

Prolink LineMaster Installation and Operation Manual RE260-334 ♦ Rev B ♦ May '00

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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 four chapters, one appendix, and an index.

Typographical Conventions

Numeric Formats:	A numeric zero looks like 0 in this document. An uppercase let ter "oh" is rendered as O.
	A numeric one looks like 1 in this document. A lowercase letter "ell" is rendered as I. However, to prevent confusion, the abbrevi- ation for milliliter includes a capital letter (mL).



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

DANGER!!	Indicates the presence of a hazard that <u>will</u> cause <u>severe</u> personal
	injury, death, or substantial property damage <u>if ignored</u> .

WARNING! Indicates the presence of a hazard that <u>can</u> cause <u>severe</u> personal injury, death, or substantial property damage <u>if ignored</u> .

Caution	Indicates the presence of a hazard that will or can cause minor per-
	sonal injury or property damage <u>if ignored</u> .

Notice Indicates special instructions on installation, operationance that are important but not related to personal	Indicates special instructions on installation, operation, or mainte-
	nance that are important but not related to personal injury hazards

HINT:	These hints are provided to suggest methods or procedures which will
	make the installation easier and/or faster.



Chapter 1: Introduction and Installation

Overview

- Introduction
- Installation Requirements
 - Physical dimensions and requirements
 - Electrical and Prolink network requirements
- Installing the LineMaster enclosure

Introduction

The Prolink LineMaster provides line leak detection for Red Jacket submersible pumps. Features include:

- The LineMaster uses powerline communications to connect to the Prolink network. This allows the LineMaster to be installed without pulling new cable or installing new conduit. This can significantly reduce the cost of providing line leak detection particularly in retrofit installations.
- The LineMaster also provides network connections for two peripheral sensors, thereby eliminating the need for separate sensor cables.
- The LineMaster is UL approved and rated explosion proof to allow installation in the hazardous area of the submersible pump manhole.
- The LineMaster is available with either 3 gph or 0.1/0.2 gph leak detection. It is upgradeable from 3 gph to 0.1/0.2 gph with an unlock code provided by Red Jacket Customer Service when an upgrade order is received.
- New software applications and updates can be downloaded to the LineMaster over the same AC power lines used for network communication, eliminating the need to physi-



cally service the unit to replace software chips

Notice	At the present time, the Prolink LineMaster is available for Red Jacket fixed speed, 1/3, 3/4, and 1 1/2 horsepower submersible pumps. Also available for the X–3 and X–5 pumps.
	available for the $X-3$ and $X-5$ pumps.

Installation Requirements

Physical dimensions and requirements

Before ordering the Prolink LineMaster, make sure that there is room in the pump manhole for the unit. The LineMaster requires a minimum of six (6) inches above the capacitor cover mounting face of the pump and a minimum of nine (9) inches outward from the center of the capacitor cover on the top of the pump housing. See figure 1.1.



Figure 1.1 Physical dimensions required for LineMaster installation



Physical requirements

The following items are required for a LineMaster installation. Review this list to make sure that you have all items on hand before beginning the installation. Refer to **Appendix A** for part numbers if you need to order additional components.

Required components

- One LineMaster unit per pump.
- One adjustable precision functional element per pump. The LineMaster uses the high pressure algorithm to perform leak testing. If your pump is equipped with the standard functional element, it must be replaced.
- One pressure transducer per pump.
- A Prolink chassis with:

Router network card and:

either a Pump Sense or Pump Control network card installed.

Other components

• If the pump has been in place for some time, the packer seals may not hold the pressure required to perform leak testing. If the pump will not hold pressure, this condition must be corrected.

Installing the LineMaster enclosure

The Prolink LineMaster enclosure is considered a single unit. There are NO FIELD REPLACEABLE PARTS in the LineMaster enclosure. If warranty repair or service is required, the LineMaster is removed as a complete unit and returned to Red Jacket Electronics for evaluation, repair, or replacement. The only exception to this is a replacement connector board and housing, which may be ordered separately.

The ID plate on the top cover contains UL information and the serial number of the LineMaster unit. The serial number is also the neuron ID number of the unit. This neuron ID can also be accessed through Pathway Plus, along with the line leak specifications (3gph or .1/.2gph).

