Port (female)

NOTE:

 Depending on the adapter, this manual refers to the Coiled Cable/Adapter assembly as the “Printer Cable” or “PC Terminal Cable”.

- 3 Attach the Adapter to the Com port on the terminal/PC or Serial port on the printer; tighten the thumbscrews.



Figure 3.11 RS-232 Serial Port to PC Com Port

Chapter 4

Navigation



- ▼ *Using the Navigation Keys, page 24*
- ▼ *Using Short-Cuts, page 27*
- ▼ *Making Selections, page 30*

This chapter provides general information on using the Pro-Link GRAPHIQ™ navigation features.

NOTE:



For information on navigating through a specific application, refer to the User's Manual provided with the application you are using.

Using the Navigation Keys

The Pro-Link GRAPHIQ™ provides various types of keys that allow you to navigate through screens, and to perform specific tasks.

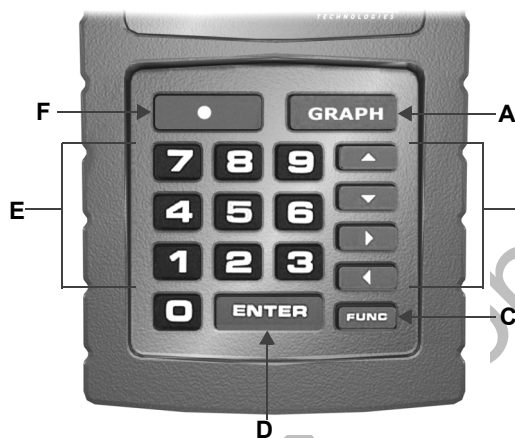


Figure 4.1 Pro-Link GRAPHIQ™ Navigation Keys

- A**—Graph (page 25)
- B**—Arrow (page 25)
- C**—Function (page 25)
- D**—Enter (page 25)
- E**—Numeric (page 26)
- F**—Special Feature (page 26)



Graph

Use to view parameter data displayed in a line graph. Refer to “Graphing Data”, on page 110 for detailed instructions.

Arrow Keys



Use the arrow keys to move to desired selections presented on the screen.

Up/Down

Use the   keys to move the cursor through lines of data presented on the display (such as with a Data List), or to scroll through a list of menu items.

Right/Left

Use the   keys to toggle between two presented options.


Also, when viewing a screen displaying multiple lines of data (such as with a Data List), use the   keys to scroll through the page, four lines at a time (that is, view the next/previous four lines of information).

Function

Use the  key to step backward from one screen to another.

Some applications may also instruct you to use this key to cancel a given operation.


Enter

Use the  key to make selections and to respond to a confirmation request, as presented by the application you are using.

Numeric

Use the numeric keys to input numeric responses for tasks, as instructed by the application you are using. These keys are also used in combination with the Special Feature key (described below) for short-cut operations. See page 27 for details.

Special Feature

Use the  in combination with other keys to perform short-cut operations (see pg. 27).

NOTE:



This key may also be used to support additional functionality specific to certain applications. Refer to the documentation provided with the application for details.

Using Short-Cuts

Pro-Link GRAPHIQ™ offers several short-cut key combinations (also known as “Hot Keys”) to allow you to quickly navigate the Pro-Link GRAPHIQ™ and to perform certain tasks.

Refer to *Table 1* on page 28 for a complete listing of short-cuts.

NOTE:



Some short-cuts vary in functionality, depending on the MPC software version that is being run with an application. These variations are noted within the corresponding short-cut descriptions. See page 32 to verify your system version.

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TABLE 1. Short-Cut Key Functions






















Keys	Function
	† Hides/shows the title for the currently viewed screen.
 + Numeric Key	‡ Freezes specific data lines: Press  + the numeric key corresponding to the line of data that you wish to freeze. For example, to freeze the second line of the screen's display, press the  +  .
	‡ Prints the currently selected Data List.
	Prints the data currently displayed on the screen.
	<p>Pauses the display and shows the value of the parameter the last time it changed.</p> <p>Note: The cursor block becomes two vertical lines to indicate <i>pause mode</i>.</p> <p>To exit <i>pause mode</i>, press  twice; then, FUNC to return to the Data List.</p> <p>Press  +  to step forward through value changes; press  +  to step backward through value changes*.</p>
	<p>† Displays a range, showing the minimum/maximum values of any numeric parameter, such as Engine RPMs.</p> <p>Note: Press FUNC to return to previous location.</p>
	‡ Toggles numeric values between English and Metric units.
	When viewing a list of data, moves the display <i>backward</i> eight lines at a time.
	When viewing a list of data, moves the display <i>forward</i> eight lines at a time.

TABLE 1. Short-Cut Key Functions

Keys	Function
 + ENTER	Initiates the Print menu, which extends the following options: <ul style="list-style-type: none"> • PRINT • PRINT ALL LISTS • CLOSE THIS LIST
 +  or 	Switches between Data List views (all lists viewed during the current session).

† Supported by systems running version 2.X and lower.

‡ Supported by systems running version 3.X.

* Refer to “Viewing Individual Parameter Historical Data”, on page 112 for more information on using these keys.

Making Selections

A common task in using the Pro-Link GRAPHIQ™ is to select from various menus presented on the screen. Making selections typically involves using the device's arrow keys and the **ENTER** key.

The following convention is used throughout this manual in order to provide abbreviated instructions on making on-screen selections.

Example Instruction Step:

- 1 From the Main Menu, select **MPC UTILITIES ▶ RESET**.

What this means:

The example instruction step is an abbreviation of the following procedure:

- 1 From the Main Menu, press the **▲** or **▼** key to select **MPC UTILITIES**, then press **ENTER**.
- 2 Press the **▲** or **▼** key to select the **RESET** option, then press **ENTER**.

Chapter 5


MPC Utilities



- ▼ *Determining the MPC Software Version, page 32*
- ▼ *Using MPC Utilities for 2.X or Lower, page 34*
- ▼ *Using MPC Utilities for 3.X, page 62*

Use **MPC UTILITIES**, located on the Main Menu, to specify settings on the Pro-Link GRAPHIQ™, according to your preferences, and to perform basic functions such as recording and printing data.


NOTE:

-
-  The functionality for MPC Utilities is dependent on the MPC software version that is running with an application card. Before using MPC Utilities, refer to the “Determining the MPC Software Version” procedure on page 32 to determine the MPC software version that is running with the application you are using.
-

Determining the MPC Software Version

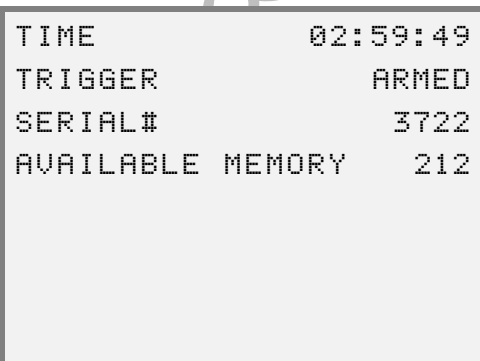
Use the following procedure to determine the MPC software version that is being run with the application you are currently using.

NOTE:

-  Once you have verified the version, proceed to the corresponding section in this chapter for instructions on using each of the options provided under **MPC Utilities**.

To determine your software version:

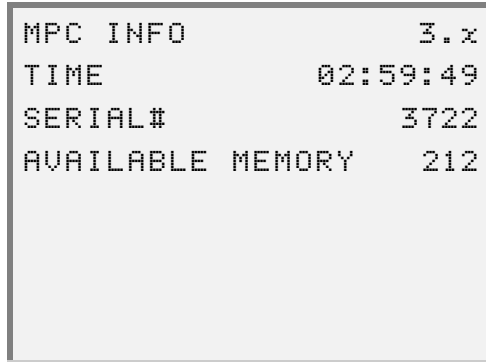
- 1 Be sure that the Pro-Link GRAPHIQ™ is connected to a vehicle or other power source and the application is loaded (see Chapter 3, "Component Connections").
- 2 From the Main Menu, select **MPC UTILITIES** ► **MPC INFO**. The screen displays the system information.
 - If the screen shows **TIME** on the first line, your application is running on **software version 2.X or lower**.



```
TIME          02:59:49
TRIGGER       ARMED
SERIAL#       3722
AVAILABLE MEMORY  212
```

Figure 5.1 Sample MPC Info screen

- If the screen shows **MPC VERSION** on the first line, your application is running on **software version 3.X**.



```
MPC INFO          3.x
TIME              02:59:49
SERIAL#           3722
AVAILABLE MEMORY  212
```

Figure 5.2 Sample MPC Info screen

- 3 Proceed to the section corresponding to the MPC software version running with the application card you are using:
 - **MPC Software Version 2.X or lower** (see page 34)
 - **MPC Software Version 3.X** (see page 62)

Using MPC Utilities for 2.X or Lower

This section provides instructions on using **MPC UTILITIES** for MPC Software Version 2.X or lower.

Refer to the page number corresponding to the option you wish to use.

- *RS-232 Serial Port* (see page 34)
- *MPC Info* (see page 45)
- *Custom Data List* (see page 46)
- *File Directory* (see page 49)
- *Contrast Adjust* (see page 49)
- *Snapshot* (see page 49)
- *Reset* (see page 56)
- *Update PC Card* (see page 57)

NOTE:



From this point forward (and unless otherwise noted), it is assumed that the Pro-Link GRAPHIQ™ is currently connected to a vehicle and that the application card you are using is properly inserted and running. If you have not yet established connection with a vehicle, or have not inserted the application card, see Chapter 3, "Component Connections" for instructions before proceeding.

RS-232 Serial Port

The **RS-232 Serial Port** utility provides the following options:

- **PRINTER SETUP**—allows you to configure your printer with the appropriate settings for printing data from the Pro-Link GRAPHIQ™ (see page 35).
- **PRINTOUT**—allows you to choose to print Data Lists or Custom Data Lists for a loaded application (see page 37).
- **TERMINAL SETUP**—allows you to configure the software program necessary for using Terminal Mode (see page 39).
- **TERMINAL MODE**—allows you to view the Pro-Link GRAPHIQ™ screen displayed on a PC screen or terminal (see page 42).

Using Printer Setup

Before attempting to print data for the first time, use the **PRINTER SETUP** option to verify that the RS-232 Serial Port configuration matches your printer's configuration.

Pro-Link GRAPHIQ™ ships with the appropriate settings for the *NEXIQ Technologies Thermal Printer*. If you are using a different printer, consult with the appropriate owner's manual to determine the following settings:

- Baud rate
- Handshake setting
- Parity setting
- Stop bits setting

To setup the printer:

- 1 Connect the Pro-Link GRAPHIQ™ to the printer, using the RS-232 coiled cable (see page 21).
- 2 Insert the application card into PCMCIA Card Slot (see page 18).

The application boots up and presents the Main Menu.

- 3 From the Main Menu, select **MPC UTILITES**.
- 4 Select **RS-232 SERIAL PORT ▶ PRINTER SETUP**. The **Printer Setup** screen appears, showing the default settings.

```

RS232 BAUD RATE    2400
HANDSHAKE          BUSY
PARITY             NONE
STOP BITS          1 BITS
  
```

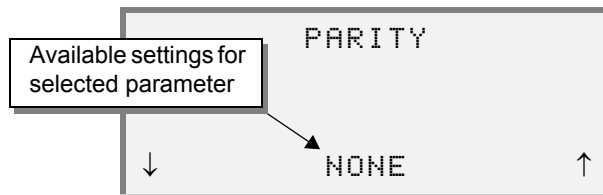
Figure 5.3 Sample Printer Setup screen

NOTE:

i The default settings are the correct settings for the NEXIQ Technologies thermal printer.

- 5 If you need to change settings, press the or key to select a parameter, then press .

The selected parameter's configuration screen appears, as follows:



- 6 Press or to scroll through the available settings; when the desired setting appears, press .

NOTE:

i Press to exit a parameter configuration screen without saving changes.

Pro-Link GRAPHIQ™ returns to the **Printer Setup** screen. Repeat these steps for each parameter requiring configuration.

- 7 Once all parameters are set and you see the **Printer Setup** screen, press . The Pro-Link GRAPHIQ™ returns to the **RS232 Serial Port** menu.

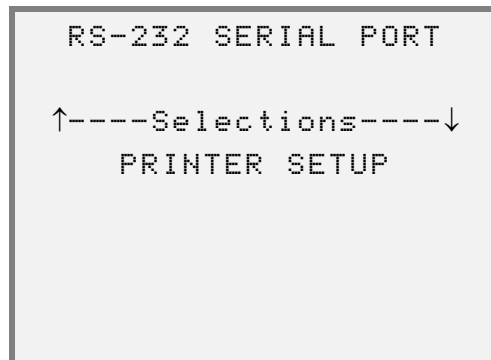



Figure 5.4 Sample RS-232 Serial Port Menu

Using Printout


NOTE:

 Before printing data, be sure that the printer you will be using is configured with the appropriate settings. Refer to “Using Printer Setup”, on page 35 for details.

Use the **PRINTOUT** option to print:


- Data Lists for the currently loaded application
- Custom Data Lists that you have created within the current session

NOTE:

 If you wish to print a *Custom Data List*, be sure that you have created one within the current session. If you have not yet created a Custom Data List, refer to “Creating a Custom Data List”, on page 46 before proceeding.

- MPC Information (see page 39)

NOTE:

 You can also use certain short-cut key combinations (“Hot Keys”) to print data. See “Using Short-Cuts”, on page 27 for details.

To print Data Lists/Custom Data Lists:

- 1 Connect the Pro-Link GRAPHIQ™ to the printer, using the RS-232 coiled cable (see page 21).
- 2 Turn the printer’s power ON.
- 3 From the Main Menu, select the application that contains the Data List(s) that you wish to print, then press **ENTER**.

If you will be printing a Custom Data List that you have already created, skip to Step 5.

- 4 Access the Data Lists(s) that you will be printing.

