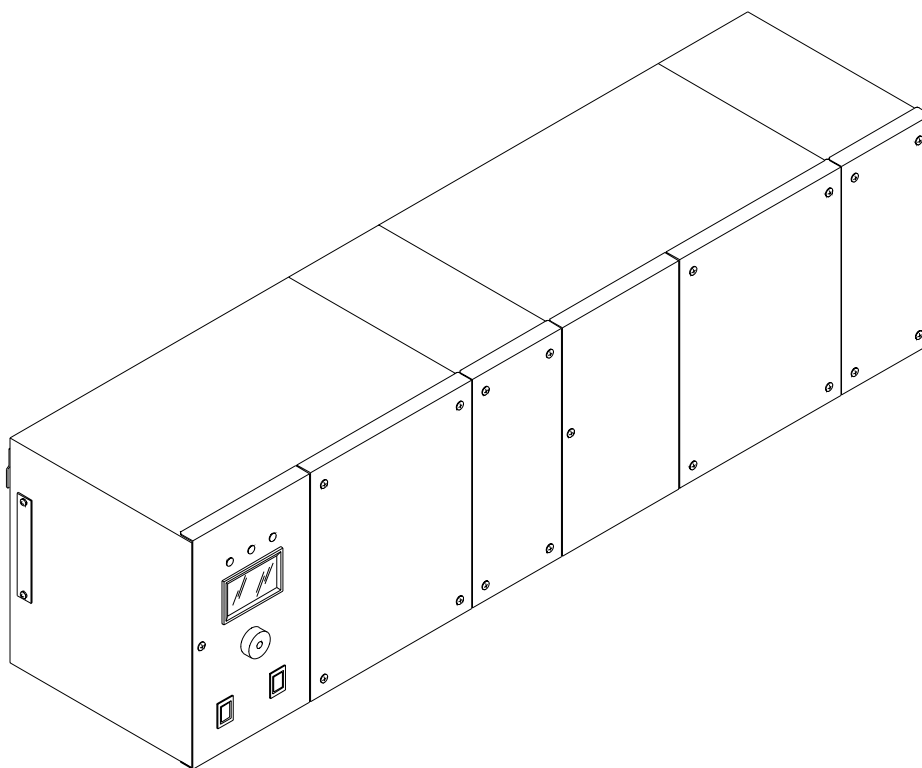




Main Data Chassis Installation Manual



ProLink Fuel Management System

RE260-205
Rev D
May '00

Prolink Chassis Installation Manual

RE260-205 Rev. D May '00

Certifications and Listings

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The Prolink has been approved by Underwriters Laboratories to carry the UL Listing Mark.

The Prolink has been approved by Underwriters Laboratories of Canada to carry the ULC Listing Mark.

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About This Manual

This preface describes the organization of this manual, explains symbols, typographical conventions used, and defines vital terminology.

Organization

This manual is organized into seven chapters and two appendixes:

Chapter 1:	Before You Start
Chapter 2:	Mounting the Prolink main data chassis
Chapter 3:	Additional Chassis
Chapter 4:	AC Connections
Chapter 5:	Relay Connections
Chapter 6:	Network Connections
Chapter 7:	Troubleshooting Guide
Chapter 8:	Pathway Plus Setup
Appendix A:	Prolink Installation and Configuration Worksheet Example
Appendix B:	Glossary of Terms
Appendix C:	Prolink Alarm Guide
Index:	

Typographical Conventions

Numeric Formats:	<p>A numeric zero looks like 0 in this document. An uppercase letter “oh” is rendered as O.</p> <p>A numeric one looks like 1 in this document. A lowercase letter “ell” is rendered as l. However, to prevent confusion, the abbreviation for milliliter includes a capital letter (mL).</p>
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Terminology

The following terms are used throughout this manual to bring attention to the presence of hazards of various risk levels, or to important information concerning use of the product.

DANGER!!

Indicates the presence of a hazard that **will** cause **severe** personal injury, death, or substantial property damage **if ignored**.

WARNING!

Indicates the presence of a hazard that **can** cause **severe** personal injury, death, or substantial property damage **if ignored**.

Caution

Indicates the presence of a hazard that **will** or **can** cause **minor** personal injury or property damage **if ignored**.

Notice

Indicates special instructions on installation, operation, or maintenance that are important but not related to personal injury hazards

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Chapter 1: Before You Start

This Chapter Explains:

- Intrinsic safety
- Installation DOs and DON'Ts

Intrinsic Safety Information

ATTENTION INSTALLER

READ THIS IMPORTANT SAFETY INFORMATION BEFORE BEGINNING WORK

Portions of this product will be installed and operated in the highly combustible environment of a petroleum product storage tank. It is essential that you carefully read and follow the warnings and instructions in this manual to protect yourself and others from serious injury, explosion, electrical shock, or death.

WARNING!	<p>All installation and programming of Red Jacket Prolink enclosures should be performed by factory trained personnel only. Before beginning any installation procedure, carefully read and understand all instructions.</p> <p>Failure to follow these guidelines can result in severe personal injury, death, or substantial property damage. Retain a copy of this manual on site with the Prolink enclosure system as required by EPA regulations in paragraph 40CFR 280.45. Installations must be in compliance with section 504, article 300 of the N.E.C.</p>
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Precautions must be taken in the installation of this product to limit power in the wiring to the fuel tanks and to keep that wiring physically separated from any other wiring (*intrinsically safe*).

All intrinsic safe wiring has to be routed through separate wireways and conduit from standard 120/240VAC wiring. Slot Dividers are required to ensure UL separation between intrinsically safe wires and standard 120VAC wiring.

Notice	It is your responsibility to maintain the effectiveness of the safety features by installing this product in accordance with the instructions and warnings that follow. Failure to do so could create danger to life and property and will result in voiding all warranties connected with this product.
---------------	--

Installation DOs and DON'Ts

WARNING!

Failure to follow these guidelines could result in severe personal injury, death, or substantial property damage.

DOs

The following list represents the DOs for installing the Prolink chassis. Please read through this list before beginning the installation.

- DO plan all conduit or direct-bury runs and contractor's box installations before mounting the Prolink enclosure.
- DO install the system to meet the National Electric Code(section 504, article 300); federal, State, and local codes; and any applicable safety regulations.
- DO disconnect all power before making final connections.
- DO connect all chassis and components to the same electrical phase.
- DO maintain intrinsic safety. Sensor wiring must be separated from all other non-intrinsically safe wiring. Install the safety tag on all intrinsically safe contractor's boxes.
- DO install all covers and access panels before operating this equipment.
- DO observe proper conduit access into the Prolink enclosure.
- DO mount the Prolink enclosure in a dry, climate controlled environment.
- DO install earth ground wire.
- DO hardwire the Prolink chassis to a dedicated, isolated power source.
- DO print the setup reports and store them on-site (after programming is complete).
- DO install a station ground rod (if one is not present) and verify that it is connected to the Pro-link main data chassis.

WARNING!

Failure to verify this ground connection **CAN** cause **SEVERE** personal injury, death, or substantial property damage

WARNING!

Failure to comply with these installation requirements will void product warranty.

DON'Ts

The following list represents the DON'Ts for installing the Prolink chassis. Please read through this list before beginning the installation.

- DON'T short circuit the power supply.
- DON'T handle the circuit boards of the Prolink chassis without proper grounding straps.
- DON'T mount the Prolink chassis in a hazardous area or a volatile, combustible, or explosive environment.
- DON'T allow unauthorized field service personnel to work on the internal circuits of the Prolink chassis. Unauthorized work will adversely affect the intrinsic safety of the system and void product warranty.
- DON'T drill any holes in the Prolink enclosure.
- DON'T run any other lines or power devices through the Prolink enclosure. The Prolink chassis is a low-voltage device.
- DON'T operate the system without all dividers, covers, and access panels installed.
- DON'T connect any components of the Prolink network to different electrical phases.
- DON'T hammer the cable into the sawcut.
- DON'T pull peripheral sensor wires more than 1,000 feet (300m) maximum from the Prolink chassis.

Chapter 2: Mounting the Prolink Main Data Chassis

This Chapter Explains:

- **The Prolink Main Data Chassis**
 - The Annunciator Panel
- **Wall-mounting the enclosure**

The Prolink Chassis

The Prolink main data chassis(or Prolink enclosure) serves as the universal enclosure for network cards.(See figure 2.1) Network cards are circuit boards which plug into the Prolink main data chassis and control various functions, such as monitoring inventory probes, peripheral sensors, relays, etc. It contains a power supply, an annunciator panel, and up to four network cards, all linked together via a backplane circuit board. Conduit knockouts are provided for all intrinsically safe and non-intrinsically safe wiring. The Prolink main data chassis is designed for the mating of multiple backplane circuit boards, with a built-in connector and screw mounts. Both flush mounting of adjacent chassis and independent location of additional chassis are allowed.

The Prolink main data chassis is equipped with conduit knockouts for AC power connection, network, and sensor cable routing. There are three conduit knockouts on the bottom of the power supply compartment, two conduits for AC wiring and a third for network cable routing. There are two conduit knockouts and a DB9 serial connector knockout under each network card slot.

The Annunciator Panel

The Annunciator panel (see figure 2.1) provides a common interface for the network cards installed on the Prolink main data chassis and serves as the archive for alarm and other system information. The Prolink main data chassis is shipped with an installed Annunciator panel, which includes user interface hardware required in common by the network cards, including a visual display, piezo and LED alarm indication, a reset button, and a quiet button to silence the piezo alarm. The following table describes each LED's meaning.

Green:	System Ok
Yellow:	System Warning
Red:	System Alarm

Notice

The front panel latches lock and unlock with a 90° turn. Attempting to turn them further will damage both the latches and the enclosure!

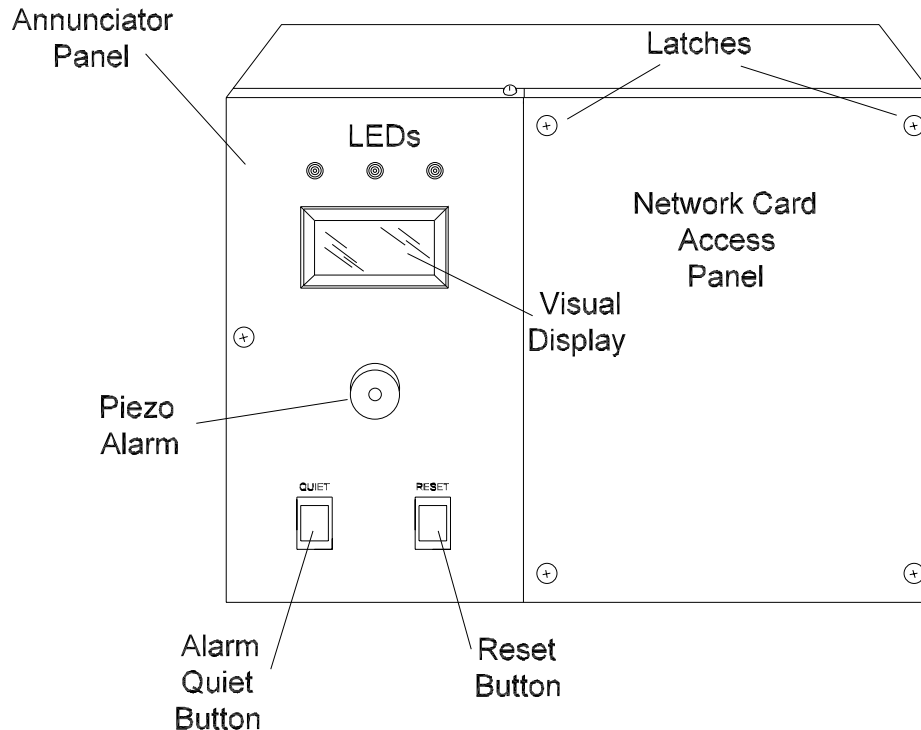


Figure 2.1 Front View of the Prolink main data chassis

Wall-mounting the Prolink Main Data Chassis

The Prolink main data chassis must be installed in an area classified as non-hazardous. (refer to **Chapter 1: Before You Start.**) The Prolink main data chassis must be installed in a climate-controlled environment that is immediately accessible to the owner and operator.

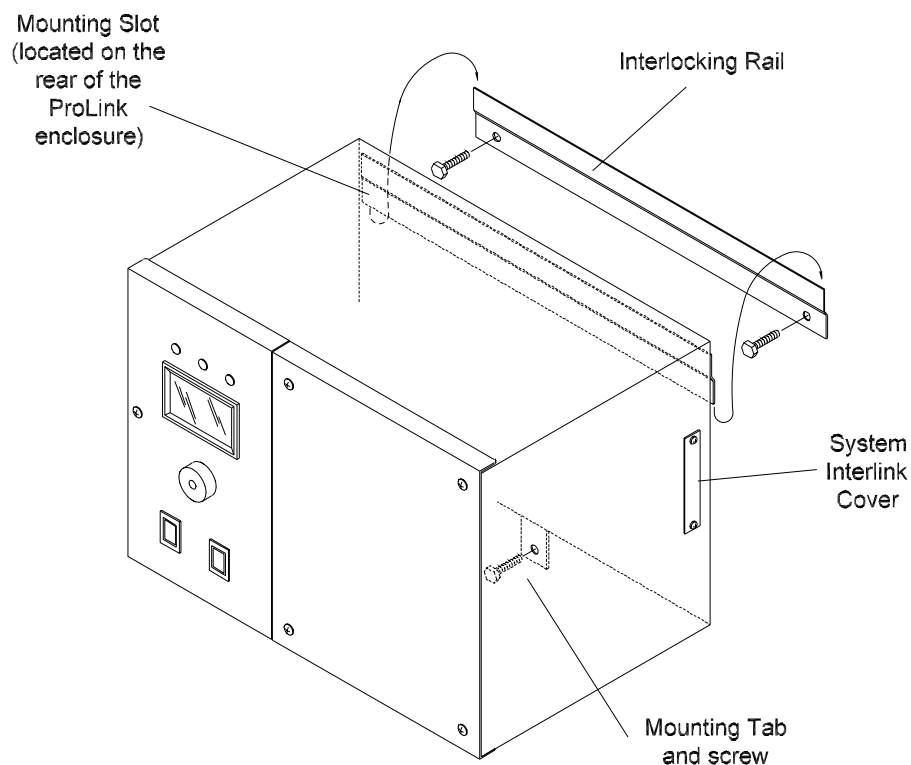


Figure 2.2 Hanging the Prolink main data chassis using the Interlocking Rail

- Step 1:** Install the Prolink main data chassis in a visible and accessible location in a dry, climate controlled environment.
- Step 2:** Install the Prolink main data chassis on an even, flat surface. If an uneven surface is being used, such as a brick wall, warped wall or uneven concrete wall, a sheet of plywood between the Prolink main data chassis and the wall may be used. This will prevent the enclosure from warping or twisting.
- Step 3:** Use a level to layout the mounting holes for the horizontal interlocking rail(s).