WARNING! Opening or removing the top cover WILL VOID product warranty! Refer to figure 1.2	
---	--



WARNING! Loosening or removing ANY cover bolts other than these two mounting bolts will VOID product warranty



Figure 1.2 View of LineMaster and tamper resistant bolts

Prepare pump wiring before connecting LineMaster

Caution It is EXTREMELY IMPORTANT to maintain the integrity of the LineMaster housing seal. This seal contributes to the explosion proof rating and also provides a liquid proof seal to keep out water which may be present in the sump.

Step 1: Lock out and tag out electrical power at the service panel to the pump where the LineMaster will be installed.

Step 2: Remove the capacitor cover from the pump packer head. Wiring connections shoud not be made to the LineMaster until Step 5 is executed.

Notice	Make sure that the capacitor has a lug for the BLUE wire from the LineMaster to connect to. If the lug is not there, DO NOT cut the BLACK wire off of the capacitor lug. Refer to figure 1.3 and 1.5.
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- **Step 3:** Cut the BLACK wire coming from the yoke at the disconnect on the capacitor. Strip back 1/2." Refer to figure 1.3 and 1.5.
- **Step 4:** Pull the YELLOW wire out of the capacitor housing and cut in the middle. Strip both ends 1/2." See figure 1.3 and 1.5.
- **Step 5:** Thread the mounting collar into the capacitor housing and use the collar installation tool and two 3/4" cap screws (included) with a 1/2 inch extension and ratchet to





tighten the collar until the O-ring compresses and the mating surfaces make contact. Refer to figure 1.4.

Notice Install the mounting collar BEFORE connecting any wires!



Figure 1.4 LineMaster collar installation tool





Figure 1.5 LineMaster to pump wiring diagram

- **Step 6:** Connect the BLACK wire from the pump housing to the BLACK wire from the LineMaster using the Orange wirenut.
- **Step 7:** Connect the YELLOW wires from the pump housing to the YELLOW wire from the LineMaster using the Yellow wirenut.
- Step 8: Connect the BLUE wire from the LineMaster to the Primary or motor side of the capacitor. See figure 1.3 and 1.5.
- Step 9: Stuff all wires up into the LineMaster housing as you slide the unit into the mounting collar. See figure 1.6.

Hint: It is highly recommended that grease be applied to the joint surfaces between the mounting collar and the LineMaster housing when mounting the unit to the collar. This will ease the installation and prevent corrosion.





Figure 1.6 Assembling the LineMaster housing to the pump housing

Step 10: Bolt the LineMaster to the mounting collar using the five (5) mounting bolts and lock washers. Tighten securely using a sequential criss-cross pattern.



Hint:	It is usually easier to install the two long bolts first, then the three shorter bolts.	
-------	---	--

Step 11: Thread the old capacitor cover into the retainer on the side of the LineMaster. See Notice below. Refer to figure 1.6.

Notice The old capacitor cover contains the pump UL information, model number, seria number, and date of manufacture. If this cover is removed or lost, there is no way to get this information without pulling the entire pump from the tank.

Step 12: Place the label with the neuron ID number on the appropriate section of the Prolink Configuration Worksheet. This will help when the Prolink network and LineMaster(s) are being configured later.



Chapter 2: Connections

Overview

- Connecting the Pressure Transducer
- Connecting Peripheral Sensors

The LineMaster ships from Red Jacket in two different configurations. The standard model (RJ400-779-5) ships with a standard connector board and housing allowing for connection to a single pressure transducer (no peripheral sensors). The complete model (RJ400-769-5) ships with a sensor connector board and housing allowing for connections to a single pressure transducer and two additional peripheral sensors.



Connecting the Pressure Transducer



Figure 2.1 Overview of LineMaster Connecting to the Pressure Transducer (RJ400-779-5)

Step 1: Loosen the compression fitting around the LineMaster sensor cable and unscrew the threaded cap on the opposite end.