- 5 Press **[FUNC]** until you see the **MPC UTILITIES** menu.

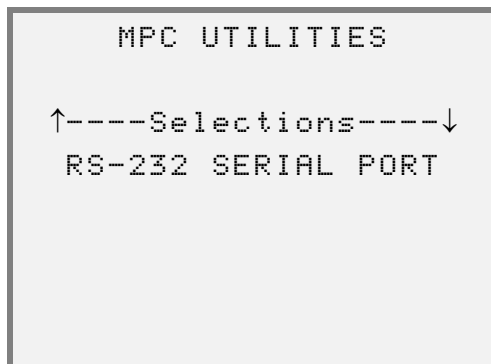


Figure 5.5 Sample MPC Utilities Menu

- 6 Select **RS-232 SERIAL PORT ▶ PRINTOUT**. The **Printout** menu appears, showing the last Data List that you accessed from the application.

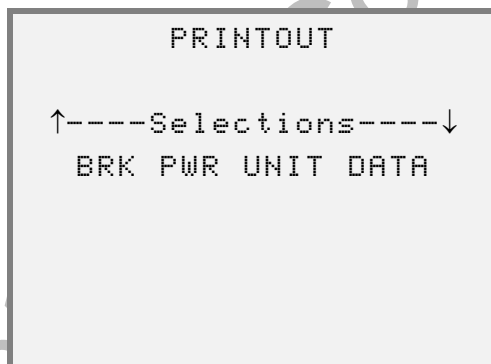


Figure 5.6 Sample Printout Selection Menu

- 7 Use the **[▲]** or **[▼]** key to make the desired selection:

—To print a standard Data List from the application, select the name of the Data List that you wish to print.

—If you wish to print a Custom Data List, select **CUSTOM DATA LIST**.

- 8 Press **[ENTER]** to begin printing.

The following screen briefly appears, showing a message to indicate printing progress.

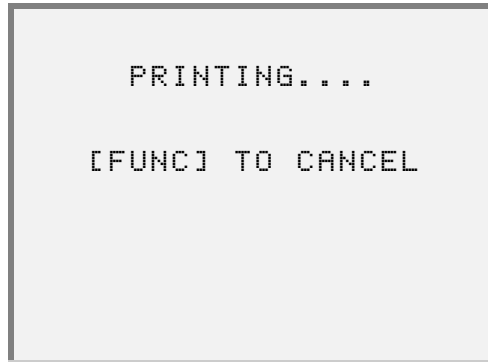


Figure 5.7 *Print Progress screen*

—If you wish to cancel printing, press **[FUNC]**.

The specified data begins printing on the printer that you are using.

To print MPC Information:

- 1 Attach Pro-Link GRAPHIQ™ to a printer, using the PC Terminal Cable (see page 21).
- 2 Turn the printer's power ON.
- 3 From the Pro-Link GRAPHIQ™ Main Menu, select **MPC UTILITIES**, then press **[ENTER]**.
- 4 Select **RS-232 SERIAL PORT ▶ PRINTOUT ▶ MPC INFO**.

The specified data begins printing on the printer that you are using.

Using Terminal Setup

Use the **TERMINAL SETUP** utility to specify the appropriate settings for using the **Terminal Mode** utility (see pg. 42) for the first time.

To set up terminal mode:

- 1 Download the **Pro-Link Virtual Terminal** software from:
<http://www.nexiq.com/downloads.asp>.
- 2 Install the **Pro-Link Virtual Terminal** program, according to the instructions provided with program.

NOTE:

i If you need assistance with downloading or installing the program, contact your System Administrator.

- 3 Use the PC Terminal Cable to attach the Pro-Link GRAPHIQ™ to your PC or Terminal (see page 21).

NOTE:

i Be sure to note the Com (Serial) Port you are using.

- 4 Start the Pro-Link Virtual Terminal program:
—From your PC's desktop, click **Start**, then select **Programs ▶ VTerm ▶ Virtual Terminal Prolink**.

NOTE:

i The path referenced above is the default path. If you altered the destination when installing the VTerm program, your path will be different.

- 5 On the **Pro-Link Virtual Terminal** screen, select **File ▶ Settings**. The following configuration screen appears:

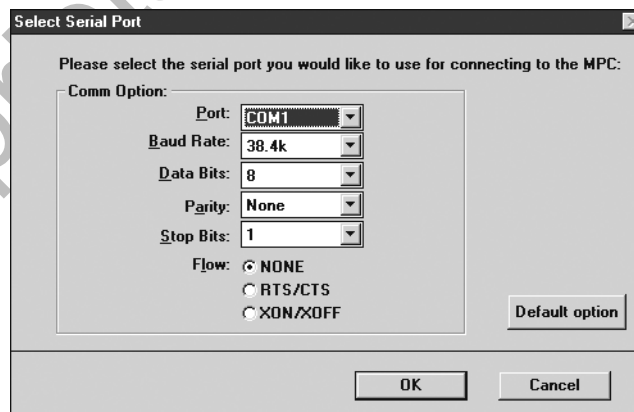


Figure 5.8 Sample Serial Port Configuration screen

- 6 Be sure that the **Port** field shows the port that the Pro-Link GRAPHIQ™ is using.

- 7 From the Pro-Link GRAPHIQ™ Main Menu, select **MPC UTILITIES ▶ RS-232 SERIAL PORT ▶ TERMINAL SETUP**. The following screen appears.

```


RS232 BAUD RAT   38400
HANDSHAKE                NONE
PARITY                   NONE
STOP BITS                1





```


Figure 5.9 Sample Printer Settings Screen

- 8 Be sure the settings on this screen match the settings on the Virtual Terminal software program (Figure 5.8, page 40).

NOTE:

 The **Flow** specification (pictured in (Figure 5.8, page 40) is the same as the **Handshake** specification (pictured on the Pro-Link GRAPHIQ™ screen).


—If you need to change a Pro-Link GRAPHIQ™ setting, use the  or  key to scroll to the parameter then press ; scroll through the available settings until you see the correct value and press ; repeat for each improperly configured parameter.

- 9 Press  to return to the **RS-232 Serial Port** menu.

Using Terminal Mode

Display the Pro-Link GRAPHIQ™ screen on your PC/laptop screen or terminal with NEXIQ's *Pro-Link Virtual Terminal* software (available on the Web at <http://www.nexiq.com/downloads.asp>).


NOTE:

 The Pro-Link GRAPHIQ™ terminal mode configuration must match the virtual terminal application's configuration. See "Using Terminal Setup", on page 39 for details.

To initiate Terminal Mode:

- 1 Use the PC Terminal Cable to attach Pro-Link GRAPHIQ™ to your PC or Terminal (see page 21).
- 2 Start the Pro-Link Virtual Terminal program:
 - From your PC's desktop, click **Start**, then select **Programs ▶ VTerm ▶ Virtual Terminal Prolink**.

NOTE:

 The path referenced above is the default. If you altered the destination when you installed VTerm, your path will be different.

- 3 From the Pro-Link GRAPHIQ™ Main Menu, select **MPC UTILITIES ▶ RS-232 SERIAL PORT ▶ TERMINAL MODE**.

Pro-Link GRAPHIQ™ requests confirmation.

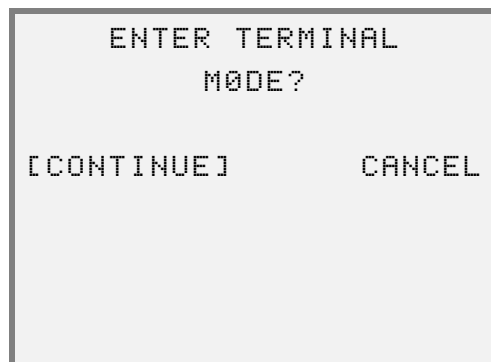


Figure 5.10 Terminal Mode Confirmation screen

- 4 Select **CONTINUE**. The screen displays the following message:

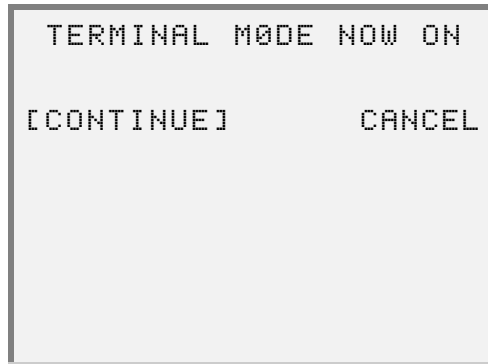


Figure 5.11 Terminal Mode "On" Notification

- 5 Select **CONTINUE**. The screen returns to the **RS-232 Serial Port** menu.
- 6 In the **Pro-Link Virtual Terminal** screen, click on the Connect icon or from the **Connect** menu, select **Connect**.

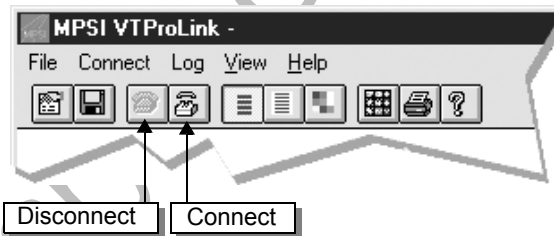


Figure 5.12 Pro-Link Virtual Terminal Toolbar

NOTE:



Notice that the Connect icon becomes disabled, while the Disconnect icon becomes enabled.

The Pro-Link GRAPHIQ™ screen appears in the window.



*If the Terminal window freezes up, exit terminal mode, shut down **Pro-Link Virtual Terminal**, and repeat this procedure.*

- 7 Press **FUNC** to return to the **RS-232 Serial Port** menu.

To exit terminal mode:

- 1 From the Pro-Link GRAPHIQ™ Main Menu, select **MPC UTILITIES ▶ RS-232 SERIAL PORT ▶ TERMINAL MODE**.

Pro-Link GRAPHIQ™ prompts confirmation.

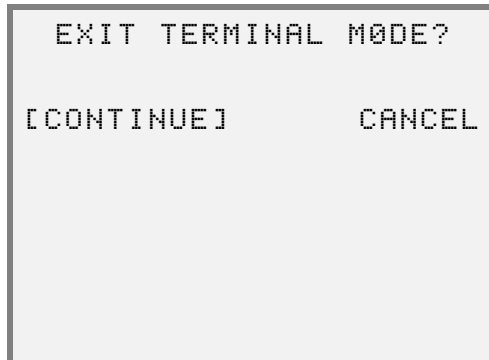


Figure 5.13 Terminal Mode Exit Confirmation

- 2 Select **CONTINUE**. Pro-Link GRAPHIQ™ displays the following message:

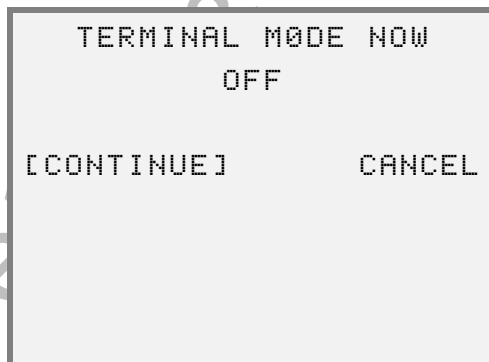


Figure 5.14 Terminal Mode "OFF" Notification

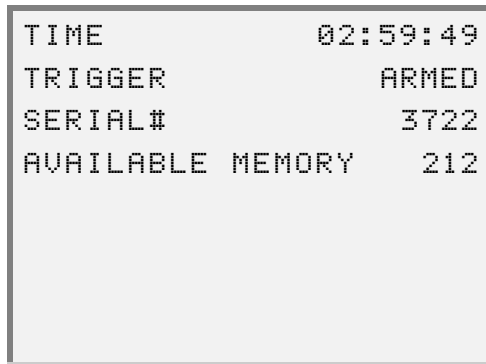
- 3 Select **CONTINUE**. The screen returns to the **RS-232 Serial Port** menu.

MPC Info

Use the **MPC Info** utility to view general information about the current system.

To view MPC Info:

- 1 From the Main Menu, select **MPC UTILITIES ▶ MPC INFO**. The screen displays the system information.



```

TIME                02:59:49
TRIGGER             ARMED
SERIAL#             3722
AVAILABLE MEMORY    212
  
```

Figure 5.15 Sample MPC Info screen

- **Time** reflects the length of time the Pro-Link GRAPHIQ™ has been powered on, in hours, minutes, and seconds.
 - **Trigger** shows either the status of the trigger (“Armed”), or the time that the most recent trigger was fired.
 - **Serial Number** shows the serial number for the PCMCIA application card that you are currently using.
 - **Available Memory** shows the amount of available short-term memory (in kilobytes).
- 2 Press **[FUNC]** to return to the **MPC UTILITIES** screen.

Custom Data List

Use the **CUSTOM DATA LIST** utility to build a Data List containing *only* the data points you need to review, ordered as you desire.

You may also choose to create a Custom Data List in order to view data points from different applications on the same card. *For example*, you may wish to load an engine application and build a Custom Data List containing engine data points; then, load a brake application to add brake system data points.

Creating a Custom Data List

Use the following procedure to create a Custom Data List.

NOTE:



Only a single Custom Data List can be created at once. Therefore, all data points that you select will be added to the *same* Custom Data List, regardless of which Data List or application the data points were selected from.

To create a Custom Data List:

- 1 Load the application(s) containing the data points you wish to include in the Custom Data List, then press **ENTER**.

NOTE:



Loading a single application may require more than one selection. For example, one application may contain more than one series of controllers. In this case, load the applicable series.

- 2 Access the Data List containing the data points that you wish to include in the Custom Data List.
- 3 Press the **▲** and **▼** keys to scroll to the first data point that you wish to add to the Custom List, then press the **0** key.