Step 4: Mount the interlocking rail(s) using the appropriate fasteners(contractor supplied), making sure that the open end of the slot is facing up. Use wall anchors if necessary.

Step 5: Hang the Prolink main data chassis on the interlocking rail. Install an appropriate fastener(contractor supplied) in the mounting tab on the bottom of the enclosure to lock it in place.

Chapter 3: Additional Chassis

This Chapter Explains:

- **Choosing an Add-on Chassis**
- **Connection Types**
 - Bus Connect
 - Adding a 2-Slot Add-on Chassis
 - Adding a 4-Slot Add-on Chassis
 - Cable Connections

Choosing an Add-on Chassis

The Prolink main data chassis has four slots for network cards. There are several optional configurations to add slots: a two-slot add-on, an additional 4-slot power chassis, or an additional 4-slot power chassis with its own two-slot add-on chassis. The Prolink system provides maximum flexibility in configuration patterns and can be set up as required for each individual site.

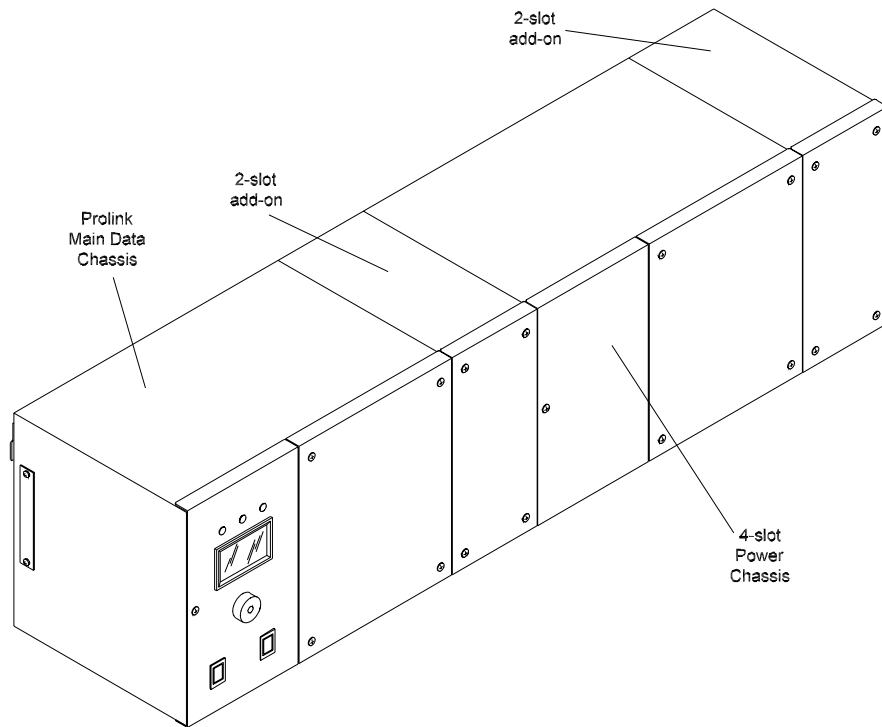


Figure 3.1 Add-on Possibilities Using Bus Connection

The built-in power supply in the Prolink main data chassis with an Annunciator can support a maximum of six network cards. This configuration consists of a Prolink main data chassis with a 2-slot add-on installed.

Notice

If more than six network cards are connected to a single Prolink power supply, the power supply will enter the overload mode and shutdown. This is indicated by the red LED on the lower left hand area of the power supply board being on.

It is possible to connect a 4-slot power chassis with power supply and 2-slot add-on to the Prolink main data chassis with its own 2-slot add-on. If this is the desired configuration, it is not necessary to run a separate electrical supply to the 4-slot power chassis, it will draw AC power from the Prolink main data chassis on the backplane circuit board. The 4-slot power chassis will be controlled by the AC on/off switch on the Prolink main data chassis power supply. (Make sure that the 4-slot power chassis AC on/off switch is set to ON.)

If more than 12 network cards are needed, additional 4-slot power chassis with power supplies must be purchased and installed separately. The 4-slot power chassis is available for use

as a secondary chassis. The 4-slot power chassis is not equipped with an annunciator panel, but provides all other functions of the Prolink main data chassis.

Notice

If more than two 4-slot power chassis with 2-slot add-ons are to be connected using the Bus Connect configuration, the additional 4-slot power chassis must be wired into their own dedicated isolated circuit.

Connection Types

There are two types of installation procedures, “Bus Connect” and “Cable Connect.” Bus Connect is used when add-on chassis are being directly connected using the interlocking rail system. The Cable Connect method is used when a space or distance constraint is present. When using the Cable Connect method the maximum distance between chassis is 1000 feet (300m).

Bus Connect

The Bus Connect method consists of mounting additional interlocking mounting rails to the right of the Prolink main data chassis and hanging additional chassis and/or 2-slot add-ons. These additional chassis are connected to the Prolink main data chassis backplane board using a backplane interconnect board. The backplane interconnect board is built into the backplane of the 2-slot add-on. See figure 3.2.

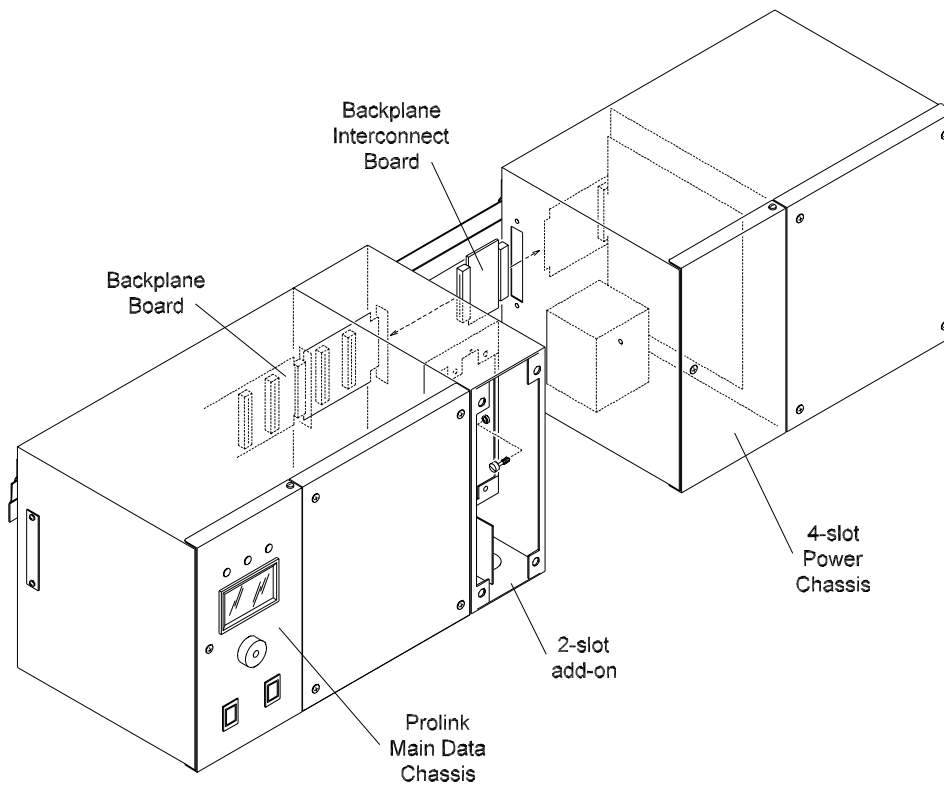


Figure 3.2 Connecting a 4-slot power chassis using the backplane interconnect board

Connecting a 2-slot add-on

Several types of add-on systems can be attached to the Prolink main data chassis, due to its modular design. The following procedure is used for the 2-slot add-on.

Step 1: Disconnect power from the Prolink system.

Step 2: Remove the System Interlink Cover, located on the right-hand side of the Prolink main data chassis. Refer to figure 3.3.

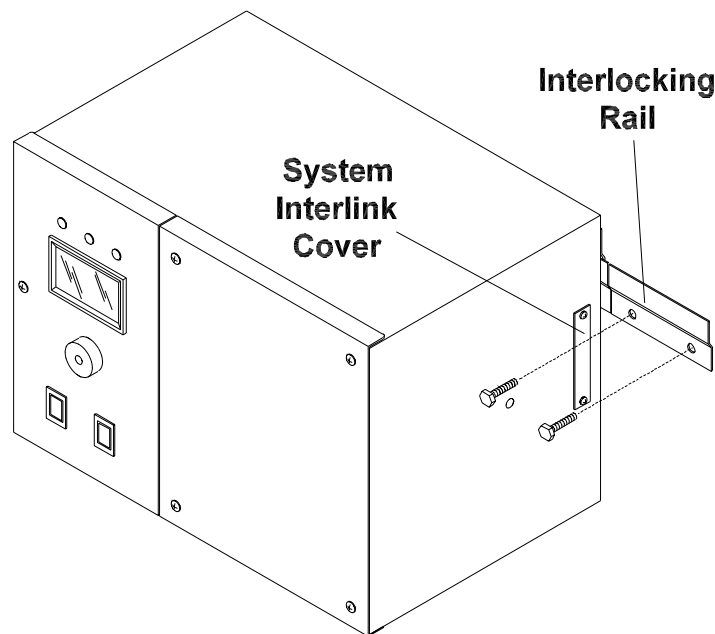


Figure 3.3 Removing the System Interlink cover and mounting the Interlocking Rail

Step 3: Remove the corresponding System Interlink cover from left hand side of the 2-slot add-on.

Step 4: Mount the provided interlocking rail end to end with the existing interlocking rail. Make sure they are both in-line and level. Refer to *figure 3.3*.

Step 5: Hang the 2-slot add-on on the second rail as shown in *figure 3.4*.

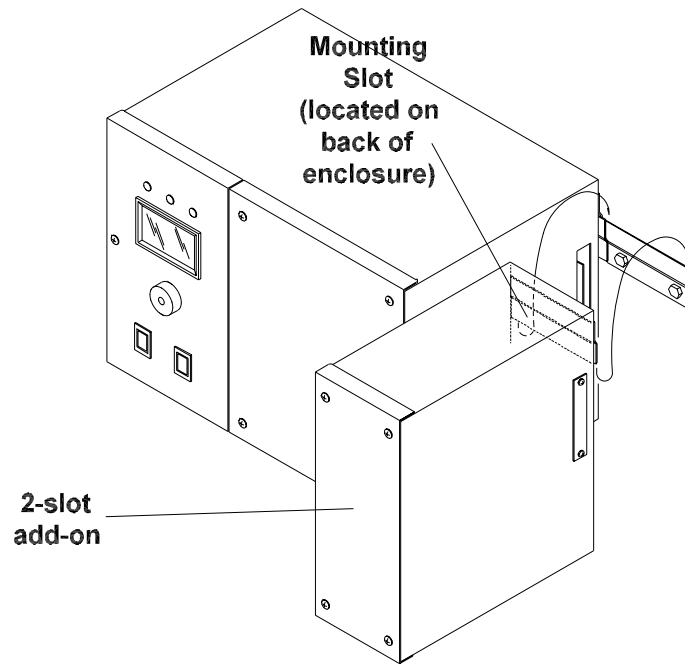


Figure 3.4 Hanging the 2-slot add-on on the Interlocking Rail

Step 6: Slide the 2-slot along the interlocking rail until the 2-slot add-on backplane connector mates with the Prolink main data chassis backplane board.

Step 7: Use the thumb screw provided to secure the two chassis together as shown in figure 3.5. Use the provided mounting screw to attach the chassis mounting tab to the wall.

Step 8: Re-apply power to the Prolink system.

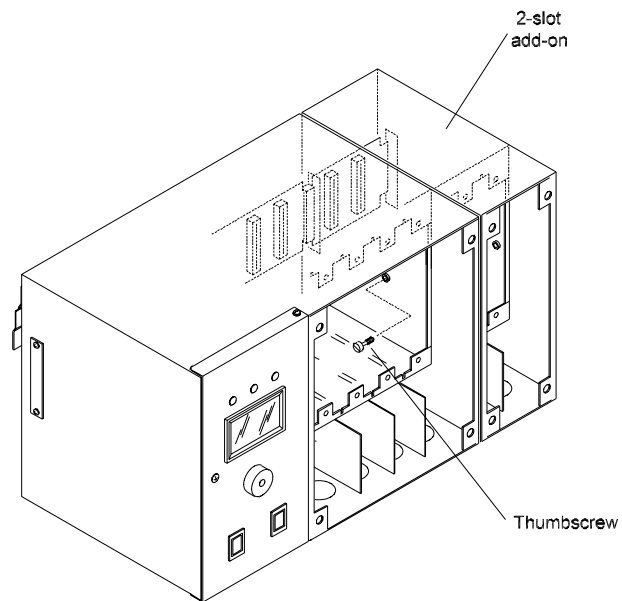


Figure 3.5 Securing the 2-slot add-on

Connecting a 4-Slot power chassis Bus Connect Configuration:

The following instructions should be used when installing a 4-slot power chassis.

Step 1: Disconnect power from the Prolink system.

Step 2: Remove the system inter-link cover, located on the right-hand side of the chassis. Refer to *figure 3.6*.

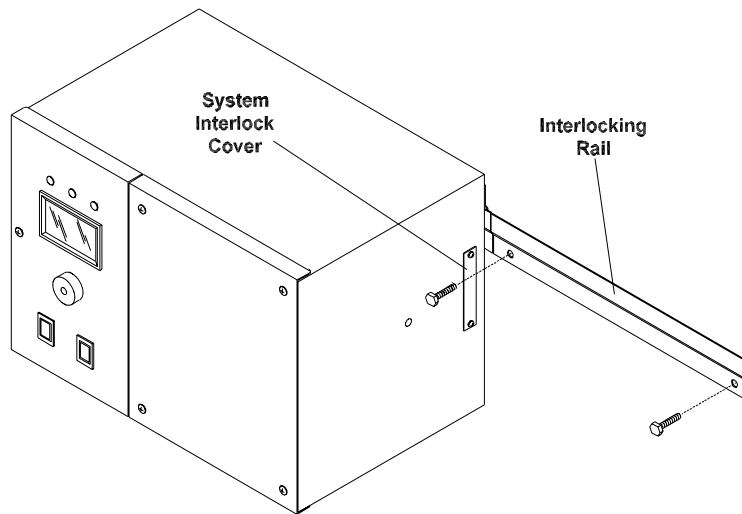


Figure 3.6 Removing the System Interlink cover and mounting the Interlocking Rail

Step 3: Remove the corresponding system interlink cover from the left hand side of the 4-slot expansion chassis. Open the left front cover and install the provided backplane interconnect board to the left end of the 4-slot power chassis backplane circuit board. See *figure 3.9*.