Notice	Make sure that this cable does not twist while you are unscrewing the threaded cap from the connector board housing.
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- **Step 2:** Slide connector board out of housing. Strip the outer jacket from the transducer cable back approximately 1 1/2." Thread thru fitting.
- Step 3: Make connections as shown in figure 2.1 above.
- Step 4: Fasten the cable to the connector board to serve as wire restraint, wire ties included.
- **Step 5:** Pull the connector board back into housing using the sensor cable.



Step 6: Remove desiccant pouches from plastic wrap and place into housing.

Step 7: Add UL Classified pipe thread sealant to threads and screw tightly onto housing.

Step 8: Finger tighten compression fittings around cables at both ends.



and the connector housing (RJ400-769-5)

Step 1: Loosen the compression fitting around the LineMaster sensor cable and unscrew the plastic end cap.

Notice	Make sure that this cable does not twist while you are unscrewing the plastic
	end cap from the connector board housing.

Step 2: Slide the connector board out of housing.

Step 3: Strip the outer jacket from the transducer cable back approximately 1 1/2." Remove



1/4" of insulation from each conductor.

Step 4: Loosen one of the compression fittings on the opposite end and remove the green plug. Feed the transducer cable through the fitting.

Step 5: Pull cable until several inches are exposed from the open end of the connector housing. Refer to figure 2.2.

Step 6: Make connections as shown in figure 2.3. Connect the BLACK wire to terminal (12) GND on the connector board. Connect the RED wire to terminal (11) +5v on the connector board. Connect the GREEN wire to terminal (6) 1A on the connector board.

Netter	If you are installing and connecting optional sensors to the LineMaster, refer to
Notice	the following section: Connecting Peripheral Sensors before continuing with
	steps 7-11.

Step 7: Fasten cable to connector board to serve as wire restraint with wire ties included. Gently pull the connector board into the housing using the transducer cable.

Step 8: Remove desiccant pouch from plastic wrap and place into housing.

Step 9: Add UL Classified pipe thread sealant to threads of housing and screw the plastic end cap tightly into place.

Step 10: Finger tighten all compression fittings around cables and green plugs at both ends.

Step 11: Hang the connector board housing to the eyebolt on top of the pump housing using the double-loop wire tie (included). Refer to figure 2.4.





Figure 2.3 Transducer connections on the sensor connector board



Notice	It is important that you remove the outer plastic bag from the desiccant pack before placing it into the connector board housing and sealing the housing.
	Failure to do this will result in corrosion of the transducer and sensor connec- tions in the connector housing.

Notice	Make sure that the cable does not twist in the compression fitting while you are tightening the plastic end cap onto the connector housing.
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Figure 2.4 Fastening the connector housing to the eyebolt



Connecting Peripheral Sensors

The LineMaster (RJ400-769-5) ships with a sensor connector board and housing, that allows connections to two additional peripheral sensors. (Refer to appendix A-1 for replacement part numbers to upgrade a LineMaster from a standard connector housing to the sensor connector housing).

The following section contains information on connecting each type of sensor to the Line-Master. For additional information on sensor installation, refer to the Installation Sheet included with each sensor.

Channels are designated by a number and a letter (i.e., 1A, 1B).





Vapor Conductivity Sensor

- 1) Choose an unused channel (2 or 3) and connect the **WHITE** wire to the **A** terminal of that channel.
- 2) Connect the RED (vapor) wire to the B terminal of the same channel.
- 3) Connect the **BLACK** wire to one of the **GND** terminals.
- 4) Fasten the cable to the connector board using the wire ties to serve as a wire restraint (included).





Sump Sensor

- 1) Choose an unused channel (2 or 3) and connect the **WHITE** (liquid) wire to the **A** terminal of the channel.
- 2) Connect the **BLACK** wire to one of the **GND** terminals.
- 3) Fasten the cable to the connector board using the wire ties to serve as a wire restraint (included).



Figure 2.6 Sump sensor connections



LIquid Refraction Sensor

- 1) Choose an unused channel (2 or 3) and connect the **WHITE** wire to the **A** terminal of that channel.
- 2) Connect the **BLACK** wire toone of the **GND** terminals.
- 3) Fasten the cable to the connector board using the wire ties to serve as a wire restraint (included).