The screen's display changes to the Custom Data List view, showing the selected data point.

```

TIME                00:19:32
BATTERY V           13.7
  
```

Figure 5.16 Sample Custom Data List screen

- 4 Press **[FUNC]** to return to the Data List screen.
 - Repeat Step 3 for each data point that you wish to add to the Custom Data List.
 - If you wish to add data points from a different Data List, press **[FUNC]** to exit the current screen, then select the desired Data List.
 - If you wish to add data points from a different application, press **[FUNC]** until you see the Main Menu, then select the desired application; repeat Steps 2 - 4.


NOTE:

-
- i** If you would like to graph the data contained in your Custom Data List, refer to “Graphing Data”, on page 110.
-

Viewing/Modifying a Custom Data List

Once you have created a Custom Data List, you can modify the list by removing specific data points.

NOTE:

 Custom Data Lists are saved in short-term memory only, and will be erased once Pro-Link GRAPHIQ™ is powered off. Therefore, if you wish to modify a Custom Data List, be sure to do so within the same session as when the Custom Data List was created.

To view/modify a Custom Data List:


- 1 From the Main Menu, select **MPC UTILITIES** ► **CUSTOM DATA LIST**.




The screen shows the data points that were originally added to the Custom Data List.

TIME	00:19:32
BATTERY V	13.7
TOTAL MI	25022
ENG HOURS	3.5

Figure 5.17 Sample Custom Data List screen

NOTE:

 The **Time** field reflects the time elapsed since the current session began.

- 2 If you wish to remove data points, use the  or  key to scroll to the first data point that you wish to remove, then press the  key.

The selected data point is instantly removed from the Custom Data List.

—Repeat Step 2 for each data point that you wish to remove.

- 3 Press **[FUNC]** to exit the **Custom Data List** screen. The display returns to the **MPC UTILITIES** menu.

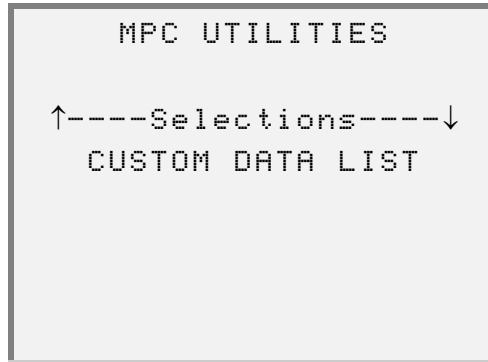


Figure 5.18 Sample MPC Utilities Menu

File Directory

The **FILE DIRECTORY** utility provides a listing of system files. Additionally, this utility provides the following options:

- **Transfer via RS232**—to transfer specific files from the Pro-Link GRAPHIQ™ to a PC.
- **Delete File**—to delete specific system files.

NOTE:



These features are reserved for certain applications. Refer to the user's manual for the application you are using to see if these features are supported.

Contrast Adjust

This feature is not yet supported and is reserved for future functionality.

Snapshot

The **SNAPSHOT** utility allows you to record data surrounding a specific event (or "trigger) in order to identify intermittent problems. An event may be:

- the detection of a fault code for a specific parameter or sub-system
- the detection of any fault code
- manually triggered

The following options are provided within the **Snapshot** menu:

- **Arm**—to enable the system to trigger upon a specified event (see page 50)
- **Fire**—to manually fire a trigger, at any time (see page 52)
- **Print Snapshot**—to print results (see page 54)

NOTE:



For information on stepping through an individual parameter's historical data, refer to "Viewing Individual Parameter Historical Data", on page 112.

Arming a Trigger

Use the **ARM** option to enable the system to report triggered events.

NOTE:



Some applications provide features for setting specific trigger criteria. In these cases, arming a trigger can be accomplished through the application (without having to go into **MPC Utilities**). Refer to the user's manual for the application you are using to see if this option is available.

To arm a trigger:

- 1 From the Main Menu, select **MPC UTILITIES** ► **SNAPSHOT**. The **SNAPSHOT** menu appears.

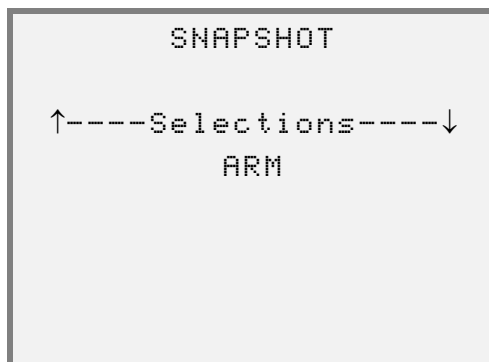


Figure 5.19 Sample Snapshot Menu

- 2 Select **ARM**. The following message appears on the screen:

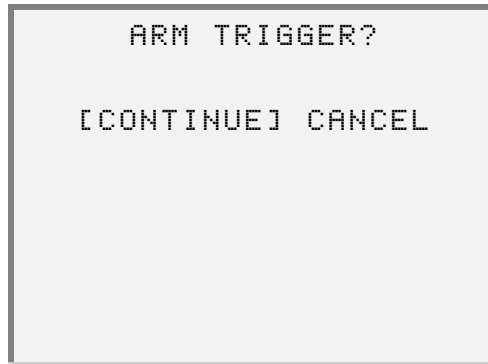


Figure 5.20 Arm Trigger Confirmation screen

- 3 Press **ENTER** to continue. The display returns to the **SNAPSHOT** menu.

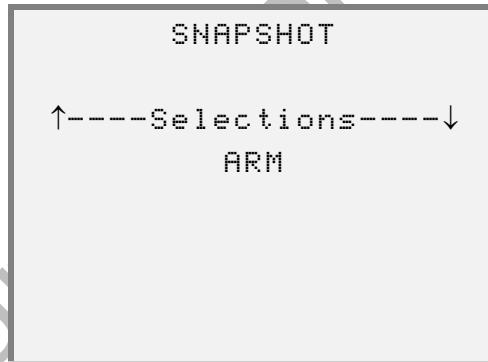


Figure 5.21 Sample Snapshot Menu

Firing a Trigger Manually

Use the **FIRE** option to manually fire a trigger at any time during the current session.

To manually fire a trigger:

- 1 From the Main Menu, select **MPC UTILITIES ▶ SNAPSHOT**. The **Snapshot** menu appears.

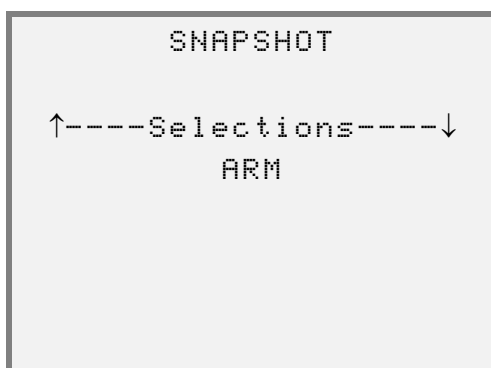


Figure 5.22 Sample Snapshot Menu

- 2 Select **FIRE**. The following message appears:

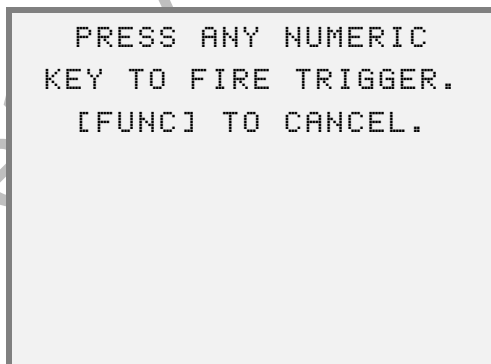


Figure 5.23 Fire Trigger Message

- 3 Follow the instructions presented on the screen.

The trigger fires and the results are presented on a screen similar to the following sample screen:

```
TRIGGER OCCURRED AT
      00:40:04

[ENTER] TO CONTINUE
```

Figure 5.24 Sample Trigger Results screen

- 4 Press **[ENTER]**. The display returns to the **SNAPSHOT** menu.

```
SNAPSHOT

↑----Selections----↓
      FIRE
```

Figure 5.25 Sample Snapshot Menu

Printing a Snapshot

Use the **PRINT SNAPSHOT** option to print the recording results.

NOTE:



Before printing data, be sure that the Pro-Link GRAPHIQ™ is attached to a printer (see page 21), and that printer the configured with the proper settings (see page 35).

In order to print a Snapshot, you must first:

- be sure that a trigger has fired

NOTE:



Refer to “Firing a Trigger Manually”, on page 52; or refer to the user’s manual for the application you are using for special instructions on setting up a trigger.

- create a Custom Data List (see page 46)

To print Snapshots:

- 1 Use the Printer Cable to attach Pro-Link GRAPHIQ™ to a printer (see page 21).
- 2 *If the printer does not have a charged battery*, plug the printer into a standard 110V outlet, using the AC Adapter provided with the printer.
- 3 Turn the printer’s power ON.
- 4 Create a Custom Data List, if you have not already done so (see page 46).
- 5 Select **MPC UTILITIES ▶ SNAPSHOT ▶ PRINT SNAPSHOT**.

The screen prompts you to enter the number of Snapshot frames to print.



Figure 5.26 Sample Enter Number of Frames screen

- 6 Use the numeric keys to enter the desired number of frames to print, then press **ENTER**.

The screen prompts you to enter the duration of each frame, in milliseconds.



Figure 5.27 Enter Milliseconds Per Frame Sample screen

For example, if you enter 500 mSecs (.5 seconds), Pro-Link GRAPHIQ™ prints the parameter's value at each half second of the Snapshot (at 1 second, 1.5 seconds, 2 seconds, etc.).

- 7 Use the numeric keys to enter the desired number of milliseconds (per frame), then press **ENTER**.

The screen prompts you to enter the first frame to print.



Figure 5.28 Sample Enter First Frame screen

- 8 Use the numeric keys to enter the first frame to print, then press **ENTER**. The screen indicates that the Snapshot is printing.



Figure 5.29 Snapshot Printing Progress

Reset

Use the **RESET** utility to end the current session and start a new session.

NOTE:



Resetting the system clears all data currently stored in short-term memory. Therefore, any existing Custom Data Lists or Snapshot information will be erased.

To reset the system:

- 1 From the Main Menu, select **MPC UTILITIES ▶ RESET**.

The Pro-Link GRAPHIQ™ automatically re-boots, showing the Main Menu once the reset is complete.

Update PC Card

Use the **UPDATE PC CARD** utility to update a PCMCIA (application) card, as well as the system software, as needed.

NOTE:

i In order to update a PC (application) card, you must have the Configuration Utility CD, which installs the necessary program files onto your PC/laptop. If you have questions about this CD or about updating a PC card, please contact NEXIQ Technical Support at NEXIQ Technical Support at 1-800-639-6774.

NOTE:

i Be sure that the PC/Terminal cable and the Power/Data cable **remain connected** to the Pro-Link GRAPHIQ™ while performing this procedure.

To update the application card:

- 1 Be sure that the MPC cartridge is properly installed on the Pro-Link GRAPHIQ™ (see page 12).
- 2 Connect the Pro-Link GRAPHIQ™ to your PC/Laptop using the PC/Terminal (“coiled”) cable (see page 21).
- 3 Connect the Power/Data cable to a 12V power source (leaving the power OFF).
- 4 Insert the Update Utility CD into your PC/laptop’s CD-ROM drive. The utility starts by showing the following screen:



Figure 5.30 Sample Update Utility screen

- 5 Connect the male, 15-pin end of the Power/Data cable to the Power/Data port, located at the top of the Pro-Link GRAPHIQ™ and tighten the thumbscrews.
- 6 On the Pro-Link GRAPHIQ™, select **MPC Utilities ▶ Update PC Card**. The screen displays the following message:

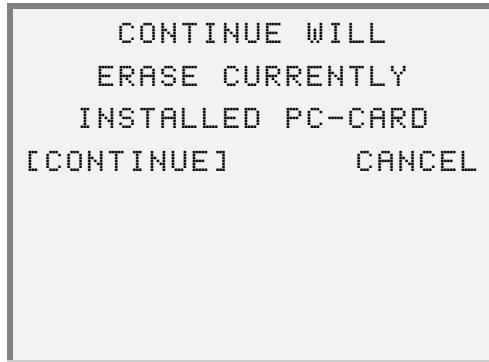


Figure 5.31 Prompt to erase currently installed card

- 7 Do not make a selection at this point. Return to your PC's screen.
- 8 On the **Update Utility** screen, click **Download**. The screen indicates that the download is in progress.

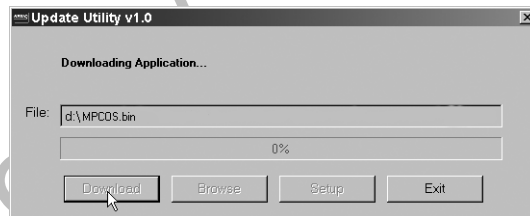



Figure 5.32 Update in progress sample screen

- 9 On the **Update Utility** screen, select the next file to download, as follows:
 - Next to the **File of type** box, click the drop-down , then select **Image Files (*.img)**.
 - Click **Open**.
 - On the **Update Utility** screen, click **Download**. The screen indicates that the download is in progress.

10 On the Pro-Link GRAPHIQ™, press **ENTER**.



*If you see the message, “Update timed out” on the PC’s screen, click **OK** to close the message box, then specify a different Comm port, as follows:*

- *On the Update Utility screen, click **Setup**.*
- *On the Comm Setup screen, click on the drop-down box and select a different port; click **OK** to close the Setup screen.*
- *Repeat procedure, from Step 8.*

Updating the Pro-Link GRAPHIQ™

Follow the steps below to update your Pro-Link GRAPHIQ™ using the *Update Utility*.

NOTE:



In order to update the Pro-Link GRAPHIQ™ system, you must have the Configuration Utility CD, which installs the necessary program files onto your PC/laptop. If you have questions about this CD or about updating Pro-Link GRAPHIQ™, please contact NEXIQ Technical Support at 1-800-639-6774.