Step 4: Mount the provided interlocking rail end to end with the existing interlocking rail. Make sure they are both in-line and level.

Step 5: Hang the 4-slot power chassis on the second rail as shown in *figure 3.7*.

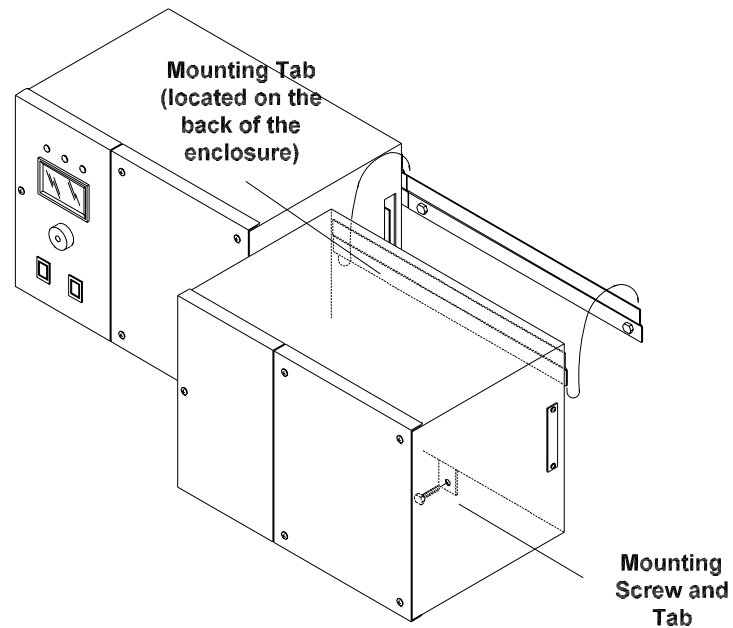


Figure 3.7 Hanging the 4-slot power chassis

Step 6: Slide the 4-slot power chassis along the interlocking rail until both ends of the back-plane connector board mate. See *figure 3.8*.

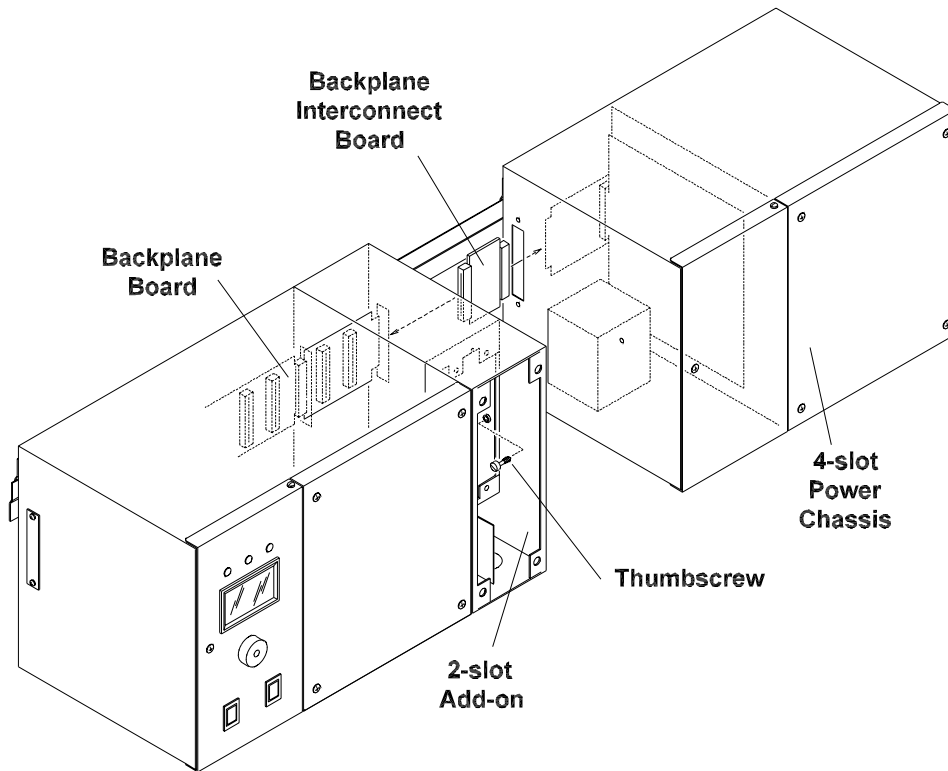


Figure 3.8 Connecting a 4-slot power chassis using the Backplane interconnect board

Step 7: Use the provided thumb screw to secure the two chassis together. Use the provided mounting screw to attach the chassis mounting tab to the wall.

Step 8: Re-apply power to the Prolink system.

Cable Connections

Sometimes add-on installations using the Bus Connection configuration (meaning one chassis butted up to another) are not possible due to space or distance constraints. Cable Connection installations allow you to connect the chassis together using a network cable. Maximum distance between chassis is 1000 feet (300m). The following instructions describe adding a 4-slot power chassis using the Cable Connection configuration.

For more detailed information on cable connection possibilities, see **Chapter 6: Network Connections**.

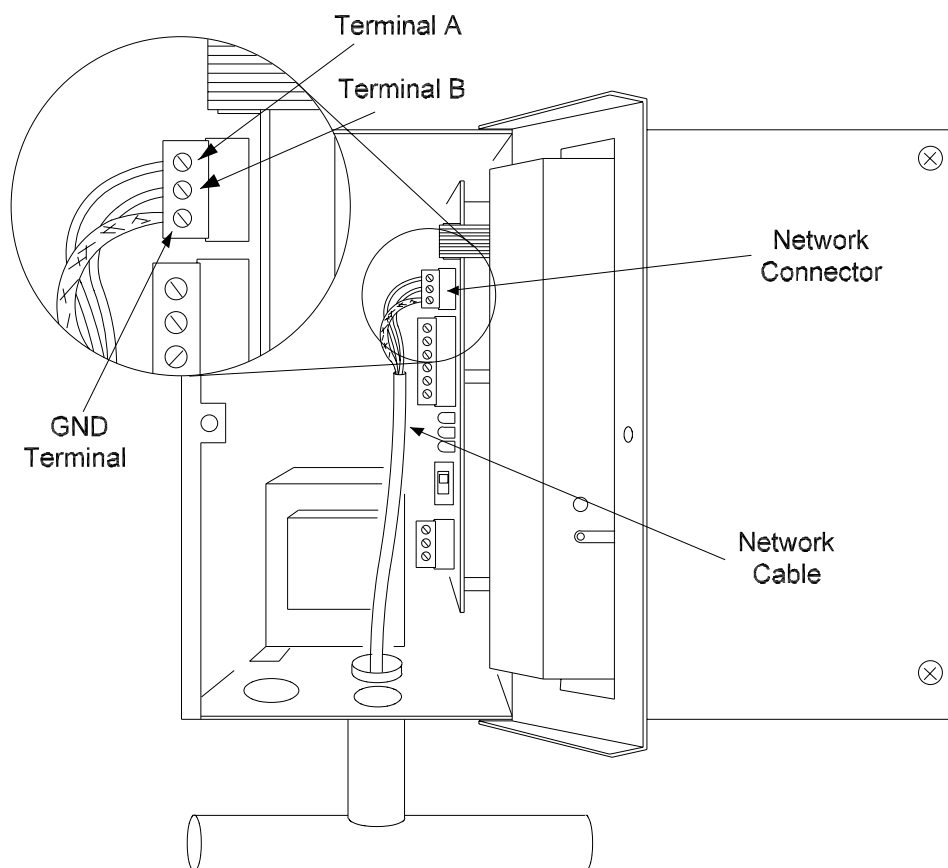


Figure 3.9 Cutaway of the Prolink main data chassis and network connections

Step 1: Connect the 4-slot power chassis to AC power following the instructions in **Chapter 3: AC Connections**.



Step 2: Connect the network cable conductors to terminals **A** and **B** on the network connector. This connection is not polarized. See *figure 3.9*.

Chapter 4: AC Connections

This Chapter Explains:

- **AC Power Connections**
 - Connecting 110VAC Power
 - Connecting 220VAC Power

AC Power Connections

The Prolink main data chassis contains a built-in dedicated AC power supply that operates on either 110 or 220VAC at 50-60 Hz. The default factory setting for the voltage selector switch is 110VAC. For 220VAC power connections, please refer to the section entitled **Connecting 220VAC Power**. If for some reason the voltage selector switch is in the 220V position, adjust it according to the instructions in the section **Connecting 220VAC Power**.

Caution

It is *extremely important* to make sure that the voltage selector switch is positioned correctly. If 220VAC power is applied to the Prolink with the selector switch in the 110VAC position, the power supply board will be *destroyed* with possible *injury* to the installer.

Connecting 110VAC Power

Before beginning the power connections please read “*Installation Do’s and Don’ts*” found in **Chapter 1**. While making AC connections, please refer to the instructions that follow *figure 4.1*.

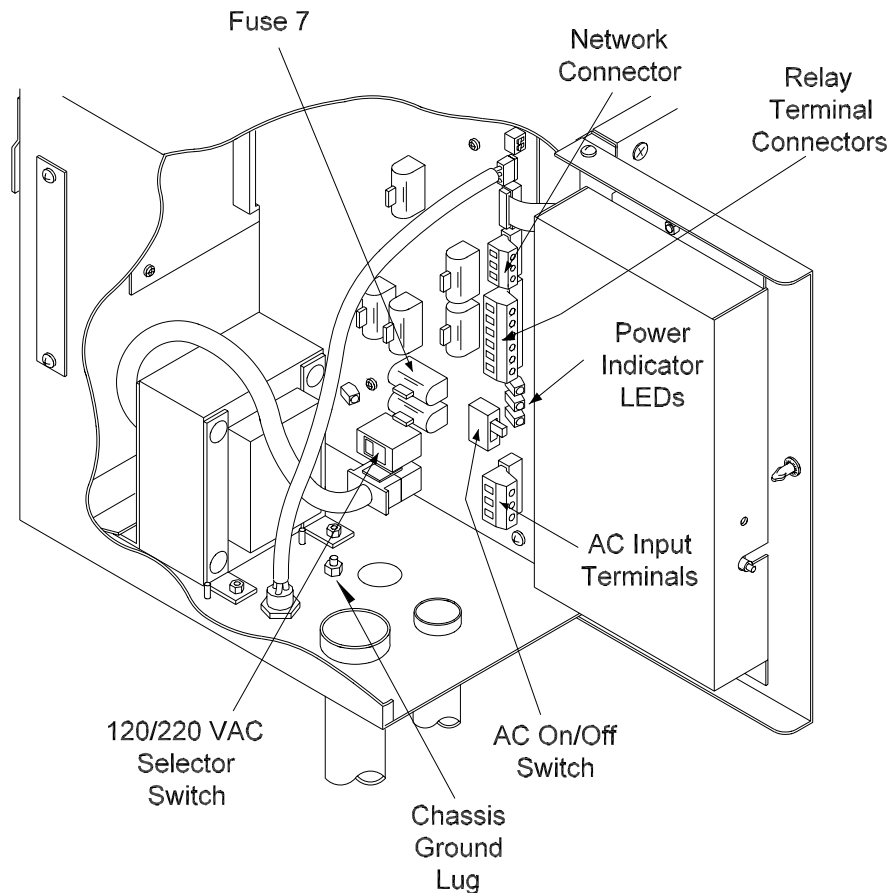


Figure 4.1 Cutaway of the Prolink main data chassis and detailed AC connection

WARNING!

Failure to disconnect Main Service Power to the Prolink main data chassis can cause severe personal injury, death, or substantial property damage if ignored.

Step 1: Disconnect Main Service Power.

Step 2: Make sure that the power supply circuit board AC On/Off switch is in the **OFF** position (Down). Refer to *figure 4.1*.

Step 3: In conduit, run a (3) conductor, minimum 16-gauge, gas and oil resistant cable from a **circuit breaker protected, dedicated isolated circuit** to the AC input terminals on the Prolink power supply circuit board. These terminals are marked on the circuit board underneath each terminal.

Step 4: Connect the appropriate wire to the **L1** terminal.

Step 5: Connect the appropriate wire to the **N** terminal.

Step 6: Connect the appropriate wire to the **GND** terminal, and to the chassis ground lug. Refer to figure 4.1 (For Canada installation only).

Step 7: Reconnect power to the circuit dedicated to Prolink. The AC Power LED (red) should now be lit. This LED indicates that AC power is available for the power supply.

Step 8: Slide the power supply circuit board AC On/Off switch to the ON position (UP). The Power On LED (green) should now be lit. This LED indicates that the power supply and circuit board are energized.

The third LED (yellow) should now be lit. This LED indicates that the low voltage section of the circuit board is energized. If this LED is not lit, refer to **Chapter 7: Troubleshooting Guide**.

Connecting 220VAC Power

Caution

It is *extremely important* to make sure that the voltage selector switch is positioned correctly. If 220VAC power is applied to the Prolink with the selector switch in the 110VAC position, the power supply board will be *destroyed* with possible *injury* to the installer.

The connections for single phase 220 VAC are the same as for 110 VAC. The only adjustment needed is to slide the voltage selector switch on the power supply circuit board to the 220 VAC position. This selector switch can be adjusted by using a small screwdriver to lever the switch from the factory default position of 110V to the 220V position. The switch must be completely positioned to one selection or the other, if the desired voltage can be seen on the switch face, the switch is correctly adjusted. See *figure 4.2* for location of switch.

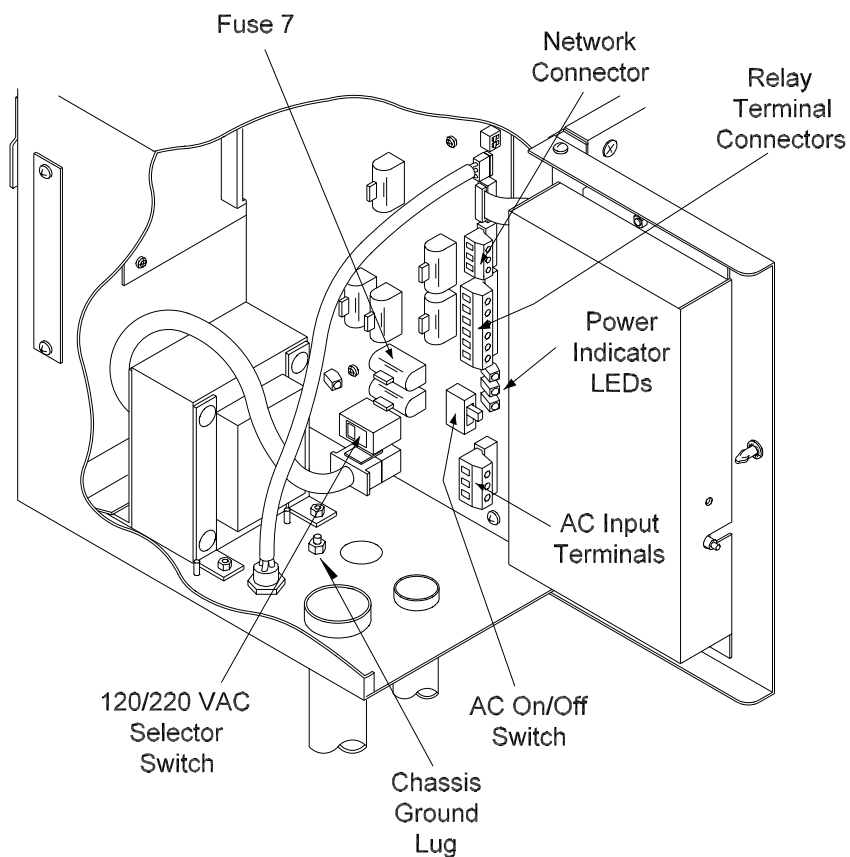


Figure 4.2 Cutaway of the Prolink main data chassis and detailed AC connection

WARNING!

DO NOT connect this unit to 220 VAC unless the 110/220 VAC switch is in the 220 VAC position!! Damage or Destruction of power supply circuit board will occur with possible injury to the installer.

Chapter 5: Relay Connections

This Chapter Explains:

- **Relay Description**
 - Basic Relay Applications
- **Connecting an external alarm**

Relay Description

There are two built in latching relays installed in a Prolink chassis. See *figure 5.1* for the location of the relay connectors. These relays can be programmed so that their normal state may be either normally open (**NO**) or normally closed (**NC**). *Figure 5.3* illustrates the relay contacts in the normally closed state.

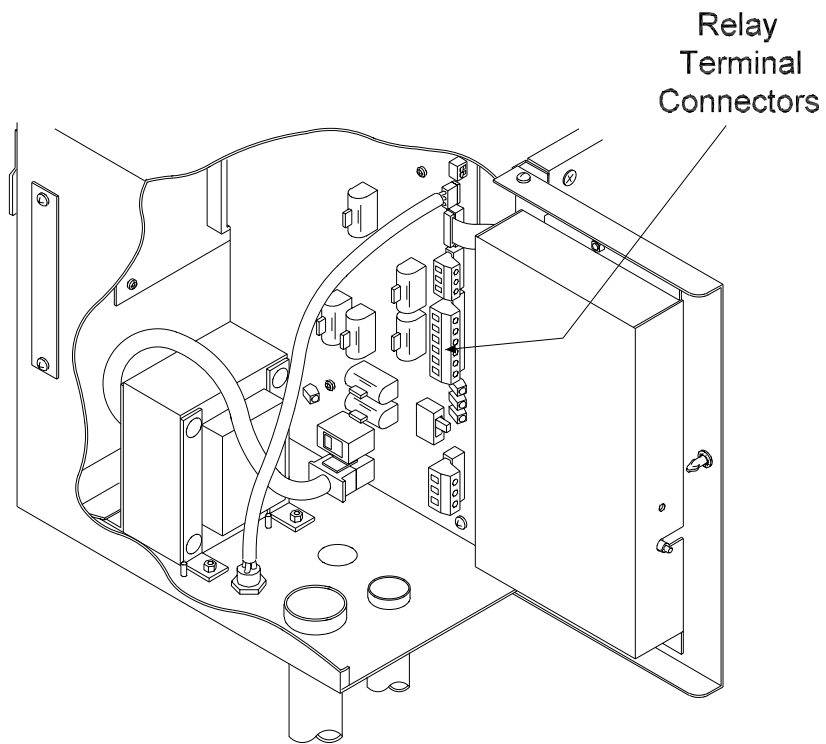


Figure 5.1 Relay terminal connector location

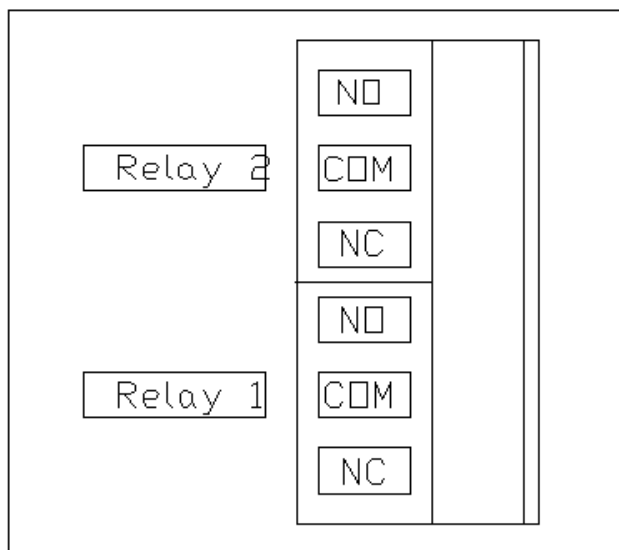


Figure 5.2 Prolink internal relay connector

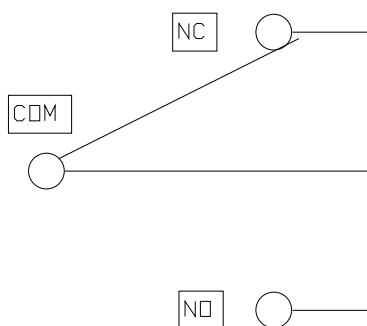


Figure 5.3 Relay contacts in the normally closed state

Basic Relay Applications

These relays can be used to switch on or off any customer selected electrical device as long as the relay maximum voltage and current ratings are not exceeded.

Relay Contact Maximum Ratings

5A 1/6 Hp 125VAC 625W
 5A 1/6 Hp 250VAC 1250W
 5A 30VDC 150W

Connecting the Optional External Alarm to a Relay

The Prolink system supports an optional external audible alarm to indicate when a hazardous condition such as an overflow has occurred. These installation procedures describe how to connect the optional audible alarm to one of the built in relays on a Prolink chassis.

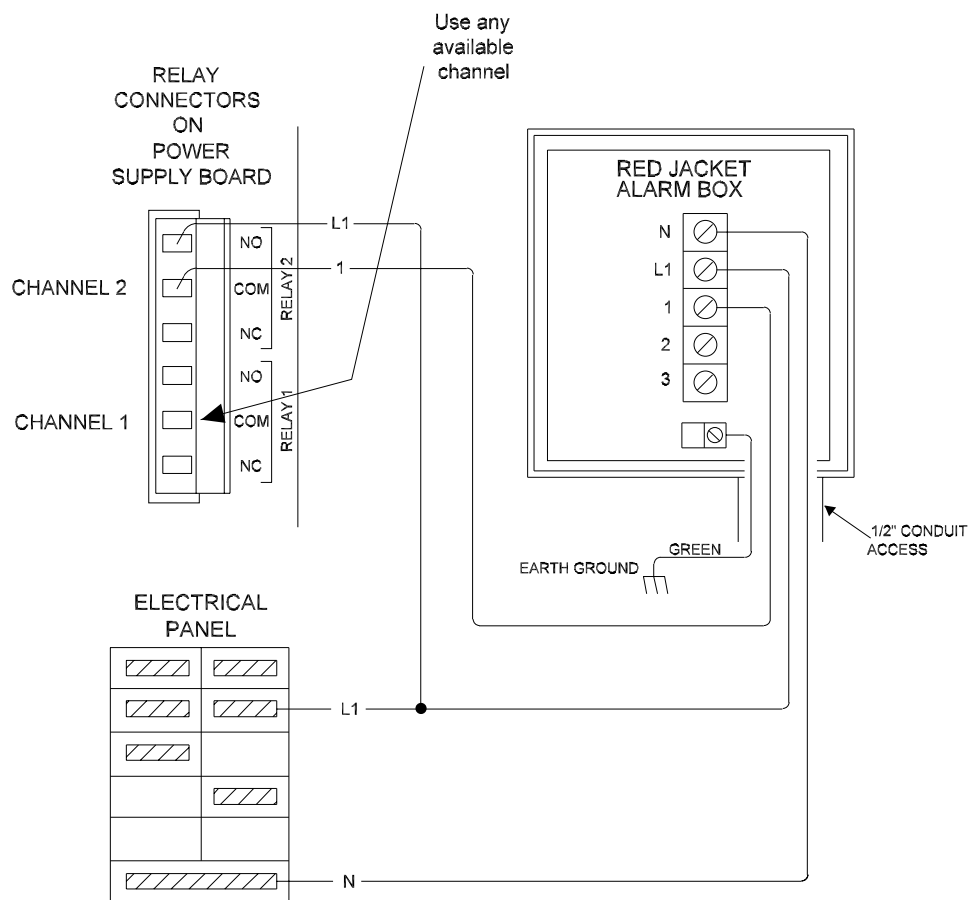


Figure 5.4 Wiring a built in relay to the external alarm box

Step 1: Install the External Alarm Box in the desired location. **Do Not** drill any holes in the enclosure. A factory supplied knockout is provided for a 1/2-in. conduit connection.

-
- Step 2:** Disconnect power from the Prolink chassis. Run three 16-gauge wires (in conduit) from the external alarm box.
- Step 3:** Run two of these wires **L1** and **1** (in conduit) into the Prolink chassis. See *figure 5.4*.
- Step 4:** Connect terminal **1** on the External Alarm Box to the common **COM** terminal on the selected relay channel **1 or 2** connector located on the Prolink power supply board. Refer to *figure 5.4*.
- Step 5:** Connect the (**L1**) wire from the electrical service panel to the normally open (**NO**) connector on the selected relay channel (**1 or 2**) located on the Prolink power supply board.
- Step 6:** Connect neutral (**N**) on the external alarm box to **AC neutral** on the electrical service panel.
- Step 7:** Connect **L1** on the alarm box to **L1** on the electrical service panel.
- Step 8:** Connect the green **GND** wire on the External alarm box to earth ground.
- Step 9:** Reconnect AC power to the Prolink chassis.

Chapter 6: Network Connections

This Chapter Explains:

- **Introduction**
- **Network Component Connections**
 - Modem to SLTA-10 network adapter
 - Network connections to the Prolink chassis
 - Network connections to the CPT Controller
- **Common Prolink network configurations**
- **Connecting to a Laptop Computer**
- **Prolink network overview diagram**
- **Network Topology**

Introduction

The Prolink network can be arranged in virtually any configuration. The various components of the network, Prolink chassis, network cards, CPT Controllers, and the Serial Link, are connected to each other by a two conductor network connection. This connection may be either a two conductor network cable or by way of the backplane board on a Prolink chassis.

This allows a Prolink network to be easily and economically customized for each individual site. For example, if more than one Prolink chassis is used by the network, it is not necessary to install them in the same physical location.

In the following sections, basic network component connections will be illustrated, along with samples of possible Prolink network configurations.

Network Configuration

The Prolink network is most commonly configured with single ended termination at the Prolink chassis. Termination is enabled/disabled and set to either single or double termination using the DIP switches located at the upper right hand corner of the Prolink power supply board. See *figure 6.1*.

Switch number 1 (lower switch) configures termination enable/disable. The default setting is the termination enabled position (switch positioned down toward the board). Switch number 2 (upper switch) configures single/double ended termination. The default setting is the single ended termination position (switch positioned down toward the board). See *figure 6.2*.

The default settings are configured for the most common applications. In most cases, no adjustment of the DIP switch settings will be necessary. *If a particular application requires a different setting, call Red Jacket Technical Support for information and instructions on how to correctly connect and configure the network.*

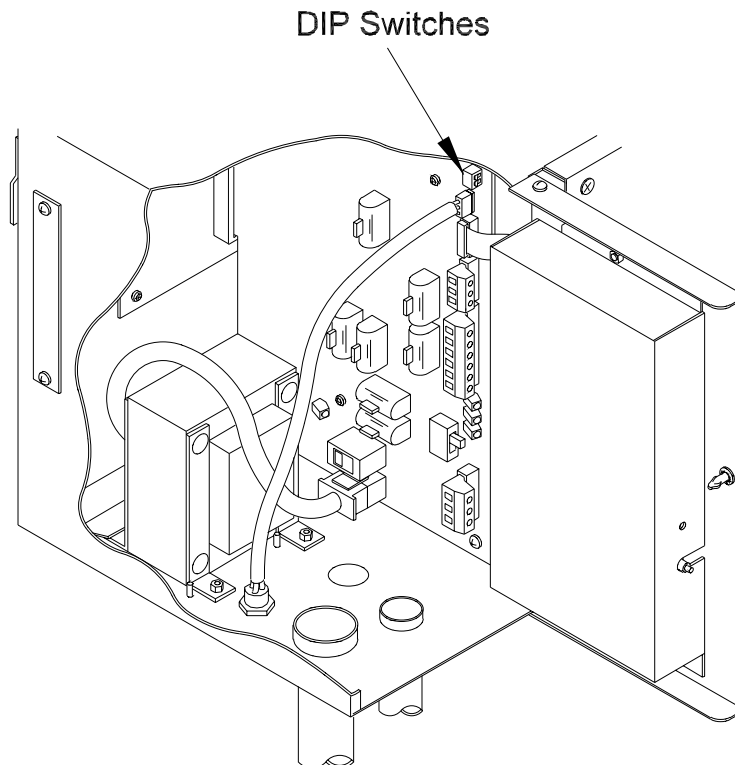


Figure 6.1 Prolink chassis DIP switch location

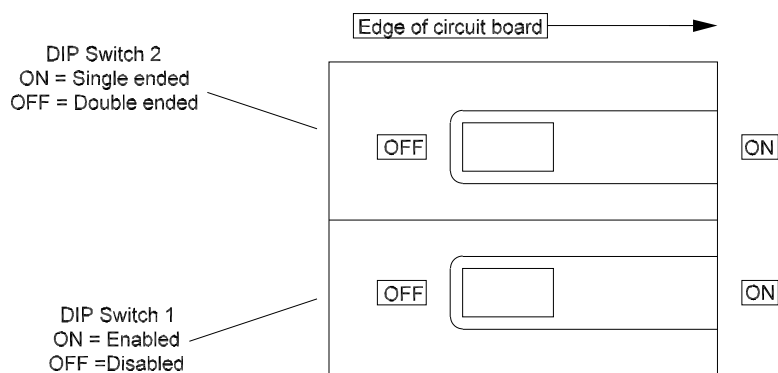


Figure 6.2 DIP switch configuration for network termination

Modem to SLTA-10 Network Adapter

These procedures should be followed whenever a Prolink network is being connected to the telephone system. The SLTA-10 network adapter is required for the Prolink network to communicate with a modem.

Step 1: Connect the modem to the telephone jack.

Step 2: Connect the modem and SLTA-10 network adapter using the Red Jacket SLTA-10 to modem cable.(See Parts List) See *figure 6.3*.