IMPORTANT:



Be sure that the Power/Data cable is connected to a power source and remains connected to the Pro-Link GRAPHIQ™ while performing this procedure. Loss of power will corrupt the flash and the unit will need to be returned to NEXIQ for service.

To update the Pro-Link GRAPHIQ™:

- 1** Be sure that the MPC cartridge is properly installed on the Pro-Link GRAPHIQ™.
- 2** Connect the Pro-Link GRAPHIQ™ to your PC/Laptop using the PC/Terminal (“coiled”) cable.
- 3** Connect the Power/Data cable to a 12V power source (leaving the power OFF).

- 4 Insert the Update Utility CD into your PC/laptop's CD-ROM drive. The Update Utility window appears.

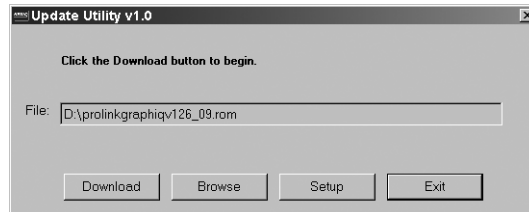



Figure 5.33 Sample Update Utility window

- 5 Connect the male, 15-pin end of the Power/Data cable to the Power/Data port, located at the top of the Pro-Link GRAPHIQ™ and tighten the thumbscrews.
- 6 Turn the power source ON *and immediately* press the Special Feature key  on the keypad.
- 7 Wait for the following screen to appear on the Pro-Link GRAPHIQ™:

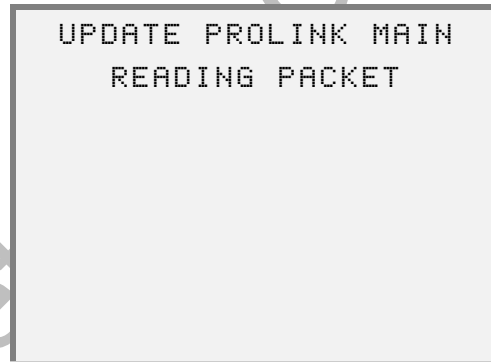
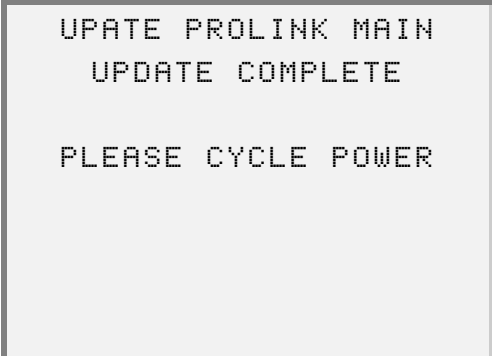


Figure 5.34 Update Pro-Link Message

- 8 On the PC's screen: click **Download** on the **Update Utility** window.

- The screen indicates, “Downloading ROM”, then displays the **Update Complete** screen; click **OK**.
- Pro-Link GRAPHIQ™ displays the following screen:



```
UPDATE PROLINK MAIN
UPDATE COMPLETE

PLEASE CYCLE POWER
```

Figure 5.35 Update Complete/Cycle Power message



If you see the message, “Update timed out”, click **OK** to close the message box, then specify a different Comm port, as follows:

- On the Update Utility screen, click **Setup**.
- On the Comm Setup screen, click on the drop-down box and select a different port; click **OK** to close the Setup screen.
- Repeat Step 8.

Using MPC Utilities for 3.X

This section provides instructions on using **MPC UTILITIES** for MPC Software Version 3.X.

Refer to the page number corresponding to the option you wish to use.

- *Language* (see page 62)
- *RS-232 Serial Port* (see page 63)
- *MPC Info* (see page 75)
- *Custom Data List* (see page 76)
- *Snapshot* (see page 82)
- *Format PC Card* (see page 97)
- *File Directory* (see page 97)
- *Contrast Adjust* (see page 100)
- *Reset* (see page 100)
- *Update PC Card* (see page 101)

NOTE:



The MPC Utilities are discussed in the order in which they appear on the MPC UTILITIES menu on the Pro-Link GRAPHIQ™.



From this point forward (and unless otherwise noted), it is assumed that the *Pro-Link GRAPHIQ™* is currently connected to a vehicle and that the application card you are using is properly inserted. If you have not yet established connection with a vehicle, or have not inserted the application card, see the appropriate section(s) in Chapter 3, "Component Connections" before proceeding.

Language

Use the **LANGUAGE** option to specify the language in which the Pro-Link GRAPHIQ™ will present information.

NOTE:



If the application you are using supports only one language, only that language is available.

To select the language:

- 1 From the Main Menu, select **MPC UTILITIES ► LANGUAGE**. The **Select Language** screen appears.
- 2 Press the or key to scroll through the available languages.
- 3 Press when you see the language you wish to use. Pro-Link GRAPHIQ™ returns to the **MPC Utilities** menu.

RS-232 Serial Port

The **RS-232 Serial Port** utility provides the following options:

- **PRINTER SETUP**—allows you to configure your printer with the appropriate settings for printing data from the Pro-Link GRAPHIQ™ (see page 63).
- **PRINTOUT**—allows you to choose to print Data Lists or Custom Data Lists for a loaded application (see page 66).
- **TERMINAL SETUP**—allows you to configure the software program necessary for using Terminal Mode (see page 70).
- **TERMINAL MODE**—allows you to view the Pro-Link GRAPHIQ™ screen displayed on a PC screen or terminal (see page 72).

Using Printer Setup

Before attempting to print data for the first time, use the **PRINTER SETUP** option to verify that the RS-232 Serial Port configuration matches your printer's configuration.

Pro-Link GRAPHIQ™ ships with the appropriate settings for the *NEXIQ Technologies thermal printer*. If you are using a different printer, consult with the appropriate owner's manual to determine the following settings:

- Baud rate
- Handshake setting
- Parity setting
- Stop bits setting

To setup the printer:

- 1 Connect the Pro-Link GRAPHIQ™ to the printer, using the RS-232 coiled cable (see page 21).

- 2 Insert the application card into PCMCIA Card Slot (see page 18).

The application boots up and presents the Main Menu.

- 3 From the Main Menu, select **MPC UTILITES**, then press **ENTER**.
- 4 Select **RS-232 SERIAL PORT** ► **PRINTER SETUP**. The **Printer Setup** screen appears, showing the default settings:

```

RS232 BAUD RATE      2400
HANDSHAKE            BUSY
PARITY               NONE
STOP BITS            1 BITS
  
```

Figure 5.36 Sample Printer Setup screen

NOTE:



The default settings are the correct settings for the NEXIQ Technologies thermal printer.

- 5 If you need to change settings, press the **▲** or **▼** key to select a parameter, then press **ENTER**.


The selected parameter's configuration screen appears, as follows:

```

          PARITY
Available settings for
selected parameter
          ↓   NONE   ↑
  
```

- 6 Press **▲** or **▼** to scroll through the available settings; when the desired setting appears, press **ENTER**.

NOTE:

-  Press **FUNC** to exit a parameter configuration screen without saving changes.

Pro-Link GRAPHIQ™ returns to the **Printer Setup** screen. Repeat these steps for each parameter requiring configuration.

- 7 Once all parameters are set and you see the **Printer Setup** screen, press **FUNC**. The Pro-Link GRAPHIQ™ returns to the **RS232 Serial Port** menu.

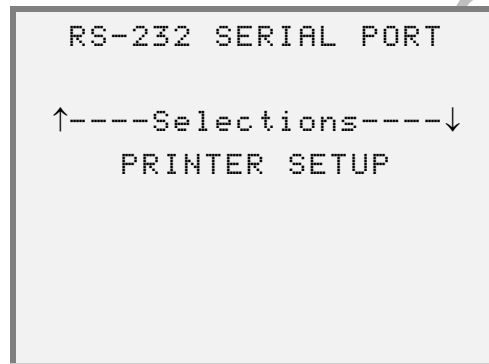



Figure 5.37 Sample RS-232 Serial Port Menu

Using Printout


NOTE:

-
-  Before printing data, be sure that the printer you will be using is configured with the appropriate settings. Refer to “Using Printer Setup”, on page 63 for details.
-


Use the **PRINTOUT** option to print:

- Data Lists for the currently loaded application (see pg. 66)
- Snapshots (see pg. 68)

NOTE:

-
-  You can also use certain short-cut key combinations to print data. See page 27 for details.
-

NOTE:

-
-  Some applications may provide additional print options. Refer to the user’s manual for the application you are using for more information.
-

To print Data Lists:

- 1 Attach Pro-Link GRAPHIQ™ to a printer, using the PC Terminal Cable (see page 21).
- 2 Turn the printer’s power ON.
- 3 From the Main Menu, select the application that contains the Data List(s) that you wish to print, then press **ENTER**.
- 4 Access the Data List(s) that you will be printing.

- 5 Press **[FUNC]** until the display returns to the **MPC UTILITIES** menu.

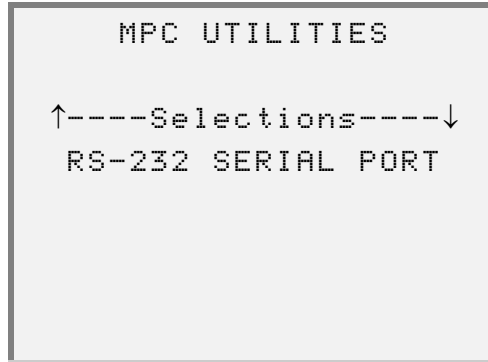


Figure 5.38 Sample MPC Utilities Menu

- 6 Select **RS-232 SERIAL PORT ▶ PRINTOUT**. The following screen appears:

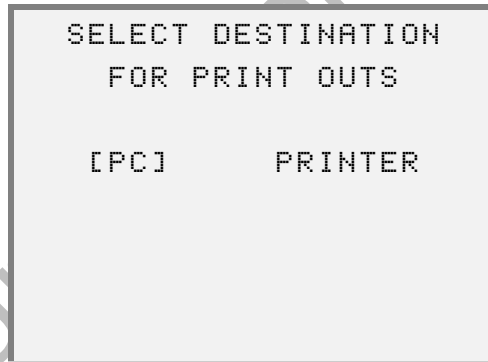


Figure 5.39 Select Print Destination screen

- 7 Select **PRINTER**.

If this is the first time using **PRINTOUT**, the screen for setting up the printer will appear.

—If you need to modify the settings, refer to “Using Printer Setup”, on page 63 before proceeding.

—If you do *not* need to modify the settings, press **[FUNC]** to proceed.

The **PRINTOUT** menu appears.

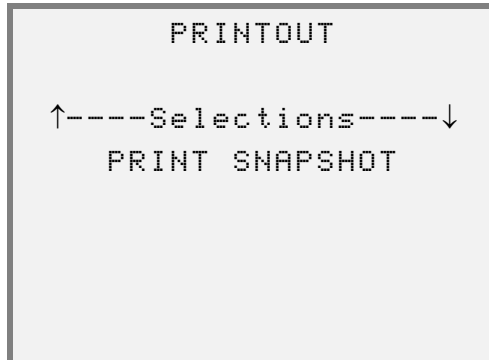


Figure 5.40 Sample Printout Selection Menu

- 8 Use the or key to scroll to the application providing desired Data List, then press .

A list of print options is presented for the currently selected application.

- 9 Select the desired option, then press to begin printing.

The specified data begins printing on the printer that you are using.

To print a Snapshot:

- 1 Attach Pro-Link GRAPHIQ™ to a printer, using the PC Terminal Cable (see page 21).
- 2 Turn the printer's power ON.
- 3 From the Main Menu, select **MPC UTILITIES ▶ RS-232 SERIAL PORT ▶ PRINTOUT**. The following screen appears:

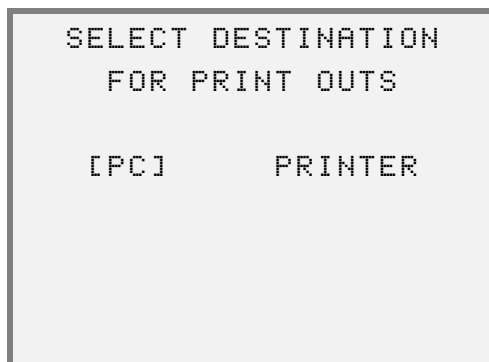


Figure 5.41 Select Print Destination screen

4 Select **PRINTER**.

If this is the first time using **PRINTOUT**, the screen for setting up the printer will appear.

—If you need to modify the settings, refer to “Using Printer Setup”, on page 63 before proceeding.

—If you do *not* need to modify the settings, press **FUNC** to proceed.

The **PRINTOUT** menu appears.

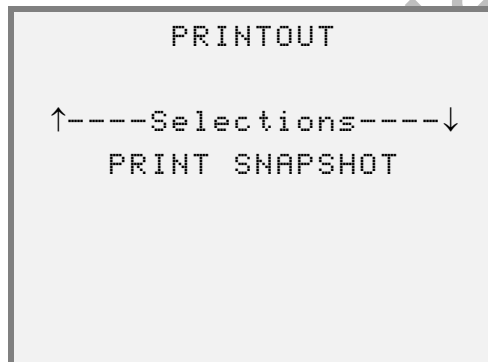


Figure 5.42 Sample Printout Selection Menu

5 Press **ENTER** to select **PRINT SNAPSHOT**. Pro-Link GRAPHIQ™ displays the following screen:



Figure 5.43 Sample Enter Sampling Frequency screen

6 Use the number keys to enter the sampling frequency you would like to print.

For example, if you enter 500 mSecs (.5 seconds), Pro-Link GRAPHIQ™ prints the parameter's value at each half second of the snapshot, i.e., at 1 second, 1.5 seconds, 2 seconds, etc.

- 7 Press **ENTER** to accept the sampling frequency.

The Snapshot data begins printing on the printer that you are using.

Using Terminal Setup

Use the **TERMINAL SETUP** utility to specify the appropriate settings for using the **Terminal Mode** utility (see pg. 42) for the first time.