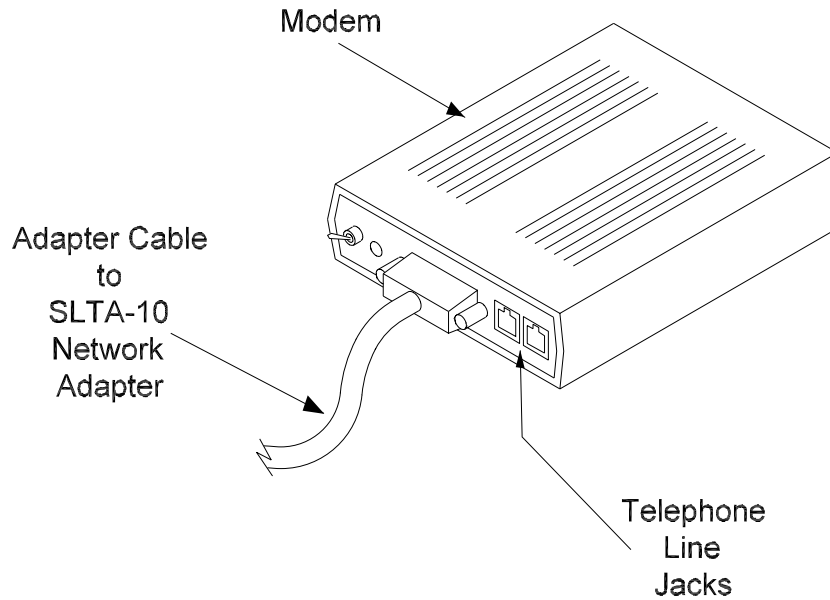


Figure 6.3 Modem connections

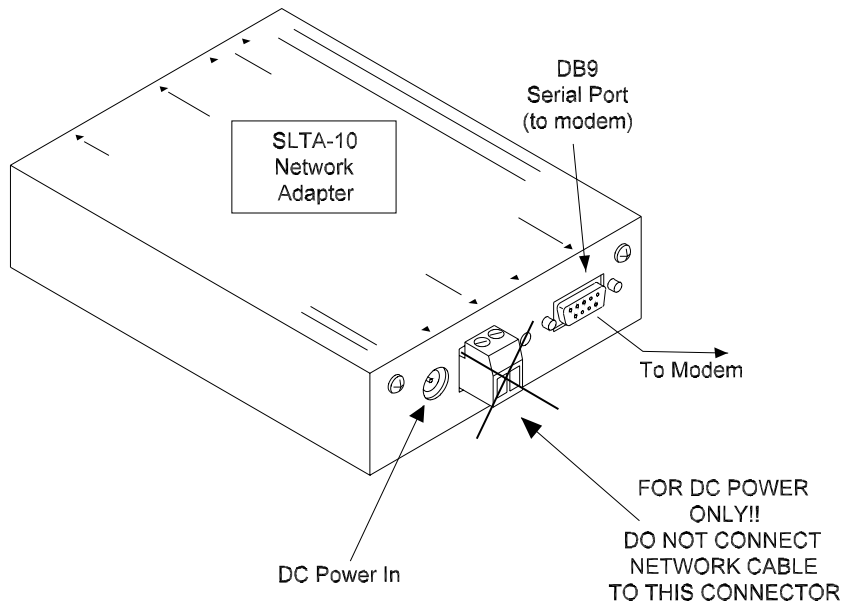


Figure 6.4 Modem to SLTA-10 network adapter connections

Step 3: Connect the two conductors of the network cable to the SLTA-10 network connector plug and install on the network terminals. See *figure 6.5*.

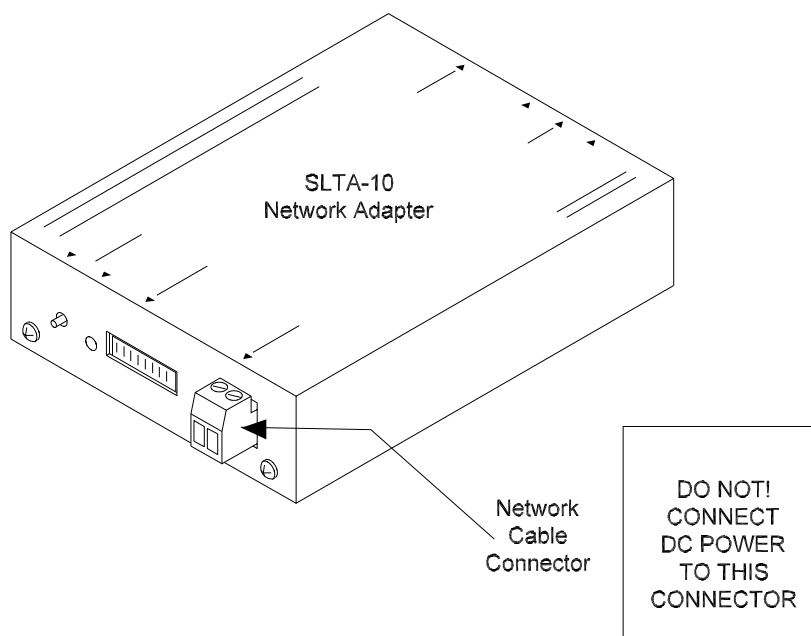


Figure 6.5 SLTA-10 Network connector

From this point, the modem and SLTA-10 network adapter can be connected to the network at any point. The most common connection is the network connector in the Prolink chassis. Follow the specific network connection procedures in the following sections according to which component of the Prolink network the SLTA-10 network adapter is being connected to.

Network connections to the *Prolink* chassis

Step 1: Route the network cable into the Prolink chassis through an unused knockout on the bottom of the enclosure.

Step 2: Connect the two network cable conductors to the network connector terminals **A** and **B** on the Prolink power supply board. See *figure 6.6*.

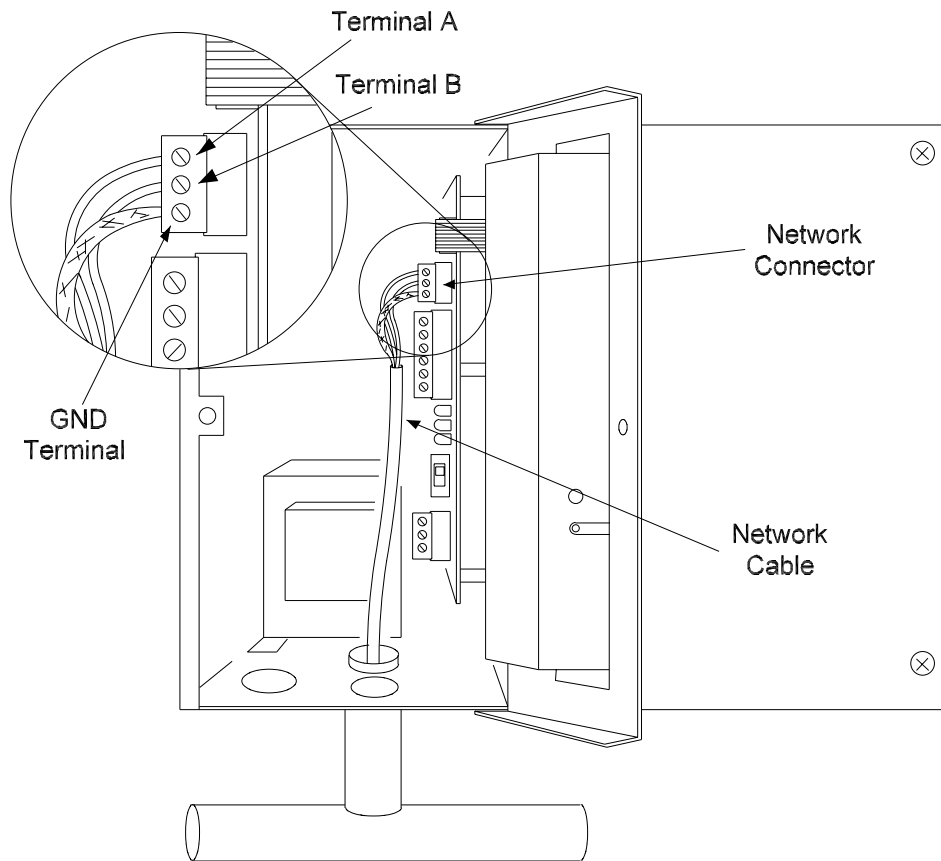


Figure 6.6 Network cable connections on the power supply board

Step 3: Make sure that the DIP switches on the Prolink power supply board are configured correctly for the specific application.

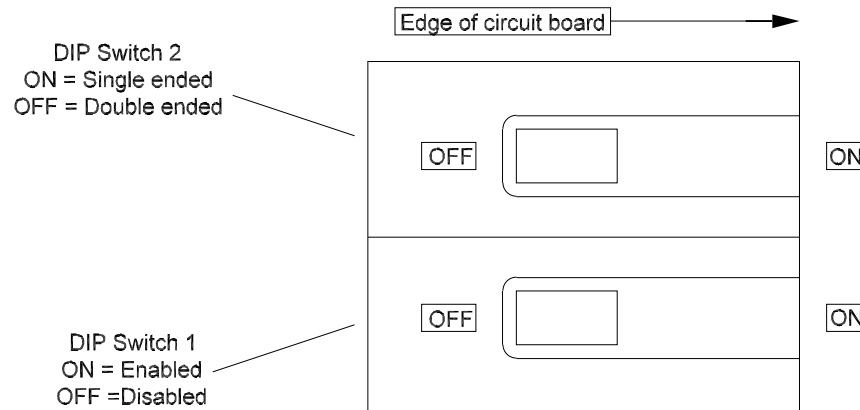


Figure 6.7 DIP switch configuration

NOTICE

If using multiple chassis, **DO NOT** set network termination in more than one chassis. Network wiring is non-polarized. That is polarity of network wires does not matter. Please use Red Jacket ProLink Network Cable RJ400-68-5 for network wiring.

Network connections to a CPT Controller

Step 1: Route the network cable into the CPT Controller enclosure through an open knock-out. See *figure 6.8*.

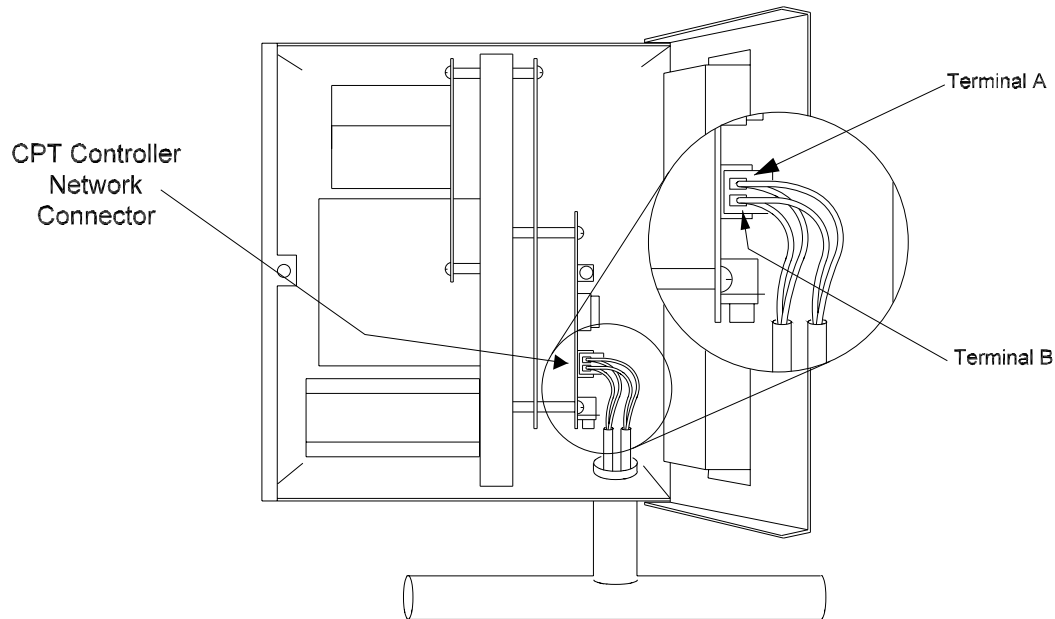


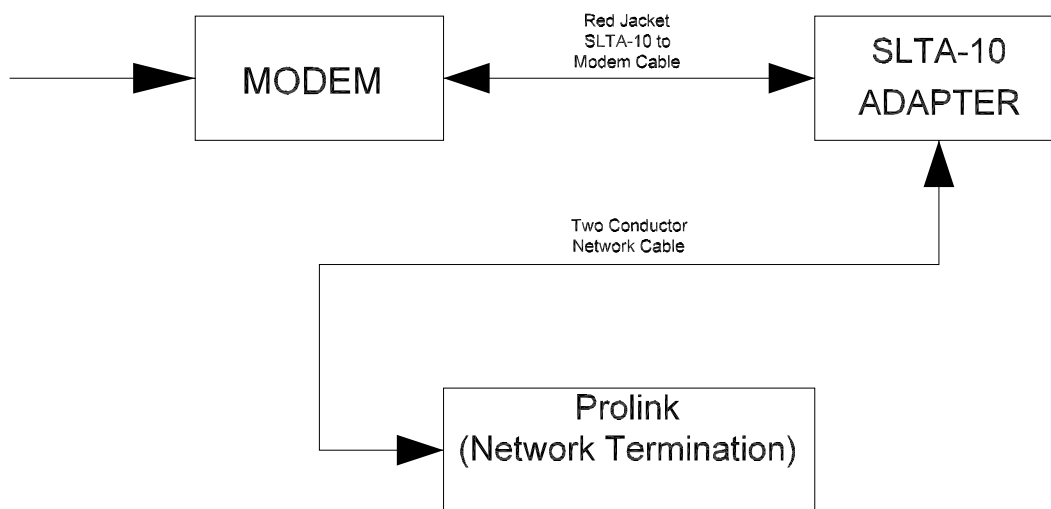
Figure 6.8 Network connections at the CPT Controller

- Step 2:** Strip the outer insulation from the network cable(s) (refer to parts list) approximately 1¼-in(32mm). Strip the inner conductors approximately ¼"(6.5mm). Take one conductor from each network cable, twist them together, and insert them into the CPT Controller network connector terminal **A**. Tighten the screw.
- Step 3:** Twist the second pair of conductors together and insert them into the terminal connector in the CPT Controller network connector terminal **B**. Tighten the screw.
- Step 4:** If another CPT Controller is being daisy chained and connected to the network, repeat steps 1–3.

Common network configurations

The following illustrations show the most common types of Prolink network configurations. See the following section: **Installation Steps for Network Connections** for detailed step by step instructions on specific network connections.

Basic Prolink Network



This is the simplest type of Prolink network. It consists of a modem, an SLTA-10 network adapter, and a Prolink chassis as the network terminator.

Figure 6.9 Basic Prolink network

Possible Prolink network configuration with modem, SLTA-10 adapter, CPT Controller (one or more), and Prolink chassis as network termination.