To set up terminal mode:


- 1 Download the **Pro-Link Virtual Terminal** software from:
<http://www.nexiq.com/downloads.asp>.
- 2 Install the **Pro-Link Virtual Terminal** program, according to the instructions provided with program.

NOTE:

 If you need assistance with downloading or installing the program, contact your System Administrator.

- 3 Use the PC Terminal Cable to attach the Pro-Link GRAPHIQ™ to your PC or Terminal (see page 21).

NOTE:

 Be sure to note the Com (Serial) Port you are using.

- 4 Start the Pro-Link Virtual Terminal program:

—From your PC's desktop, click **Start**, then select:
Programs ▶ VTerm ▶ Virtual Terminal Prolink.

NOTE:



The path referenced above is the default path. If you altered the destination when installing the VTerm program, your path will be different.

- 5 On the **Pro-Link Virtual Terminal** screen, select **File ▶ Settings**. The following configuration screen appears:

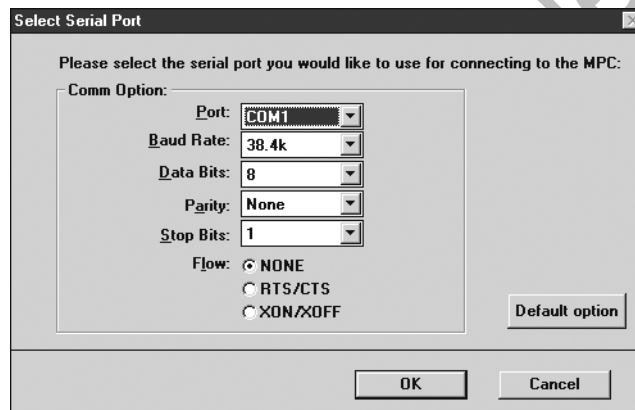


Figure 5.44 Sample Serial (Com) Port Configuration screen

- 6 Be sure that the **Port** field shows the port that the Pro-Link GRAPHIQ™ is using.
- 7 From the Pro-Link GRAPHIQ™ Main Menu, select **MPC UTILITIES ▶ RS-232 SERIAL PORT ▶ TERMINAL SETUP**. The following screen appears.

```

RS232 BAUD RAT   38400
HANDSHAKE                NONE
PARITY                   NONE
STOP BITS                 1

```





Figure 5.45 Sample screen—Printer Settings


- 8 Be sure the settings on this screen match the settings on the Virtual Terminal software program (Figure 5.44, page 71).

NOTE:



The **Flow** specification (pictured in Figure 5.44, on page 71) is the same as the **Handshake** specification (pictured on the Pro-Link GRAPHIQ™ screen).

—If you need to change a Pro-Link GRAPHIQ™ setting, use the  or  key to scroll to the parameter then press ; scroll through the available settings until you see the correct value and press ; repeat for each improperly configured parameter.

- 9 Press  to return to the **RS-232 Serial Port** menu.

Using Terminal Mode

Display the Pro-Link GRAPHIQ™ screen on your PC/laptop screen or terminal with NEXIQ's **Pro-Link Virtual Terminal** software (available on the Web at <http://www.nexiq.com/downloads.asp>).

NOTE:



The Pro-Link GRAPHIQ™ terminal mode configuration must match the virtual terminal application's configuration. See "Using Terminal Setup", on page 70 for details.

To initiate Terminal Mode:

- 1 Use the PC Terminal Cable to attach Pro-Link GRAPHIQ™ to your PC or Terminal (see page 21).
- 2 Start the **Pro-Link Virtual Terminal program**:
 - From your PC's desktop, click the **Start**, then select **Programs ▶ VTerm ▶ Virtual Terminal Prolink**.

NOTE:



The path referenced above is the default. If you altered the destination when you installed VTerm, your path will be different.

- 3 From the Pro-Link GRAPHIQ™ Main Menu, select **MPC UTILITIES ▶ RS-232 SERIAL PORT ▶ TERMINAL MODE**.

Pro-Link GRAPHIQ™ requests confirmation.

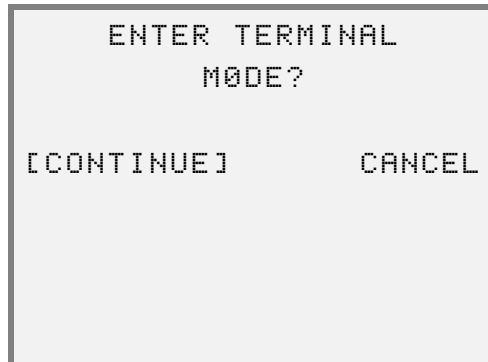


Figure 5.46 Terminal Mode Confirmation screen

- 4 Select **CONTINUE**. The screen displays the following message:

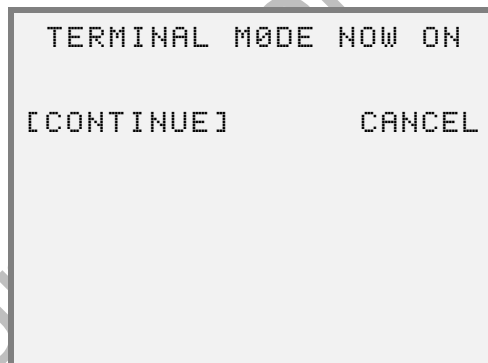


Figure 5.47 Terminal Mode "On" Notification

- 5 Select **CONTINUE**. The screen returns to the **RS-232 Serial Port** menu.
- 6 Click the **Pro-Link Virtual Terminal** screen, click on the Connect icon or select **Connect** from the **Connect** menu.

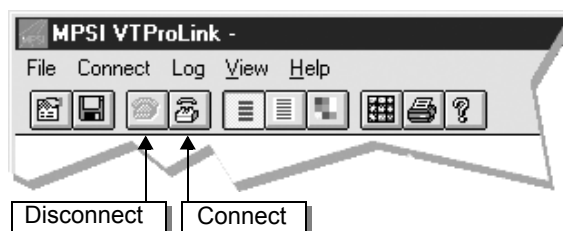



Figure 5.48 Pro-Link Virtual Terminal Toolbar

NOTE:

 Notice that the Connect icon becomes disabled, while the Disconnect icon becomes enabled.

The Pro-Link GRAPHIQ™ screen appears in the window.

 *If the Terminal window freezes up, exit terminal mode, shut down **Pro-Link Virtual Terminal**, and repeat this procedure.*

7 Press **[FUNC]** to return to the **RS-232 Serial Port** menu.

To exit terminal mode:

- 1 From the Pro-Link GRAPHIQ™ Main Menu, select **MPC UTILITIES ▶ RS-232 SERIAL PORT ▶ TERMINAL MODE**.

Pro-Link GRAPHIQ™ prompts you for confirmation.

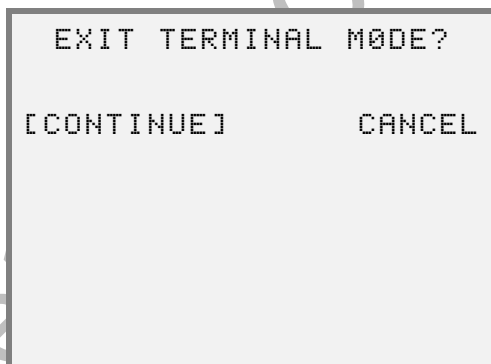


Figure 5.49 Terminal Mode Exit Confirmation

- 2 Select **CONTINUE**.

Pro-Link GRAPHIQ™ displays the following message:

```
      TERMINAL MODE NOW
      OFF

[CONTINUE]      CANCEL
```

Figure 5.50 Terminal Mode "OFF" Notification

- 3 Select **CONTINUE**. The screen returns to the **RS-232 Serial Port** menu.

MPC Info

Use the **MPC Info** option to view general information about the current system.

To view MPC Info:

- 1 From the Main Menu, select **MPC UTILITIES ▶ MPC INFO**. The screen displays the system information.

```
MPC VERSION      x.x
TIME             02:59:49
SERIAL#          3722
AVAILABLE MEMORY 212
```

Figure 5.51 Sample MPC Info screen

- MPC Version** shows the current MPC software version number.
- Time** reflects the length of time the Pro-Link GRAPHIQ™ has been powered on, in hours, minutes, and seconds.
- Serial Number** shows the serial number for the PCMCIA application card that you are currently using.
- Available Memory** shows the amount of available short-term memory (in kilobytes).

2 Press **[FUNC]** to return to the **MPC UTILITIES** screen.

Custom Data List

Use the **CUSTOM DATA LIST** utility to build your own Data List, containing *only* the data points you need to review, ordered as you desire.

You can also choose to create a Custom Data List in order to view data points from different applications provided on the same card. *For example*, you may wish to load an engine application and build a Custom Data List containing engine data points; then, load a brake application to add brake system data points.

Once you create a Custom Data List, Pro-Link GRAPHIQ™ stores the list in the long-term memory, where it can be reused in later sessions.

The rest of this section provides detailed instructions for performing each of the following procedures:

- Creating/editing a Custom Data List (pg. 76)
- Viewing a Data List (pg. 79)
- Deleting a Data List (pg. 81)

Creating/Editing a Custom Data List

Follow the steps below to create and/or edit a Custom Data List.

To create/edit Custom Data List:

- 1 If you have not already done so, load the application(s) containing the data points you wish to include in the Custom Data List, then press **[ENTER]**.

NOTE:

i Loading a single application may require more than one selection. For example, one application may contain more than one series of controllers; load the applicable series.

- 2 Press **[FUNC]** until you see the Main Menu again.
- 3 Select **MPC UTILITIES ▶ CUSTOM DATA LIST**. The following screen appears:

```
CUSTOM DATA LIST

[VIEW]                EDIT
```

Figure 5.52 Custom Data List options

- 4 Select **EDIT** then press **[ENTER]**. Pro-Link GRAPHIQ™ displays the following instructions.

```
1ADDS, 0 REMOVES
ENTER ACCEPTS
FUNC ABORTS
[CONTINUE]      CANCEL
```

- 5 Select **CONTINUE**. The **Custom Data List Edit** menu displays a list of currently loaded applications.



Figure 5.53 Custom Data List Edit menu

- 6 Scroll to the applicable application then press **ENTER**.

Pro-Link GRAPHIQ™ compiles a list of eligible data points.

NOTE:

i If you built a Custom Data List previously and did not delete it, or you have reformatted the application card, Pro-Link GRAPHIQ™ shows an asterisk (*) next to the items included in the existing custom list.

- 7 Press the **▲** or **▼** key to scroll the list. When the blinking cursor appears next to a data point that you wish to include, press **1**. An asterisk (*) appears next to the item, indicating it has been selected.

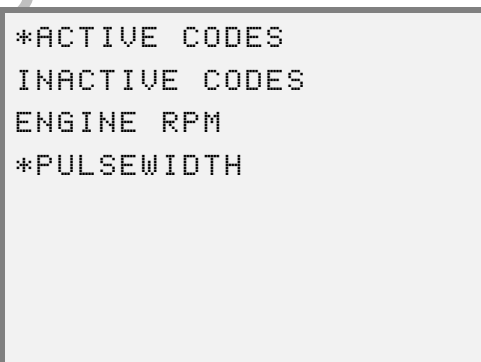


Figure 5.54 Sample Custom Data List screen

—To exclude a selected parameter, position the cursor accordingly and press **0**. The asterisk (*) disappears, indicating that the parameter is no longer selected.

NOTE:

- i** Select the data points in the order you wish to see them appear in the Data List. For example, if you select **PULSEWIDTH** before **ACTIVE CODES**, **PULSEWIDTH** appears first in the Custom Data List.

- 8** Press **[ENTER]** when finished selecting data points. Pro-Link GRAPHIQ™ requests confirmation.



Figure 5.55 Custom Data List Updated message

- 9** Press **[ENTER]** to continue. Pro-Link GRAPHIQ™ returns to the **Custom Data List Edit** menu.
- 10** At this point, you can:
- add parameters from another application by selecting the appropriate application and repeating these steps.
 - view the list that you just built by pressing **[FUNC]** to return to the Custom Data List screen, then selecting **VIEW**.
 - exit the **Custom Data List** utility and return to the **MPC Utilities** menu by pressing **[FUNC]** twice.
 - view the Custom Data List in graph mode (see “Graphing Data”, on page 110).

Viewing a Custom Data List


Follow the steps below to view an existing Custom Data List.

To view a Custom Data List:

- 1** If you haven't already done so, load the application containing the standard Data List that your Custom Data List is based upon.

For example, if your custom list is based upon the engine application Data List, then load the engine application.

NOTE:

 This may require more than one selection. For example, one application may contain more than one series of controllers; load the applicable series first.

- 2 Press **[FUNC]** until you see the Main Menu again.
- 3 Select **MPC UTILITIES ▶ CUSTOM DATA LIST**. The following screen appears.

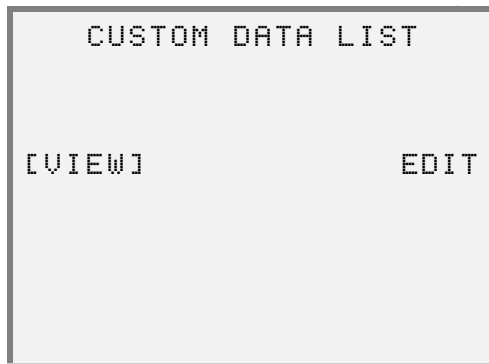


Figure 5.56 Custom Data List Options

- 4 Select **VIEW**. The Custom Data List appears.

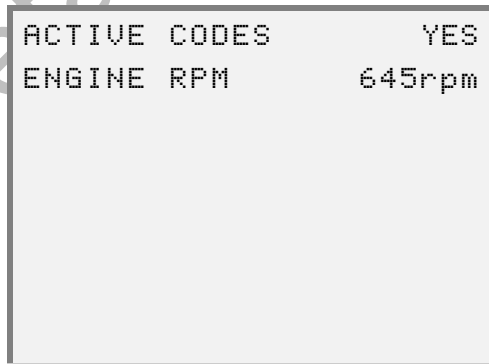


Figure 5.57 Sample Custom Data List View

- 5 Press **[FUNC]** to return to the **MPC Utilities** menu.