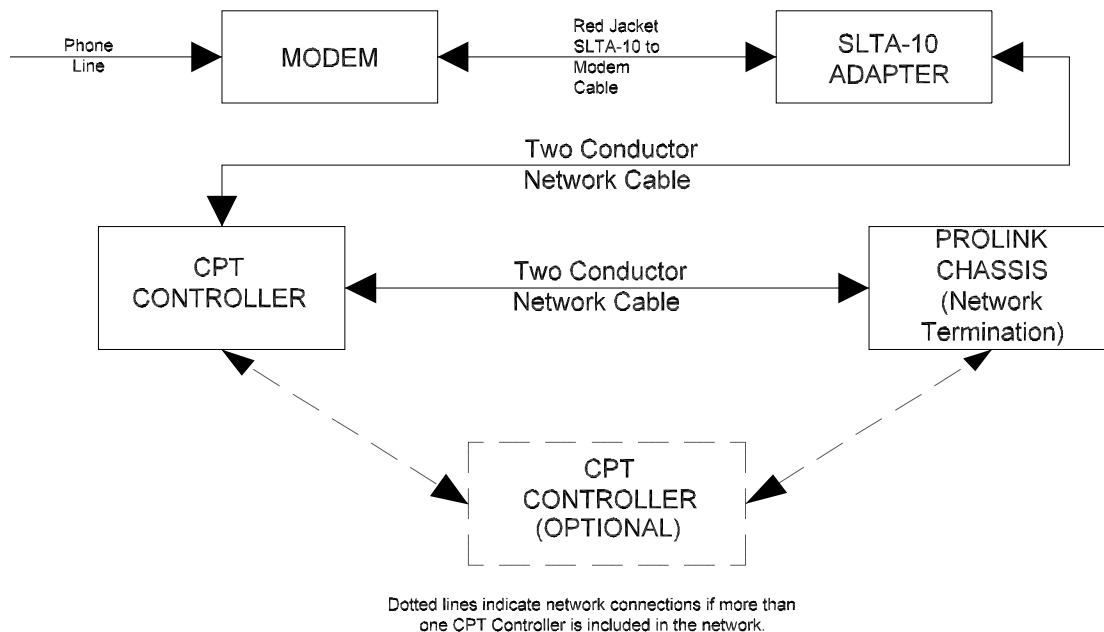


Figure 6.10 Prolink network with CPT Controllers

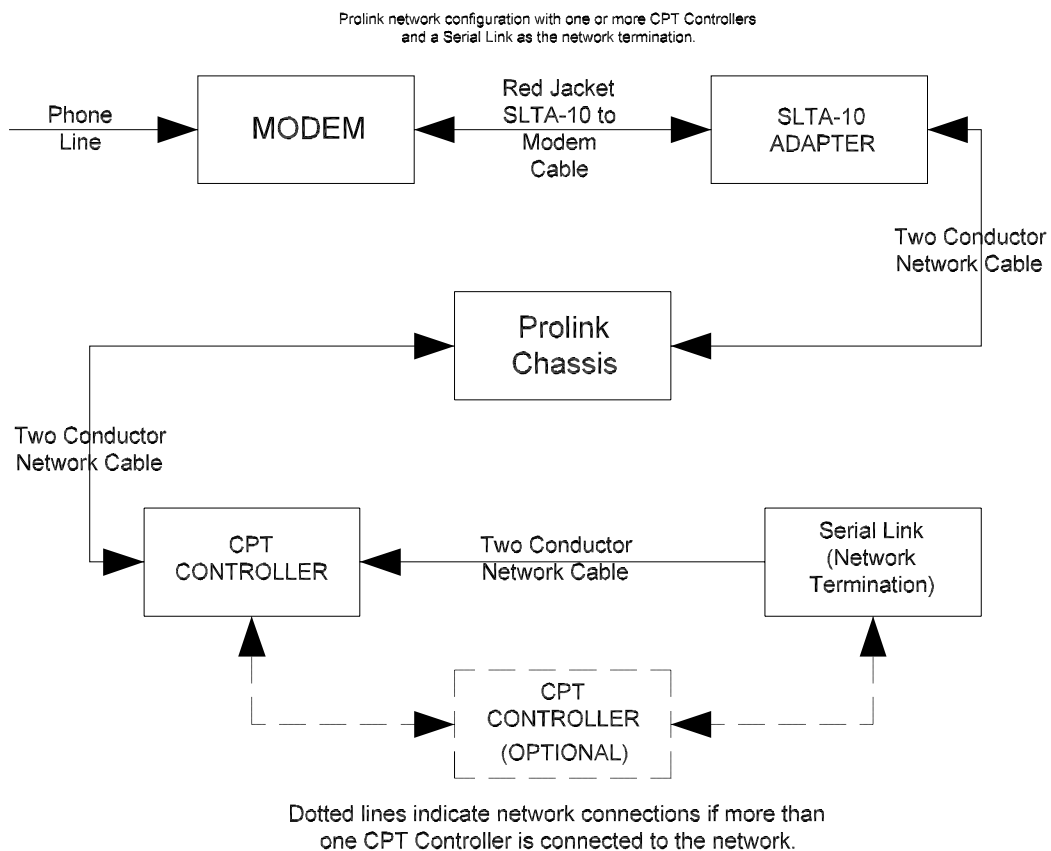


Figure 6.11 Prolink network with CPT Controller(s) and Serial Link

Connecting to a Laptop computer

Connecting a laptop computer to the Prolink network is done by plugging the PCC-10 to network cable into the PCC-10 network interface connector on the bottom of the Prolink chassis. This gives complete network access when running Pathway Plus on a laptop computer.

This application requires the PCC-10 PCMCIA network card and cable. (See Parts List)

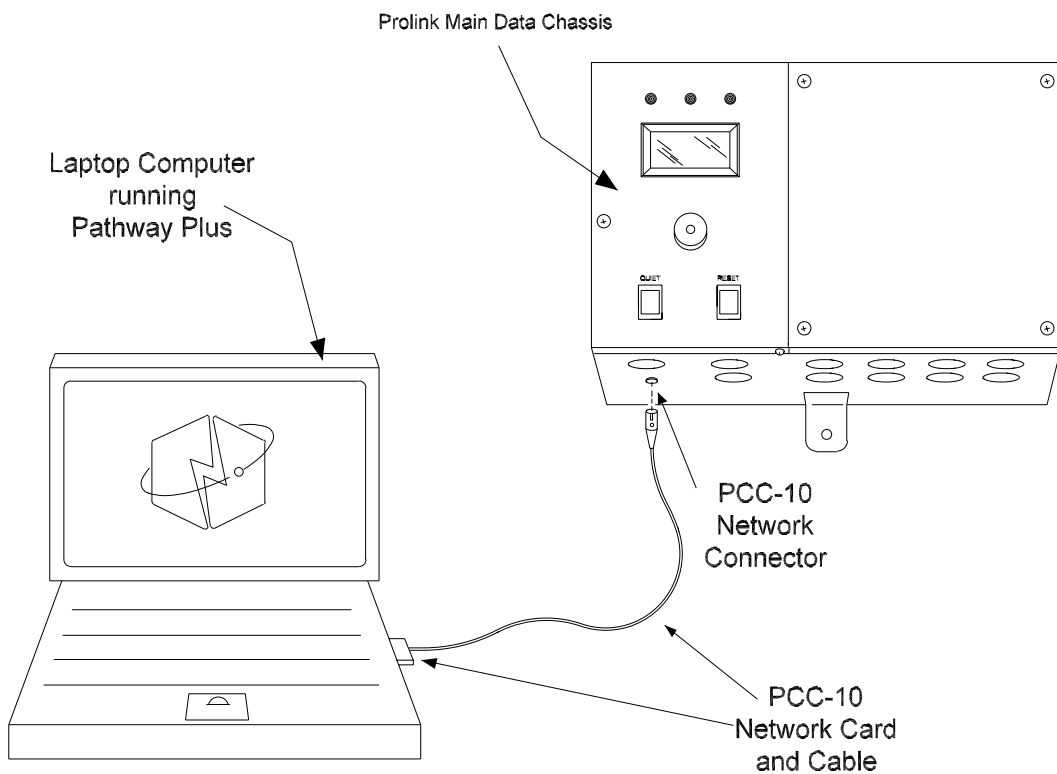
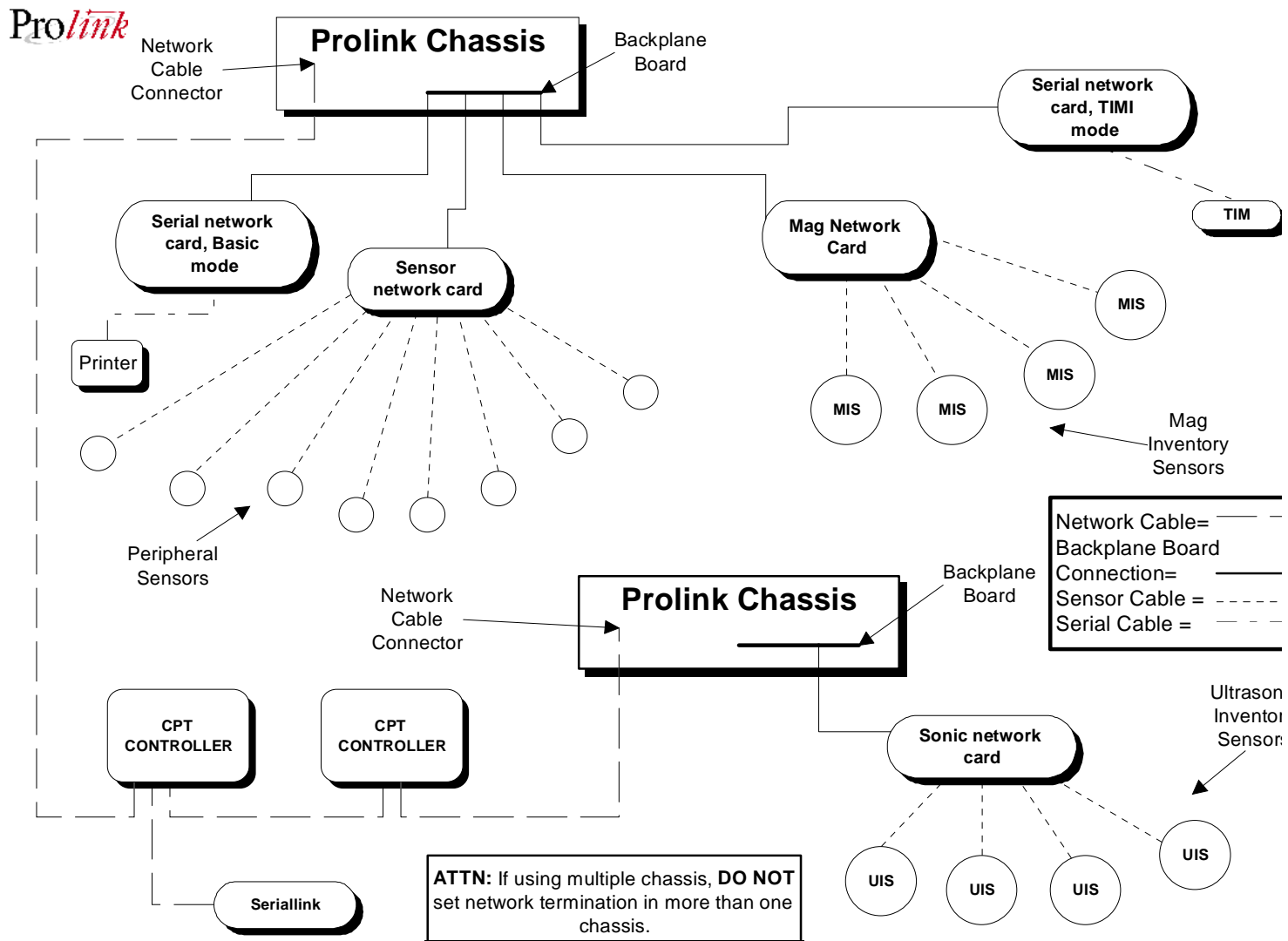


Figure 6.12 Laptop Computer connections to the Prolink network



Network Topology

The LonWorks based Prolink network is a free topology type of network. Any node on the network can be connected to any other node. There is no required order of connection or configuration for this type of network.

Definition:	A node is defined as any component of the Prolink network that has a neuron microprocessor. Nodes can be connected by either a two conductor network cable or by the connection on the Prolink chassis backplane board.
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This allows a large degree of flexibility in the design and customization of a Prolink network for an individual site. Prolink chassis can be installed in different physical locations on a site to minimize the amount of sensor and network cable.

Chapter 7: Troubleshooting Guide

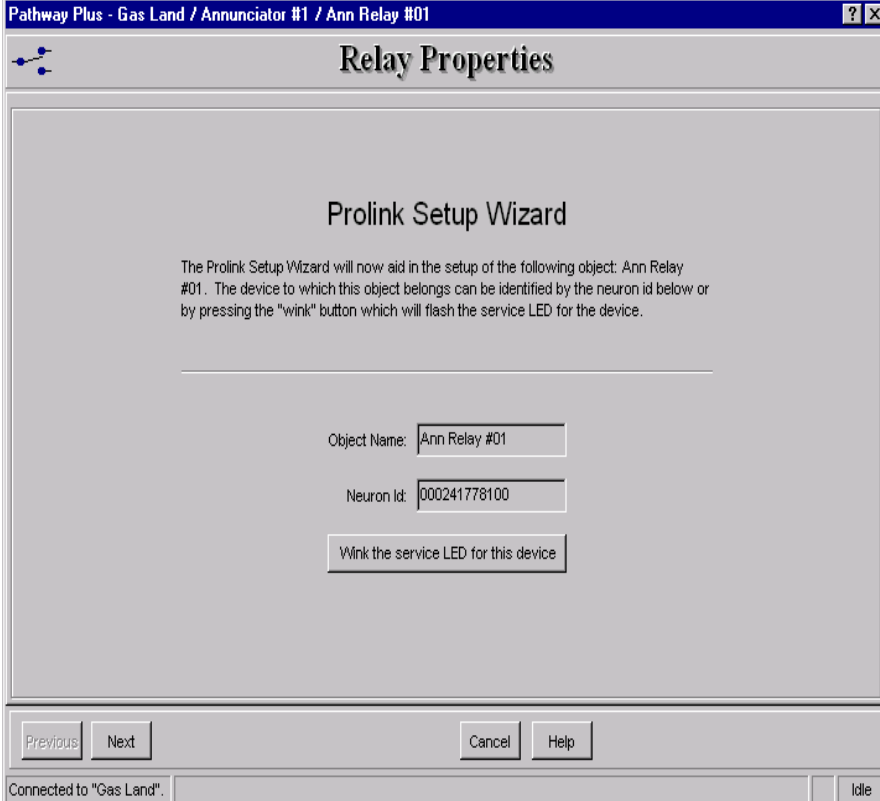
Symptoms	Probable Cause	Suggested Actions
AC PWR (red)LED is not lit	<i>Prolink</i> dedicated circuit not energized	Ensure that circuit breaker is ON. Check fuse #7 on power supply circuit board WITH POWER DISCONNECTED! If LED still is not lit, check all connections.
AC PWR (red) LED is lit, but PWR ON (green) LED is not lit	PWR ON Switch not ON 110\220 VAC selector switch incorrectly set Fuse is blown or no good Transformer not plugged into power supply board Bad transformer	Ensure that PWR ON switch is in the ON (up) position. Ensure that the 110/220 VAC selector switch is moved fully to the desired position. Check fuse #1 on power supply circuit board WITH POWER DISCONNECTED! Ensure that transformer is plugged into power supply circuit board. If this does not solve problem, test connections for continuity. Test transformer for continuity.
AC PWR (red) LED lit, PWR ON (green) LED is lit, but +5 VDC (yellow) LED is not lit	Fuse is blown or no good Circuit board has automatically shut down due to an overload condition (too many cards or sensors connected)	Check fuse #3 on power supply circuit board WITH POWER DISCONNECTED! Check that LED #4 is lit (lower left-hand corner of circuit board). If not lit, overload condition has occurred.

Chapter 8: Pathway Plus Setup

This Chapter Explains:

- Annunciator Relay Setup in Pathway

Annunciator Relay Setup in Pathway



Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Prolink Setup Wizard

The Prolink Setup Wizard will now aid in the setup of the following object: Ann Relay #01. The device to which this object belongs can be identified by the neuron id below or by pressing the "wink" button which will flash the service LED for the device.

Object Name:

Neuron Id:

Connected to "Gas Land"

Wink: Click on this button to blink the service LED on the node. This is helpful in situations where there is more than one network card of the same type installed in the same chassis. Blinking this LED will identify the specific card that is being configured.

The **node name** represents the current name of the card you will be working with. The **neuron id** is a permanent number, and it does not change.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Object ID

Object Number:

Object Name

To change the object name, enter the name of the object in the box to the right:

Enabled State

To enable the object, check the box to the right: ☒ Object Enabled

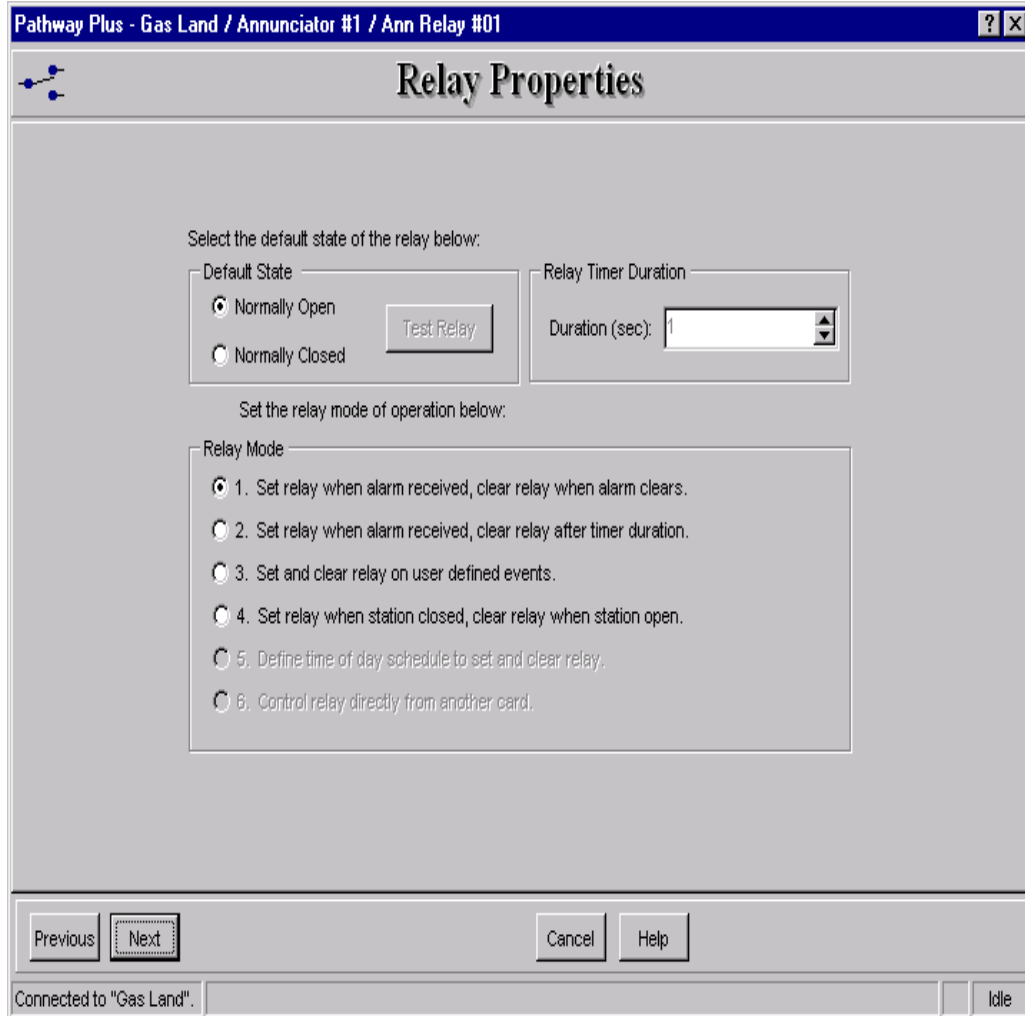
Previous Next Cancel Help

Connected to "Gas Land". Idle

Object ID is uniquely identified by the specific object by number in this screen. The Object ID property indicates which object is open for configuration or setup, and is a read only field.

Object Name displays the name of the object. This field may be changed (max. 12 characters) or left at default.

Enabled State box must be 'checked' to enable operation of the Relay.



The screenshot shows a software window titled "Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01". Inside the window is a "Relay Properties" dialog box. The dialog box has a title bar with a question mark and a close button. The main content area is divided into two sections. The first section, "Select the default state of the relay below:", contains a "Default State" group box with two radio buttons: "Normally Open" (selected) and "Normally Closed". To the right of these buttons is a "Test Relay" button. The second section, "Set the relay mode of operation below:", contains a "Relay Mode" group box with six radio buttons, each followed by a description: 1. "Set relay when alarm received, clear relay when alarm clears." (selected), 2. "Set relay when alarm received, clear relay after timer duration.", 3. "Set and clear relay on user defined events.", 4. "Set relay when station closed, clear relay when station open.", 5. "Define time of day schedule to set and clear relay.", and 6. "Control relay directly from another card." To the right of the "Relay Mode" group box is a "Relay Timer Duration" group box containing a "Duration (sec):" label and a numeric spinner set to "1". At the bottom of the dialog box are four buttons: "Previous", "Next", "Cancel", and "Help". Below the dialog box, a status bar shows "Connected to 'Gas Land'." and "Idle".

Mode 1: Configures the relay to activate when any configured alarm events occur and deactivates only if all configured events are in clear. Available alarm events are configured in the 'Alarm Configuration' tab.

The following example assumes two liquid sump sensors configured on a sensor network card.

Example 1: Sensor 1 and sensor 2 alarm events are chosen for the relay set event tab. If either sensor 1 or sensor 2 go into alarm the relay will set. If both sensor 1 and sensor 2 go into alarm then the relay will set and remain set until both sensors 1 and 2 go out of alarm.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Alarm configuration for setting the relay.

Objects:

Mag #1 - Super

Object Alarms:

Alarm Name	State
Overfill Alarm	Alarm
Product Low	Alarm
Water High	Alarm
Probe Failure	Alarm
Theft Alarm	Alarm
Water Float Error	Alarm

Selected alarms that will set relay.

Alarm Name	State	Card Name	Object Name
Overfill Alarm	Alarm	Mag #1	Unlead
Overfill Alarm	Alarm	Mag #1	Super

☐ Any
 ☐ All

Objects: This drop down box allows the user to select from a list of different objects. The list will vary depending on installed options.

Object Alarms: To add entries to the list of alarms that will set the relay, select (highlight via mouse) one or more alarms desired in the left box. Then click on the '>>' button to copy selected Object Alarms to the 'Selected alarms that will set relay' box on the right. A maximum of 14 alarm events can be chosen.

To remove entries from the list of alarms that will set the relay, highlight the entries you want to remove in the right pane, then click '<<' button to remove the selected (highlighted) entries from the list of events that will set the relay.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Select the default state of the relay below:

Default State

☒ Normally Open

☐ Normally Closed

Test Relay

Relay Timer Duration

Duration (sec): 30

Set the relay mode of operation below:

Relay Mode

☐ 1. Set relay when alarm received, clear relay when alarm clears.

☒ 2. Set relay when alarm received, clear relay after timer duration.

☐ 3. Set and clear relay on user defined events.

☐ 4. Set relay when station closed, clear relay when station open.

☐ 5. Define time of day schedule to set and clear relay.

☐ 6. Control relay directly from another card.

Previous Next Cancel Help

Connected to "Gas Land". Idle

Mode 2: Configures the relay to activate when a configured alarm set event occurs and deactivates after the amount of time specified in the 'Relay Timer Duration' edit box. Available alarm events are configured in the 'Alarm Configuration' tab.

For each occurrence of a configured alarm event the relay will activate for the specified duration.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Alarm configuration for setting the relay.

Objects:

GLOBAL

Object Alarms:

Alarm Name	State
Overfill Alarm	Alarm
Product Low	Alarm
Water High	Alarm
Probe Failure	Alarm
Theft Alarm	Alarm
Water Float Error	Alarm

Selected alarms that will set relay.

Alarm Name	State	Card Name	Object Name
Theft Alarm	Alarm	Mag #1	Unlead
Theft Alarm	Alarm	Mag #1	Super
Water Float Error	Alarm	GLOBAL	

☒ Any
 ☐ All

Connected to "Gas Land". Idle

Objects: This drop down box allows the user to select from a list of different objects. The list will vary depending on installed options.

Object Alarms: To add entries to the list of alarms that will set the relay, select (highlight via mouse) one or more alarms desired in the left box. Then click on the '>>' button to copy selected Object Alarms to the 'Selected alarms that will set relay' box on the right. A maximum number of 14 alarm events can be chosen.

To remove entries from the list of alarms that will set the relay, highlight the entries you want to remove in the right pane, then click '<<' button to remove the selected (highlighted) entries from the list of events that will set the relay.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Select the default state of the relay below:

Default State

☒ Normally Open

☐ Normally Closed

Relay Timer Duration

Duration (sec):

Test Relay

Set the relay mode of operation below:

Relay Mode

☐ 1. Set relay when alarm received, clear relay when alarm clears.

☐ 2. Set relay when alarm received, clear relay after timer duration.

☒ 3. Set and clear relay on user defined events.

☐ 4. Set relay when station closed, clear relay when station open.

☐ 5. Define time of day schedule to set and clear relay.

☐ 6. Control relay directly from another card.

Previous
Next
Cancel
Help

Connected to "Gas Land".
Idle

Mode 3: Configures the relay to activate when relay set events occur and deactivate when relay clear events occur. Available set and clear events are configured in the 'Alarm Set Events' and 'Alarm Clear Events' tabs. **Note:** Configuring a relay for mode 3 operation requires that you have at least one set and one clear event configured.

Example 1: Sensor 1 and sensor 2 alarm events are chosen for the relay set event tab with 'Any' selected. Sensor 3 and sensor 4 alarm events are chosen for the relay clear event tab with 'Any' selected. If sensor 1 or sensor 2 goes into alarm the relay will activate. If sensor 3 **OR** sensor 4 goes into alarm the relay will deactivate even if sensor 1 and 2 are still in alarm. Clear events have priority over set events.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Alarm configuration for setting the relay.

Objects:

Mag #1 - Unlead

Object Alarms:

Alarm Name	State
Overfill Alarm	Alarm
Overfill Alarm	Clear
Product Low	Alarm
Product Low	Clear
Water High	Alarm
Water High	Clear
Probe Failure	Alarm
Probe Failure	Clear
Theft Alarm	Alarm
Theft Alarm	Clear
Water Float Error	Alarm
Water Float Error	Clear

Selected events that will set relay.

Alarm Name	State	Card Name	Object Name
Product Low	Alarm	Mag #1	Unlead
Water High	Alarm	Mag #1	Unlead

☒ Any
 ☐ All

Previous Next

Cancel Help

Connected to "Gas Land".

Idle

Objects: This drop down box allows the user to select from a list of different objects. The list will vary depending on installed options.

Object Alarms: To add entries to the list of alarms that will set the relay, select (highlighted via mouse) one or more alarms desired in the left box. Then click on the '>>' button to copy selected Object Alarms to the 'Selected alarms that will set relay' box on the right. Maximum of seven selections.

To remove entries from the list of alarms that will set the relay, highlight the entries you want to remove on the right pane, then click the '<<' button to remove the selected (highlighted) entries from the list of events that will set the relay.

When the '**Any**' default button is selected, **any** single set event may activate the relay independently.

When the '**All**' button is selected, **all** set events must occur and be true together before the relay is activated.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Alarm configuration for clearing the relay.

Objects:

Mag #1 - Unlead

Object Alarms:

Alarm Name	State
Overfill Alarm	Alarm
Overfill Alarm	Clear
Product Low	Alarm
Product Low	Clear
Water High	Alarm
Water High	Clear
Probe Failure	Alarm
Probe Failure	Clear
Theft Alarm	Alarm
Theft Alarm	Clear
Water Float Error	Alarm
Water Float Error	Clear

Selected events that will clear relay:

Alarm Name	State	Card Name	Object Name
Product Low	Clear	Mag #1	Unlead
Water High	Clear	Mag #1	Unlead

☒ Any
 ☐ All

Previous Next

Cancel Help

Connected to "Gas Land".

Idle

Objects: This drop box allows the user to select from a list of different objects. The list will vary depending on installed options.

Object Alarms: To add entries to the list of alarms that will clear the relay, select (highlight via mouse) one or more alarms desired in the left box. Then click on the '>>' button to copy selected Object Alarms to the 'Selected alarms that will clear relay' box on the right. Maximum of seven selections.

To remove entries from the list of alarms that will clear the relay, highlight the entries you want to remove in the right pane, then click '<<' button to remove the selected (highlighted) entries from the list of events that will clear the relay.

When the '**Any**' default button is selected, **any** single clear event may deactivate the relay independently.

When the '**All**' button is selected, **all** clear events must occur and be true together before the relay is deactivated.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Select the default state of the relay below:

Default State

☒ Normally Open

☐ Normally Closed

Test Relay

Relay Timer Duration

Duration (sec): 0

Set the relay mode of operation below:

Relay Mode

☐ 1. Set relay when alarm received, clear relay when alarm clears.