Deleting a Custom Data List

Follow the steps below to delete a Custom Data List.

To delete a Custom Data List:

- 1 From the Main Menu, select **MPC UTILITIES ▶ FILE DIRECTORY**.
- 2 Scroll to **CUSTOM.DL**, then press **[ENTER]**. The following screen appears:



Figure 5.58 Sample Custom Data List Options Menu

- 3 Select **DELETE FILE**. Pro-Link GRAPHIQ™ requests confirmation.

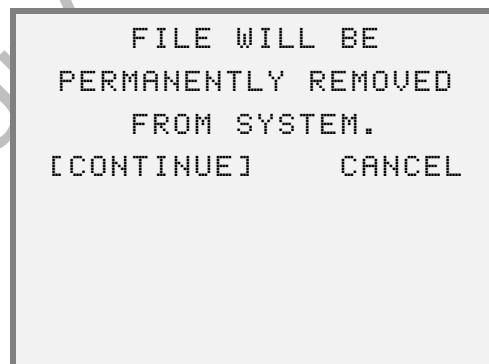


Figure 5.59 Delete File Confirmation screen

- 4 Select **CONTINUE** to delete the file. Pro-Link GRAPHIQ™ displays a message, indicating that the file was deleted and instructs you to re-start the system.



Figure 5.60 Restart MPC Message

- 5 Press **ENTER**.
- 6 Re-boot the system by removing then re-inserting the application card.

Snapshot

Use the **SNAPSHOT** utility to record data surrounding a specific event, in order to identify the source of intermittent issues. An event may be:

- the detection of a fault code for a specific parameter or sub-system
- the detection of any fault code
- manually triggered

You determine how many events to record, the length of each recording, and how much data to record before or after the event. This allows you to see trends in the data that may help you determine the cause of the problem.

NOTE:



If the problem occurs while driving the vehicle, have another technician drive while you take the Snapshot, then save Snapshot in long-term memory to review and/or print it at a later time.

The rest of this discussion provides instructions on:

- taking a Snapshot (pg. 83).
- loading a saved Snapshot (pg. 93).
- reviewing a Snapshot (pg. 95).

NOTE:

- i** For instructions on printing a saved Snapshot, refer to “Using Printout”, on page 66.

NOTE:

- i** For information on stepping through an individual parameter’s historical data, refer to “Viewing Individual Parameter Historical Data”, on page 112.

Taking a Snapshot

The following procedure provides detailed instructions for taking a Snapshot.

To take a Snapshot:

- 1 If you have not already done so, load the desired application by selecting it from the Main Menu.
- 2 Once the application is loaded, press **[FUNC]** to return to the Main Menu.
- 3 Select **MPC UTILITIES ▶ SNAPSHOT ▶ TRIGGER SETUP**. Pro-Link GRAPHIQ™ prompts you to enter the number of event frames to capture.

Use the number keys to enter the desired number, then press **[ENTER]**.



Figure 5.61 Enter Number of Frames Sample screen

Pro-Link GRAPHIQ™ prompts you to enter the duration of each event, in seconds.

- 4 Use the number keys to enter the desired number of seconds, then press **ENTER**.



Figure 5.62 Enter Duration of Event Sample screen

Pro-Link GRAPHIQ™ prompts you to enter the relative trigger position (that is, the amount of data to record before and after the event).

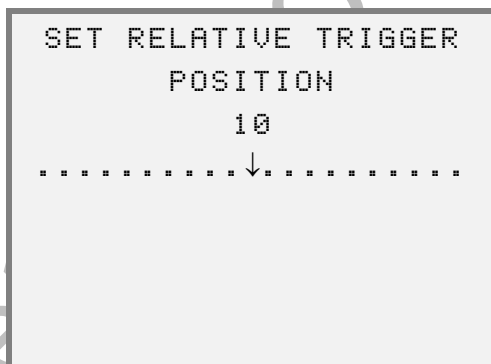


Figure 5.63 Set Relative Trigger Position Sample screen

For example, if you establish a 20 second event duration (previous screen) and you set the relative trigger position to:

- 0, Pro-Link GRAPHIQ™ records 20 seconds of data after trigger activation.
- 5, Pro-Link GRAPHIQ™ records 5 seconds of data before, and 15 seconds after trigger activation.

- 5 Press the or key to adjust the trigger position, then press to continue. Pro-Link GRAPHIQ™ prompts you to enter the parameters to capture.

```

CAPTURE DATA IN
CUSTOM LIST OR EDIT
NEW LIST?
[CUSTOM]          EDIT

```

Figure 5.64 Enter Parameters to Capture screen

- To use a Custom Data List that you have already created, select **CUSTOM**; skip to Step 12.
- To create a new Data List, select **EDIT**.

If you selected **EDIT**, the following screen appears:

```

1 ADDS 0 REMOVES
ENTER ACCEPTS
FUNC ABORTS
[CONTINUE]      CANCEL

```

Figure 5.65 Edit Data List Confirmation screen

- 6 Select **CONTINUE**. A list of currently loaded applications appears.




Figure 5.66 Sample Data List Edit Selection Menu

- 7 Press or until you see the application you need, then press .

Pro-Link GRAPHIQ™ compiles a list of eligible data points.

NOTE:

 If you built a Custom Data List previously and did not delete it, Pro-Link GRAPHIQ™ shows an asterisk (*) next to the items included in the existing custom list.

- 8 Press the or key to scroll the list. When the blinking cursor appears next to a data point that you wish to include, press . An asterisk (*) appears next to the item, indicating it has been selected.

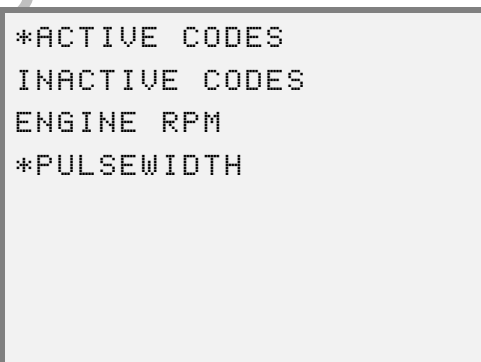


Figure 5.67 Sample Custom Data List screen

—To exclude a selected parameter, position the cursor accordingly and press . The asterisk (*) disappears, indicating that the parameter is no longer selected.

NOTE:

- i** Select the data points in the order you wish to see them in the Snapshot. For example, if you select **PULSEWIDTH** before **ACTIVE CODES**, **PULSEWIDTH** lists first in the Snapshot.

NOTE:

- i** Pro-Link GRAPHIQ™ stores Snapshot Data Lists and Custom Data Lists in separate files. Therefore, editing a Snapshot Data List does not effect a saved Custom Data List.

- 9 Press **ENTER** when finished selecting data points. The following message appears:



```
CAPTURE DATA LIST
      UPDATED

[ENTER] TO CONTINUE
```

Figure 5.68 *Data List Updated Notification*

- 10 Press **ENTER** to continue. Pro-Link GRAPHIQ™ returns to the **Capture Data List** screen.

- 11 Press **FUNC** to exit the Snapshot Data List builder.

—To load additional data points, select another application and repeat Steps 7 - 10 of this procedure.

- 12** Once the **Trigger Selection** screen appears (see sample screen below), select one of the following options:

```

SELECT CONDITION FOR
      TRIGGER
↑----Selections----↓
      ON ANY CODE

```

TABLE 1.

- **ON ANY CODE** to trigger the Snapshot when Pro-Link GRAPHIQ™ detects a new fault code. With this option selected, Pro-Link GRAPHIQ™ begins the Snapshot, capturing an event for each fault code that it detects (until the desired number of events occurs). *Skip to Step 18* for instructions on completing the Snapshot.
- **MANUAL** to trigger the Snapshot manually. If selecting this option, *proceed to Step 13* for further instructions.
- **APPLICATION SPECIFIC** to trigger the Snapshot when Pro-Link GRAPHIQ™ detects a specific fault code. If selecting this option, *skip to Step 14* for further instructions.

- 13** Once the following screen appears, press **[ENTER]**.

```

PRESSING ENTER OR
ANY NUMERIC KEY WILL
CAUSE MANUAL TRIGGER
[ENTER]    TO CONTINUE

```

Figure 5.69 Manual Trigger Confirmation

The **Capture Status** screen appears.

```
WAITING FOR MANUAL
TRIGGER EVENTS
  0 OF 3 SEEN
```

Figure 5.70 Sample Capture Status screen

When ready to trigger an event, press **ENTER** or any numeric key; repeat until all events are captured. Pro-Link GRAPHIQ™ beeps after each event and the display updates to show the number of captures. Go to Step 18 for instructions on completing the Snapshot.

- 14 Once the **Application Selection** screen appears; scroll to the desired application and press **ENTER**.

```
SELECT APPLICATION
TO SET TRIGGER
↑----Selections----↓
APPLICATION NAME
```

Figure 5.71 Select Application for Trigger screen

Pro-Link GRAPHIQ™ presents the option to trigger on either PID (Parameter ID) or SID (Subsystem ID).

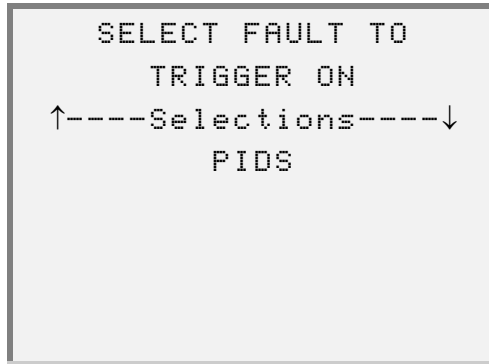


Figure 5.72 Fault Selection screen

- 15 Press the or key to scroll to the desired option then press .

Pro-Link GRAPHIQ™ presents a list of SIDs or PIDs, depending on your selection in the previous screen.

- 16 Press the or key to scroll to the SID/PID that you wish to trigger the Snapshot with, then press .

Pro-Link GRAPHIQ™ shows the SID/PID description and requests confirmation.

- 17 Select **CONTINUE** to accept the selection.

The **Snapshot Status** screen appears and the Pro-Link GRAPHIQ™ beeps after each event and the display updates to show the number of captures.

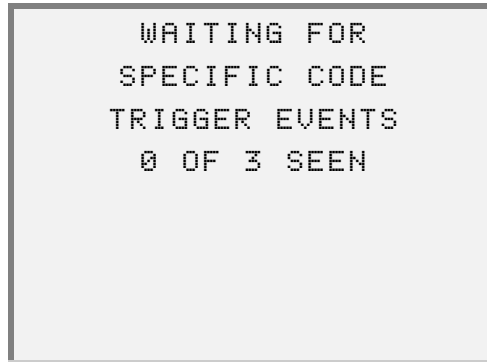




Figure 5.73 *Sample Snapshot Status screen*

- 18** Once Pro-Link GRAPHIQ™ captures the defined number of events, it prompts you to save the session.
 - If you would like to review and/or print the Snapshot at a later time, select **YES**.

NOTE:

-  If you select **NO**, the Snapshot will remain available for print/review throughout the session, but will be lost once you disconnect from the vehicle or lose power. Save the Snapshot at any time during the session by returning to the **Snapshot** menu and selecting **SAVE SESSION**.




NOTE:

-  If you have already saved a Snapshot and Pro-Link GRAPHIQ™ freezes up while attempting to save the new Snapshot, delete the old Snapshot file. Refer to “Deleting Individual Files”, on page 98 for details.


- 19** Pro-Link GRAPHIQ™ displays the **Review Snapshot** menu, which lists the event captures at the bottom of the screen.



Figure 5.74 Sample Review Snapshot screen

- 20** Press the  or  key to scroll to the capture that you wish to review, then press .

Pro-Link GRAPHIQ™ shows the time the capture was triggered, followed by the value(s) of the selected parameter(s) at that time.

- 21** Press  to return to the **Review Snapshot** menu.

NOTE:

- i** Pro-Link GRAPHIQ™ records every value change that occurs for the selected parameters during the event capture. Refer to “Reviewing a Snapshot”, on page 95, for instructions on stepping through a parameter’s value changes.

Loading a Saved Snapshot

Use the **LOAD SESSION** feature to load a previously saved Snapshot. This option is only available prior to loading an application. Therefore, be sure to load the Snapshot before selecting an application from the Main Menu.

To load a saved Snapshot:

- 1 From the Main Menu, select **MPC UTILIES ▶ SNAPSHOT ▶ LOAD SESSION**.

NOTE:





- i** **LOAD SESSION** will not appear on the menu if you have loaded an application. To restore this option, re-boot and return to the first step of this procedure.

The display shows the message, **READ SAVED SESSION?**

- 2 Select **YES**, then press **ENTER**. The display returns to the **Snapshot** menu.
- 3 To review the Snapshot, select **REVIEW SNAPSHOT**. The display shows the **Review Snapshot** menu, listing the event captures at the bottom of the screen.



Figure 5.75 Sample Review Snapshot screen

- 4 Press the  or  key to scroll to the capture you wish to review then press . The display shows the time the capture was triggered, followed by the value(s) of the selected parameter(s) at that time.
- 5 Press  to return to the **Review Snapshot** menu.

NOTE:



Pro-Link GRAPHIQ™ records every value change of the selected parameters during the event capture. Refer to “Reviewing a Snapshot”, on page 95, for instructions on stepping through a parameter’s value changes.

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Reviewing a Snapshot

Use this feature to review:

- a saved Snapshot at any time. Load the Snapshot session first (see page 93).
- an unsaved Snapshot at any time during the session that the Snapshot was taken.

Both **SNAPSHOT** and **LOAD SESSION** automatically display the **Review Snapshot** menu upon completing the given task. This section describes reviewing the Snapshot after exiting the **Snapshot** menu. In addition, this section details the process of stepping through a parameter's value(s) before and after trigger activation.

To review a Snapshot:

- 1 From the Main Menu, select **MPC UTILITIES** ▶ **SNAPSHOT** ▶ **REVIEW SNAPSHOT**. The display shows the **Review Snapshot** menu, listing the event captures at the bottom of the screen.



Figure 5.76 Sample Review Snapshot screen


- 2 Press the or key to scroll to the capture you wish to review then press .





The display shows the time the Snapshot was triggered, followed by the value(s) of the selected parameter(s) at that time.




```

TIME          00:00:51:575
ACTIVE CODES  YES
ENGINE RPM    432
ENG LOAD PCT  10%
  
```

Figure 5.77 Sample Snapshot Occurrence Results screen

Pro-Link GRAPHIQ™ records every value change that occurs for the selected parameters during the event capture. If you push and hold in the  (Special Feature key):

- while the cursor is blinking on **TIME**, then press  or , Pro-Link GRAPHIQ™ shows the time that the event capture began/ended, as well as the values of the parameters at that time.
- while the cursor is on a parameter, then press , Pro-Link GRAPHIQ™ shows the parameter's previous value and the time the change occurred. If there were no more changes to the parameter's value, the display jumps to the beginning of the event capture.
- while the cursor is on a parameter, then press , Pro-Link GRAPHIQ™ shows the parameter's next value and the time the change occurred. If there were no more changes to the parameter's value, the display jumps to the end of the event capture.

- 3 Press  or  (*without* the Special Feature key) to step through the event capture in one-second increments.
- 4 Press  to return to the **Review Snapshot** menu.

Format PC Card

The **FORMAT PC CARD** utility allows you to delete *all* data files from an application card, if necessary.

NOTE:



While it is not typically necessary to delete files, you may wish to delete certain, individual files. Refer to “Deleting Individual Files”, on page 98 for more information.

File Directory

Use the **FILE DIRECTORY** utility to:

- transfer a data file to your PC.
- move a current file from the short-term memory to the long-term memory (that is, copy it to the application card).
- delete individual files.

NOTE:



Transferring files to the PC and moving files to an application card are reserved for certain diagnostics applications. Refer to the user’s manual for the application you are using to see if these features are supported.

For instructions on deleting an individual data file, refer to “Deleting Individual Files”, on page 98.

Deleting Individual Files

Pro-Link GRAPHIQ™ stores certain data files on the application card. For example:

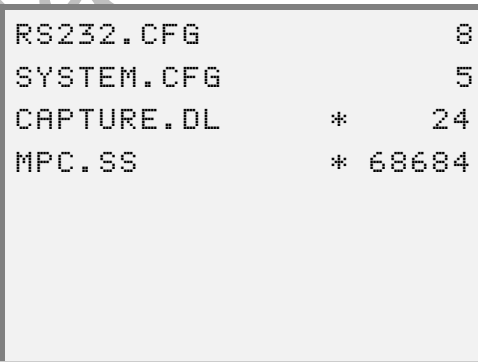
- ISODESC.CFG is a temporary data file created by the system.
- CUSTOM.DL is a Custom Data List file.
- CAPTURE.DL is a Snapshot Data List file.
- MPC.SS is a Snapshot session file.

Use the **FILE DIRECTORY** utility to delete individual files. For instance:

- If you need to remove several parameters from an existing Custom Data List, and need to add only a few, save editing time by deleting the Custom Data List file and building a new one (see pg. 76).
- If there is a Snapshot session file on the application card and Pro-Link GRAPHIQ™ freezes up when you try to save a new Snapshot, delete the Snapshot file and re-take a Snapshot.

To delete an individual file:

- 1 From the Main Menu, select **MPC UTILITIES ▶ FILE DIRECTORY**. The display presents a list of data files.



RS232.CFG		8
SYSTEM.CFG		5
CAPTURE.DL	*	24
MPC.SS	*	68684

Figure 5.78 Sample File Directory screen

NOTE:



Files marked with an asterisk (*) are stored on the application card (that is, in long-term memory); files *not* marked with an asterisk (*) are stored in short-term memory.

- Position the cursor on the file you wish to delete and press **[ENTER]**. The display shows the selected file along with the **File Directory Options** menu.



Figure 5.79 Sample File Directory Options Menu

- Press the **[▲]** or **[▼]** key until you see **DELETE FILE**, then press **[ENTER]**. The display prompts you to confirm removal of the file.

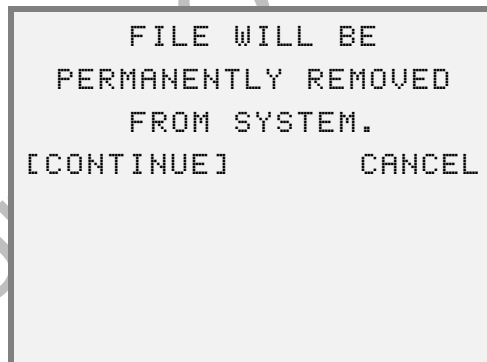


Figure 5.80 File Removal Confirmation Message

- Select **CONTINUE** to erase the selected data file.
—If you do *not* wish to erase the file, select **CANCEL** to return to the file list; skip the rest of this procedure.

- 5 If you select **CONTINUE**, the display instructs you to re-start the MPC to recover the space; press **[ENTER]**.



Figure 5.81 File Deleted Notification

NOTE:



To delete additional files, repeat Steps 1 - 5 for each file; then complete Step 6.

- 6 Remove then re-insert the application card.

Contrast Adjust

This feature is not yet supported and is reserved for future functionality.

Reset

Use the **RESET** utility to reboot the Pro-Link GRAPHIQ™ and clear the short-term memory. For example, after repairing a faulty system, re-set Pro-Link GRAPHIQ™ to that ensure old fault codes are cleared.

To reset the system:

- 1 From the Main Menu, select **MPC UTILITIES ▶ RESET**.

The Pro-Link GRAPHIQ™ automatically re-boots, showing the Main Menu once the reset is complete.

Update PC Card

Use the **UPDATE PC CARD** utility to update a PCMCIA (application) card, as well as the system software, as needed.

NOTE:

i In order to update a PC (application) card, you must have the Configuration Utility CD, which installs the necessary program files onto your PC/laptop. If you have questions about this CD or about updating a PC card, please contact NEXIQ Technical Support at NEXIQ Technical Support at 1-800-639-6774.

NOTE:

i Be sure that the PC/Terminal cable and the Power/Data cable **remain connected** to the Pro-Link GRAPHIQ™ while performing this procedure.

To update the application card:

- 1 Be sure that the MPC cartridge is properly installed on the Pro-Link GRAPHIQ™ (see page 12).
- 2 Connect the Pro-Link GRAPHIQ™ to your PC/Laptop using the PC/Terminal ("coiled") cable (see page 21).
- 3 Connect the Power/Data cable to a 12V power source (leaving the power OFF).
- 4 Insert the Update Utility CD into your PC/laptop's CD-ROM drive. The utility starts by showing the following screen:



Figure 5.82 Sample Update Utility screen

- 5 Connect the male, 15-pin end of the Power/Data cable to the Power/Data port, located at the top of the Pro-Link GRAPHIQ™ and tighten the thumbscrews.

- 6 On the Pro-Link GRAPHIQ™, select **MPC Utilities ▶ Update PC Card**. The screen displays the following message:

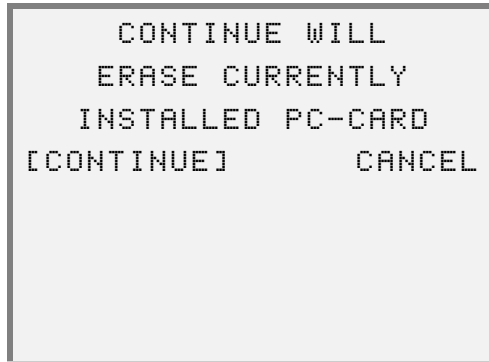


Figure 5.83 Prompt to erase currently installed card

- 7 Do not make a selection at this point. Return to your PC's screen.
- 8 On the **Update Utility** screen, click **Download**. The screen indicates that the download is in progress.

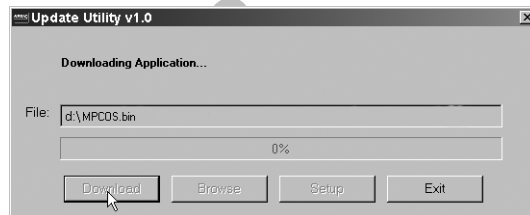


Figure 5.84 Update in progress sample screen

- 9 On the **Update Utility** screen, select the next file to download, as follows:

—Click on the **Browse** button. The following screen appears:



Click here to select the .img file.

Figure 5.85 Sample Open screen


- Next to the **File of type** box, click the drop-down , then select **Image Files (*.img)**.
 - Click **Open**.
 - On the **Update Utility** screen, click **Download**. The screen indicates that the download is in progress.
- 10** On the Pro-Link GRAPHIQ™ screen, press **[ENTER]** to select **Continue**.
 - 11** Once the update is complete, the Pro-Link GRAPHIQ™ shows the following screen:



Figure 5.86 Update Complete message

12 Press **ENTER**.



If you see the message, "Update timed out" on the PC's screen, click **OK** to close the message box, then specify a different Comm port, as follows:

- On the Update Utility screen, click **Setup**.
- On the Comm Setup screen, click on the drop-down box and select a different port; click **OK** to close the Setup screen.
- Repeat procedure, from Step 8.

Updating the Pro-Link GRAPHIQ™

Follow the steps below to update your Pro-Link GRAPHIQ™ using the *Update Utility*.

NOTE:



In order to update the Pro-Link GRAPHIQ™ system, you must have the Configuration Utility CD, which installs the necessary program files onto your PC/laptop. If you have questions about this CD or about updating Pro-Link GRAPHIQ™, please contact NEXIQ Technical Support at 1-800-639-6774.

IMPORTANT:



Be sure that the Power/Data cable is connected to a power source and remains connected to the Pro-Link GRAPHIQ™ while performing this procedure. Loss of power will corrupt the flash and the unit will need to be returned to NEXIQ for service.

To update the Pro-Link GRAPHIQ™:

- 1 Be sure that the MPC cartridge is properly installed on the Pro-Link GRAPHIQ™.
- 2 Connect the Pro-Link GRAPHIQ™ to your PC/Laptop using the PC/Terminal ("coiled") cable.
- 3 Connect the Power/Data cable to a 12V power source (leaving the power OFF).

- 4 Insert the Update Utility CD into your PC/laptop's CD-ROM drive. The Update Utility window appears.

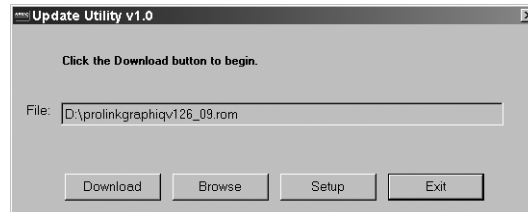



Figure 5.87 Sample Update Utility window

- 5 Connect the male, 15-pin end of the Power/Data cable to the Power/Data port, located at the top of the Pro-Link GRAPHIQ™ and tighten the thumbscrews.
- 6 Turn the power source ON *and immediately* press the Special Feature key  on the keypad.
- 7 Wait for the following screen to appear on the Pro-Link GRAPHIQ™:

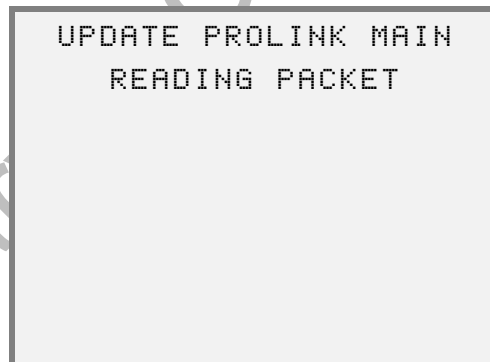


Figure 5.88 Update Pro-Link Message

- 8 On the PC's screen: click **Download** on the **Update Utility** window.

- The screen indicates, “Downloading ROM”, then displays the **Update Complete** screen; click **OK**.
- Pro-Link GRAPHIQ™ displays the following screen:

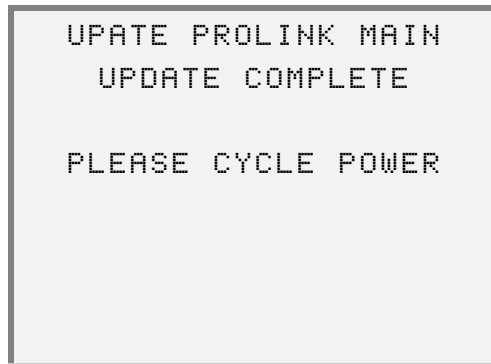


Figure 5.89 Update Complete/Cycle Power message



If you see the message, “Update timed out”, click **OK** to close the message box, then specify a different Comm port, as follows:

- On the Update Utility screen, click **Setup**.
- On the Comm Setup screen, click on the drop-down box and select a different port; click **OK** to close the Setup screen.
- Repeat Step 8.


Chapter 6

Additional Features



- ▼ *Freezing Data List Lines, page 108*
- ▼ *Graphing Data, page 110*
- ▼ *Viewing Individual Parameter Historical Data, page 112*


This chapter provides detailed instructions for setting up the Pro-Link GRAPHIQ™ and for using each of its features.

 *If at any point, you receive an “out of memory” error, clear the memory by removing then re-inserting the application card.*





Freezing Data List Lines

View specific parameters grouped together by “freezing” lines of parameters within a Data List, without having to scroll the list.