☐ 2. Set relay when alarm received, clear relay after timer duration.

☐ 3. Set and clear relay on user defined events.

☒ 4. Set relay when station closed, clear relay when station open.

☐ 5. Define time of day schedule to set and clear relay.

☐ 6. Control relay directly from another card.

Previous Next Cancel Help

Connected to "Gas Land". Idle

Mode 4: Configures the relay to activate when the station closes and deactivate when the station opens. Station open and close times are configured in the main Station Properties 'Time/Hours' tab. The station hours must be previously configured.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Operation Hours

DAYS OPEN	OPEN TIME	CLOSE TIME
<input checked="" type="checkbox"/> Mon	12:00 AM	12:00 AM
<input checked="" type="checkbox"/> Tue	12:00 AM	12:00 AM
<input checked="" type="checkbox"/> Wed	12:00 AM	12:00 AM
<input checked="" type="checkbox"/> Thur	12:00 AM	12:00 AM
<input checked="" type="checkbox"/> Fri	12:00 AM	12:00 AM
<input checked="" type="checkbox"/> Sat	12:00 AM	12:00 AM
<input checked="" type="checkbox"/> Sun	12:00 AM	12:00 AM

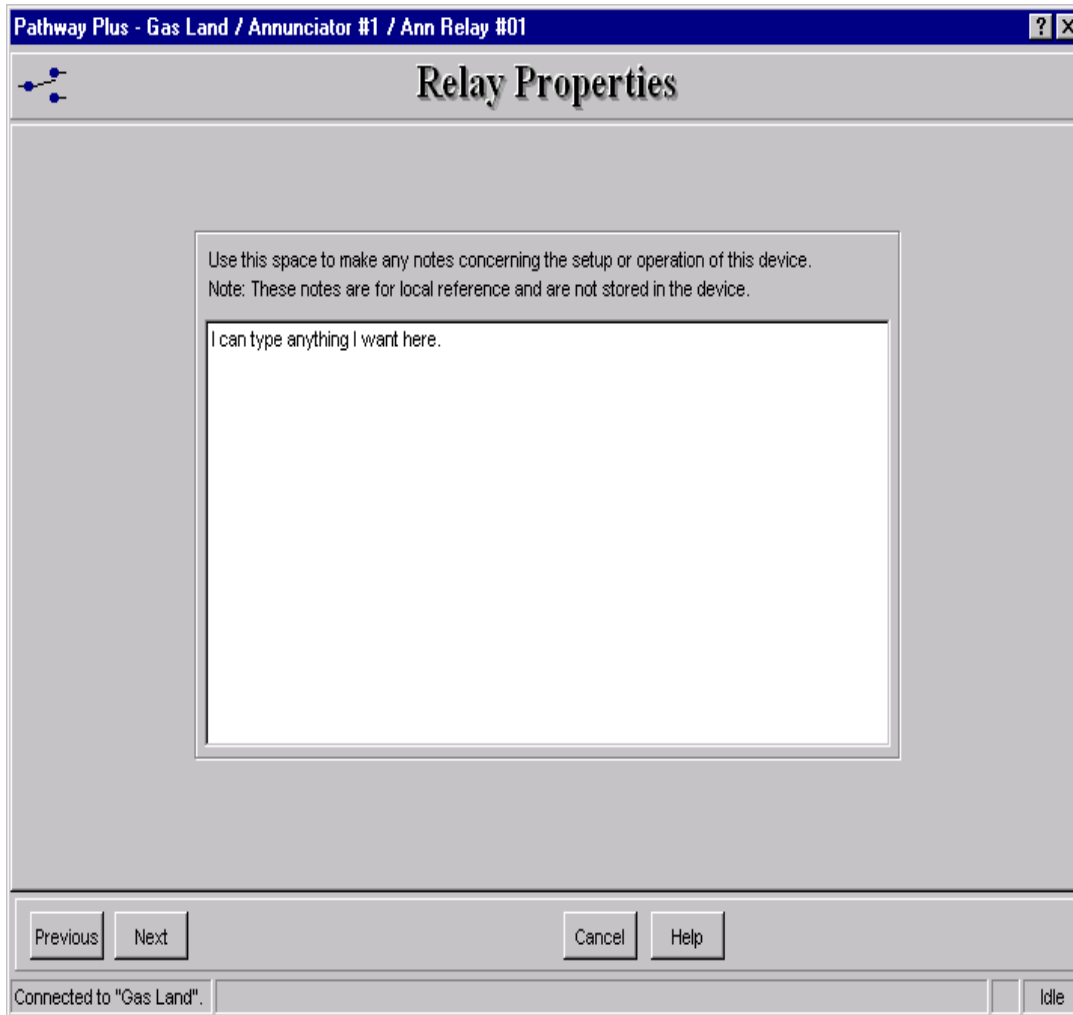
Previous Next Cancel Help

Connected to "Gas Land". Idle

The operation hours table is displayed for information purposes only, and is read only on this tab.

Note 1: When the station is **open**, the relay is **inactive**. When the station is **closed**, the relay is **active**. When both open and close times are the same for a given day, the station is considered open for 24 hours, therefore the relay would be inactive for the entire 24 hour period.

Note 2: A day **unchecked** means that the relay will be active for that **entire 24 hour period**.



Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Use this space to make any notes concerning the setup or operation of this device.
Note: These notes are for local reference and are not stored in the device.


I can type anything I want here.

Previous Next Cancel Help

Connected to "Gas Land". Idle

This is the user's opportunity to make any notes to have for future reference.

Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01



Relay Properties

Display Status Monitor

This Prolink object has a status monitor associated with it. You can use the status monitor to view the current state of the object and to verify that it is working correctly.

Display the Status Monitor?

☒ Yes

☐ No

Previous

Next

Cancel

Help

Connected to "Gas Land".

Idle


Pathway Plus - Gas Land / Annunciator #1 / Ann Relay #01

Relay Properties

Current Relay State

☒ Open Time: 8:44:41 AM

☐ Closed

 Led is blinking when relay is not in its default state.

Connected to "Gas Land".

Open and Closed Check boxes display the relay status. When the 'Test Relay' button is clicked the relay will toggle for five seconds to test the relay operation. The Test Relay button toggles the relay, forcing the current relay state to change from one position to the other.

Toggling the current relay state does not change the default relay state.

The Green LED will blink while the relay is not in default position.

The 'Time' field is the current system time based on your computer's clock, and is displayed for informational purposes only.



Setup is complete!

Appendix A: Replacement Parts

Part Number	Description
RJ350-133-5	Repl. Quiet/Reset Switch
RJ350-146-5	Repl. Annunciator Power Supply Cable
RJ350-137-5	Repl. Network Cable
RJ350-162-5	Repl. Serial Network Cable
RJ350-163-5	Repl. TIM to Prolink Cable
RJ350-127-5	Cable, Transformer to power supply bd., Prolink
RJ268-205-5	Encl. Assy., 2-slot Prolink
RJ267-286-5	Encl. Assy., 4-slot Add-on Prolink (W/O Annunciator)
RJ267-287-5	Encl. Assy., 2-slot Add-on (W/O Annunciator)
RJ267-205-5	Encl. Assy., 4-slot Prolink (W/Annunciator)
RJ330-158-5	Repl. PC Bd., Power Supply Board, Prolink
RJ330-159-5	Repl. PC Bd., Annunciator, Prolink
RJ330-157-5	Repl. PC Bd., Connector Bd., Prolink
RJ330-175-5	Repl. PC Bd., 2-slot Add-on backplane
RJ330-199-5	Repl. PC Bd., 2-slot System backplane
RJ330-149-5	Repl. PC Bd., 4-slot System backplane, Prolink

Appendix B: Glossary

AC	Alternating current
Annunciator	Data collection device used by ProLink to collect and store information from the network cards for transmission to Pathway Plus for creating reports.
DC	Direct current.
DIP switch	Dual in-line package switch with two rows of pins through which signals and power enter and leave the package.
Ground	A conductor that connects with the earth; to connect electrically with ground (earth ground, chassis ground, analog ground, digital ground).
LCD	Liquid crystal display; a display that consists of segments of a liquid crystal whose reflectivity varies with the voltage applied to them.
LED	Light-emitting diode. A light emitting device.
Peripheral	A device connected to the system that provides communication or auxiliary functions.
Piezo	An alarm that uses a piezoelectric material to produce sound.
Relay	An electrically actuated set of electrical contacts used to switch on or off an electrical device.
UL-classified	A designation for products that have been evaluated by Underwriters Laboratories with respect to one or more of the following: (1) specific hazards only — for example, flammability; (2) performance under specified conditions; (3) regulatory codes; or (4) other standards.
Volt (V)	The meter-kilogram-second unit of electric potential difference and electromotive force equal to the difference in potential between two points in a wire carrying a constant current of 1 ampere when the power dissipated between the points is equal to 1 watt.
Voltage	A potential electrical difference between two points, expressed in volts.

Appendix C: Prolink Alarm Guide

This section describes the alarm codes that may be seen on the Prolink main data chassis display. These alarm codes are displayed in the following format: Chassis #, Slot #, Object # and then the alarm code.

Prolink Alarm Display (sample)

1	4	2	1
This digit indicates that the network card producing the alarm is installed in Prolink chassis #1	This digit indicates that the alarm is coming from the network card installed in slot #4	This digit indicates the object or individual sensor connected to the network card identified by the first two digits that is in alarm	This is the specific alarm code which indicates the cause of the alarm

To read these alarm codes, you must know which network cards are installed in each chassis and slot. Refer to the Prolink Configuration Worksheet for the station.

The Prolink network continuously performs a self test and displays the results using the LEDs on the front panel. The green LED indicates that no alarms are active, the yellow LED indicates that an alarm has occurred, but is not serious enough to shut down the system. The red LED indicates a line or tank leak alarm has occurred and the pumps are shut down. To perform an additional self test, press the reset button on the front panel of the Prolink chassis and observe the LED indicator lamps.

The object number indicates which sensor or channel on the network card is in alarm. The alarm code number indicates what type of alarm has been detected. With this information and the table below, the Prolink alarm display can be read.

Prolink Alarm Codes

Network Card Type	Alarm Type & Description	Alarm Code
Annunciator	None:	
Dispenser Interface network card	None	
Mag network card	Overfill: Indicates that the liquid level in the tank has exceeded the programmed limit.	0
	Low Product: Indicates that the liquid level in the tank has dropped below the programmed limit.	1
	High Water: Indicates that the water level in the tank has exceeded the programmed level.	2
	Theft: Indicates that product has been removed from the tank during times that the station is closed.	3
	Probe Error: Indicates that the Mag network card is not communicating with the Mag Inventory sensor.	4
	Water Float: Indicates that the water float is not responding correctly. This may be caused by incorrect probe installation or the Prolink network is programmed to register a water float, but no water float is installed.	5
Pump Control network card	None	
Recon Daughter card	None	

Prolink Alarm Codes

Relay network card	None	
Sensor network card	<p style="text-align: center;">Pump Alarm: Indicates that a line leak has been detected and the pump has been shut down. This is a hard fault and will shut down the pump.</p>	1
	<p style="text-align: center;">Failure to Pressurize: Indicates that the pump is not developing enough pressure. This alarm is a hard fault and will shut down the pump.</p>	2
	<p style="text-align: center;">Long Pumping Time: Indicates that the CPT senses that the pump has been running for more than 6 hours. This condition will prevent leak detection from taking place.</p>	3
	<p style="text-align: center;">Dry Run: Indicates that the pump is running and no pressure has developed. Usually caused by product level being below the level of the pump intake. This alarm is a hard fault and will shut down the pump.</p>	4
	<p style="text-align: center;">Sensor Fail: Indicates that the Sensor network card is reading an out of range voltage from the pressure transducer. This usually means that the transducer is faulty.</p>	5
	<p style="text-align: center;">Low Seating Pressure: Indicates a possible line leak condition or that the seating pressure should be checked and adjusted. This is a hard fault and will shut down the pump.</p>	6
	<p style="text-align: center;">Vapor Alarm: Indicates that vapor has been detected by the sensor indicated on the display.</p>	7

Prolink Alarm Codes

	Fuel Alarm: Indicates that fuel or product has been detected by the sensor indicated on the display.	8
	Water Alarm: Indicates that water has been detected by the sensor indicated on the display.	9
	Sump Alarm: Sump sensor alarm. Indicates the presence of liquid in a containment sump.	A
	Overfill Alarm: High Level and High/Low Level sensor alarm. Indicates that the liquid level in the tank has exceeded the preset limit.	C
	Underfill Alarm: High/Low Level sensor alarm. Indicates that the liquid level in the tank has dropped below the preset limit.	D
	Hydrostatic Alarm: Hydrostatic sensor alarm. Indicates a change in level of the brine in a double walled tank. A leak has developed in either the inner or outer wall of the tank.	E
Serial network card— Basic Mode	None	
Sonic network card	Overfill: Indicates that the liquid level in the tank has exceeded the programmed limit.	0
	Low Product: Indicates that the liquid level in the tank has dropped below the programmed limit.	1
	High Water: Indicates that the water level in the tank has exceeded the programmed level.	2

Prolink Alarm Codes

	<p style="text-align: center;">Theft:</p> <p>Indicates that product has been removed from the tank during times that the station is closed.</p>	3
	<p style="text-align: center;">Probe Error:</p> <p>Indicates that the Mag network card is not communicating with the Mag Inventory sensor.</p>	4
	<p style="text-align: center;">Water Float:</p> <p>Indicates that the water float is not responding correctly. This may be caused by incorrect probe installation or the Prolink network is programmed to register a water float, but no water float is installed.</p>	5
<p>CPT Controller (Refer to the CPT Controller Installation and Programming Manual for complete descriptions of these alarms and their causes.)</p>	<p style="text-align: center;">Pump Alarm:</p> <p>Indicates that a line leak has been detected and the pump has been shut down.</p>	1
	<p style="text-align: center;">Failure to Pressurize:</p> <p>Indicates that the pump is not developing enough pressure. This alarm is a hard fault and will shut down the pump.</p>	2
	<p style="text-align: center;">Long Pumping Time:</p> <p>Indicates that the CPT senses that the pump has been running for more than 6 hours. This condition will prevent leak detection from taking place.</p>	3
	<p style="text-align: center;">Dry Run Alarm:</p> <p>Indicates that the pump is running and no pressure has developed. Usually caused by product level being below the level of the pump intake. This alarm is a hard fault and will shut down the pump.</p>	4

Prolink Alarm Codes

	Sensor Fail: Indicates that the Sensor network card is reading an out of range voltage from the pressure transducer. This usually means that the transducer is faulty.	5
	Low Seating Pressure: Indicates a possible line leak condition or that the seating pressure should be checked and adjusted.	6

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