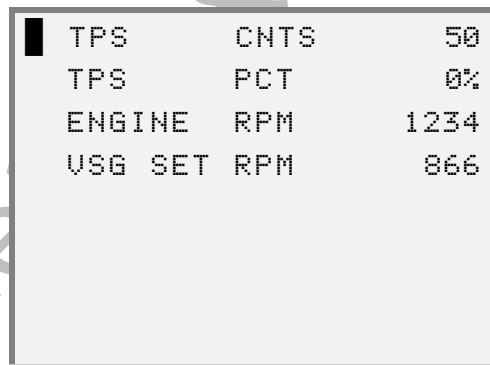
NOTE:

 This feature is available only for systems running on MPC software version 3.x. Refer to “Determining the MPC Software Version”, on page 32 to see if this feature can be used with application you are currently using.

To freeze data list lines:

- 1 Be sure that the desired Data List is in view.
- 2 Use the  or  key to scroll the Data List.
- 3 When the first item you want to freeze appears on the first line of the display, press  then .

A black square appears to the left of the parameter, indicating that it is frozen.










	TPS	CNTS	50
	TPS	PCT	0%
	ENGINE	RPM	1234
	USG SET	RPM	866

Figure 6.1 Sample Data List showing Line Freezing



- 4 Freeze additional lines, as desired, using the  and the numeric key corresponding to the line that you are freezing ( +  for the second line,  +  for the third line, and so on).

As you scroll the data list, the frozen data lines remain in position (data lines that are not frozen scroll normally).

NOTE:

 Freezing data does not impact the value of the parameter. Therefore, if a parameter's value changes while it is frozen, the display updates to reflect the change.

To unfreeze a single line:

- » Press the numerical key corresponding to the line you want to unfreeze. *For example*, if the third line is frozen, press  + .


The square disappears and the line scrolls normally.

To unfreeze the entire display at once:

- » Press the  +  key. All squares disappear and all lines scroll normally.


Graphing Data

NOTE:



 This feature is currently supported only by application cards with Part Numbers beginning with 804XXX.

Use the **GRAPH** key to view parameter values from a Data List presented in a line graph. By default, the graph view shows the first four parameters currently in view (on the Data List screen).

NOTE:

 To specify which parameters appear in graph view at once, follow the instructions provided under “Freezing Data List Lines”, on page 108, then proceed with the instructions provided below.

To graph data:

- 1 Be sure that the Data List containing the desired parameter(s) is in view.
- 2 Use the  or  key to scroll to the parameter that you wish to graph, then press the **GRAPH** key.

The display switches to graph mode.

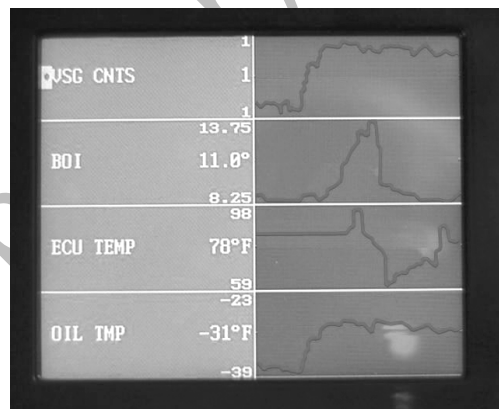




Figure 6.2 Sample Graph screen

- The left side of the screen shows the parameter names, along with the minimum, maximum, and current values for each.
- The right side of the screen shows a graph, representing the values of each of the currently viewed parameters.

NOTE:

“N/A” indicates that graph mode is not applicable to that parameter.

- 3 Use the  or  to scroll through the display and view the displayed parameter values in graph mode.
- 4 To exit the graph screen and return to the Data List, press the **GRAPH** key.
- 5 To return to the Data List menu, press **FUNC**.


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Viewing Individual Parameter Historical Data




Use the following procedure review the value of a specific parameter at a regular time increment.

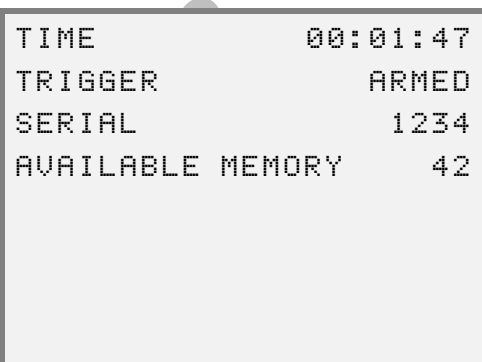
For example, you can check the value of a given parameter every two seconds.

NOTE:

 To view or print history for a *series* of parameters, refer to the “Snapshot” section (in Chapter 5) corresponding to the system software version you are currently running. Refer to “Determining the MPC Software Version”, on page 32 if you do not know which version is being run.

To check a parameter’s value at a regular time increment:

- 1 Access the Data List containing the parameter that you wish to monitor.
- 2 Press the  or  key to scroll to the desired parameter.
- 3 Press the  key to access the **MPC Information** screen.



```
TIME          00:01:47
TRIGGER       ARMED
SERIAL        1234
AVAILABLE MEMORY  42
```

Figure 6.3 Sample MPC Information screen





- 4 Press the  or  key to scroll to the **TIME** field (if necessary) and press . The following screen appears:





Figure 6.4 Sample Time Increment Entry screen

- 5 Use the number keys to enter the amount of time, in milliseconds, that you wish to increment the display; press .

For example, 5000 milliseconds shows the value of the parameter every 5 seconds (1000 is the default).







The display returns to the **MPC Info** screen (Figure 6.3, page 112).

- 6 Press and hold in the  key; then press . The cursor changes to two vertical lines, indicating that the display is in pause mode.

NOTE:






Although the display pauses, the system is still active.


- 7 Step through the parameter's value changes, as desired:
- To step *backward*, hold in the  key, then press .
 - To step *forward*, hold in the  key, then press .
- 8 Press  to return to the Data List; press  to return to the **MPC Information** screen.



—To see the parameter's value at a different time increment, repeat Steps 4 - 8.

If a value remains the same for several increments and you wish to jump directly to the time it changed:


—Return to the Data List; hold in the  key and press  or  (depending on whether you are moving forward or backward through the parameter's history).

The parameter displays the updated value.

—Press  to see when the value change occurred.

- 9** To exit pause mode, press . From the **MPC Information** screen, press  again.

The cursor returns to its normal state and the millisecond position in the **Time** field disappears.

- 10** Press  to return to the Data List.

Appendix A

Warranty & Service



- ▼ *Exclusive Warranty, page 116*
- ▼ *Exclusive Remedy, page 117*
- ▼ *Return Materials Authorization (RMA), page 118*
- ▼ *Return of Goods Policy, page 120*

This appendix provides warranty and service information.

Proprietary & Confidential

Exclusive Warranty

Pro-Link GRAPHIQ™ is warranted for a period of one (1) year from the date of purchase to be free of defects in materials and workmanship and to be merchantable and fit for its intended purpose.

All cables, adapters, and connectors are warranted for a 90-day period.

All warranties are null and void if, after shipment, the product is altered or modified for any reason by anyone other than NEXIQ Technologies, or is mis-used or abused. No warranty, express or implied, lasts beyond one (1) year from the date of purchase. There are no oral warranties of any kind.

Proprietary & Confidential

Exclusive Remedy

The sole remedy for breach of warranty or any other obligation (including and arising out of statute or regulation, strict liability, negligence or the law of torts) is repair or replacement of defective parts by NEXIQ Technologies or, at the option of NEXIQ Technologies, refund of the purchase price. This is the exclusive remedy. ALL LIABILITY OF NEXIQ Technologies FOR CONSEQUENTIAL OR OTHER DAMAGES IS EXCLUDED AND DISCLAIMED. In no event shall the Buyer be entitled to damages for lost profits, down time, attorney fees, or business, economic, or commercial loss or damage of any kind. Action on any claim must be commenced within one (1) year after the cause of action has accrued.

Proprietary & Confidential

Return Materials Authorization (RMA)

Warranty service is obtained by returning the product (shipping charges prepaid), along with proof of price and date of purchase to the following address:

NEXIQ/NNT Technologies
2329 East Walton Blvd.
Auburn Hills, MI 48326
Attention: Product Service/Repair Department

During the warranty period, NEXIQ Technologies will, at its option, repair or replace the product which proves to be defective or, refund the purchase price.

Customers MUST obtain a RMA number before repair items are sent in for service. This is for warranty and non-warranty repairs as well as rework services.

To obtain a RMA number, please call **(800) 639-6774** and then enter **option 3**. This option transfers your call to the Product Service department where either the Production Associate or a Technician will troubleshoot the issues the customer is experiencing. If there is an issue that cannot be handled during the phone conversation, the customer will be given an authorization (RMA number) to return the unit. You will be asked by the NEXIQ/NNT associate for your company name, address, phone number and main contact source. Your issue will be documented under the RMA number given and linked to your company's information.

NOTE:



It is required that the RMA number be written on the outside of the box in large, bold print.

Return the unit(s) to the NEXIQ/NNT Location at:

NEXIQ/NNT Technologies
2329 East Walton Blvd.
Auburn Hills, MI 48326
Attention: Product Service/Repair Department

In addition, we request that you include a business card or your name and phone number INSIDE the box so we can contact you if there are any repair costs. Any package sent in for the Product Service department that does not have a RMA number on the outside of the box WILL BE REFUSED and returned to the sender, unopened.

If necessary, payment information will be obtained for NEXIQ/NNT to cover the cost of services while on the phone and a copy should be returned with the items coming in for repair/rework. Payment needs to include shipping and handling charges. (This is for non-warranty and rework charges).

The customer is responsible for shipping and handling charges on non-warranty repairs and non-warranty rework. With all warranty repairs, NEXIQ/NNT is responsible for the shipping costs of the return to customer.

Proprietary & Confidential

Return of Goods Policy

Thank you for your NEXIQ/NNT purchase. Please inspect your order for accuracy and for damage during the shipping process. If you did not receive your entire order or your order has not arrived in excellent condition, please contact the Customer Service Department at **(800) 639-6774, option 1** within 30 working days of receipt. If NEXIQ/NNT receives the request for return AFTER 30 DAYS, a 15% restocking fee will be issued. Upon inspection and approval of the returned products, credit will be issued. Any damaged or missing parts will be deducted from the final credit total. NO RETURNS ARE ACCEPTED WITHOUT AN RGA (RETURN GOODS AUTHORIZATION) NUMBER. Customers are responsible for return shipping charges.

Proprietary & Confidential

Return Goods Authorization (RGA) Procedure

RGA numbers are issued for any item that needs to be returned due to an incorrect shipment or credit adjustment.

Customers MUST obtain a RGA number BEFORE returned items can be returned to NEXIQ/NNT. Any package sent into NEXIQ/NNT that does not have a RGA number on the outside of the box WILL be refused and returned to the sender, unopened.

To obtain a RGA number, please call **(800) 639-6774** and then enter **option 1**. This option transfers your call to the Customer Service department. Please be prepared to provide the following information:

- Company Name and Contact Name
- Company Address
- Phone Number
- Where the unit was originally purchased
- Purchase order number
- Packing Slip Number

NOTE:



NEXIQ/NNT will accept the return of any product, HOWEVER, if the unit is damaged or items are missing, deductions will be made to the final credit amount. ANY ITEM THAT IS OBSOLETE OR DETERMINED TO HAVE NO VALUE WILL NOT RECEIVE CREDIT.

Once authorization for the return is given, it is required to have the RGA number put on the outside of the box in big bold letters and numbers.

Return the unit(s) to NEXIQ/NNT Location at:

NEXIQ/NNT Technologies
2329 East Walton
Auburn Hills, MI 48326
Attention: Returns/Quality Control Department

NOTE:



The customer is responsible for return shipping and handling to NEXIQ/
NNT.

Index

A

- application card
 - installing 18
 - removing 20
 - slot for 8
 - updating
 - Version 2.X 57
 - Version 3.X 101
- arrow keys 25

C

- cable ports
 - power/data 7
 - RS-232 Serial 7
- custom data list
 - Version 2.X
 - creating 46
 - Version 3.X
 - creating 76

D

- data recording. See MPC Utilities
- device configuration
 - application card slot 6
 - ID Tag 9
 - illustration of 6
 - keypad 6
 - LCD 7
 - MPC 8

F

- freezing data lines 108
- FUNC (function) key 25

G

- graphing data 110

H

- Hot Keys. See short-cuts

K

- keypad 8
 - navigation keys 24

L

- language
 - specifying 62
- Liquid Crystal Display (LCD) 7

See also Contrast Adjust

M

MPC Utilities

Version 2.X

- Contrast Adjust 49
- Custom Data List 46
- File Directory 49
- MPC Info 45
- Reset 56
- RS-232 Serial Port 34
 - printout 37
 - Terminal Mode 42
- Snapshot 49
- Terminal Mode 39
- Update PC Card 57
 - using 34

Version 3.X

- Contrast Adjust 100
- Custom Data List 76
- File Directory 97
- Format PC Card 97
- MPC Info 75
- Reset 100
- RS-232 Serial Port 63
 - printout option 66
 - Terminal Mode 72
- Snapshot 82
- Update PC Card 101
- Multi-Protocol Cartridge (MPC) 8
 - installing 12
 - removing 13

N

- navigation
 - using short-cuts 27
 - using the keypad 24
- numeric keys 26

P

- parameter data
 - freezing 108
 - graphing 110
- PC, connecting to a 21
- PCMCIA Cards
 - See application cards
- power sources, using alternate 15
- printer, connecting to a 21

S

short-cuts
 using 27
Snapshot
 printing a 54
Special Feature button 26

T

Terminal Mode 42, 72
 setting up 70
trigger
 arming a 50
 manually firing a 52

U

update, performing an 59, 104

user's manual
 conventions used 3
 overview 2
 specialized text 4

V

vehicle
 connecting to a 16

W

warranty information 116
 exclusive remedy 117
 Return Materials Authorization (RMA) 118
 Return of Goods (RGA)
 policy 120
 procedure 121