Figure 2.7 Liquid Refraction sensor connections



Optical Liquid Discrimination Sensor

- 1) Choose an unused channel (2 or 3) and connect the **WHITE** wire to the **A** terminal of that channel.
- 2) Connect the **GREEN** (product) wire to the **B** terminal on the same channel.
- 3) Connect the **BLACK** wire to one of the **GND** terminals.
- 4) Connect the RED wire to one of +5V terminals.
- 5) Fasten the cable to the connector board using the wire ties to serve as a wire restraint (included).



Figure 2.8 Optical Liquid Discrimination sensor connections



Hydrostatic Sensor

- 1) Choose an unused channel (2 or 3) and connect one wire to the **A** terminal of that channel.
- 2) Connect the other wire to the **B** terminal on the same channel.
- 3) Fasten the cable to the connector board using the wire ties to serve as a wire restraint (included).



Figure 2.9 Hydrostatic sensor connections



High/Low Sensor

- 1) Choose an unused channel (2 or 3) and connect the **WHITE** wire to the **A** terminal of that channel.
- 2) Connect the **RED** wire to the **B** terminal on the same channel.
- 3) Connect the **BLACK** wire to one of the **GND** terminals.
- 4) Fasten the cable to the connector board using the wire ties to serve as a wire restraint (included).



Figure 2.10 High/Low sensor connections



High Level Sensor

- 1) Choose an unused channel (2 or 3) and connect the **WHITE** wire to the **A** terminal of that channel.
- 2) Connect the **BLACK** wire to one of the **GND** terminals.
- 3) Fasten the cable to the connector board using the wire ties to serve as a wire restraint (included).



Figure 2.11 High Level sensor connections



Groundwater Sensor

- 1) Choose an unused channel (2 or 3) and connect the **WHITE** wire to the **A** terminal of that channel.
- 2) Connect the **GREEN** wire to the **B** terminal on the same channel.
- 3) Connect the **RED** wire to one of the **+5VDC** terminals.
- 4) Connect the **BLACK** wire to one of the **GND** terminals.
- 5) Fasten the cable to the connector board using the wire ties to serve as a wire restraint (included).



Figure 2.12 Groundwater sensor connections



Dispenser Pan Sensor

- 1) Choose an unused channel (2 or 3) and connect the **GREEN** wire to the **A** terminal of that channel.
- 2) Connect the **RED** wire to the **B** terminal on the same channel.
- 3) Connect the **BLACK** wire to one of the **GND** terminals.
- 4) Fasten the cable to the connector board using the wire ties to serve as a wire restraint (included).







Chapter 3: Powerline Communications

Overview

- Introduction
 - Electrical Wiring and Connections

Introduction

ALL communications between the LineMaster and the Prolink network are transmitted over the pump AC power lines. This has the advantage of not having to install new conduit or pull new cables. There are several things that must be kept in mind when installing a LineMaster to connect to a Prolink network.

- A Router network card must be installed in a Prolink chassis to allow communication between the LineMaster and the Prolink network.
- A Pump Sense or Pump Control network card must be installed in the Prolink chassis to enable the network to send pump on and off information to the LineMaster.

Notice	The Prolink chassis used for powerline communications with the LineMaster CANNOT have power conditioning equipment installed. This equipment will filter out the signal being transmitted over the powerlines.	
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The following sections describe the correct electrical installation procedures to allow trouble free power line communications.



Electrical Wiring and Connections

The most important factor to take into consideration when wiring the LineMaster and the Prolink chassis, where the Router network card will be installed, is that both the LineMaster and pump and the Prolink chassis must be on the same electrical service. This means that the power supply for both must come from the same power transformer (or circuit). If the Line-Master and the Prolink chassis are connected to different electrical services, the data being sent over the power lines will not be able to travel past the transformer to the other electrical service circuit and communication will not be possible.

In addition, the dispensers must also be wired to the same phase and same electrical service as the Prolink chassis, the LineMaster, and the pump.

Notice	The Prolink chassis L1, LineMaster L1, and the dispenser status signal L1 MUST be on the same phase AND the same electrical service.
Notice	This is CRITICAL to the proper functioning of the LineMaster and the Prolink network.

Important point

• The dispenser status signal has to be connected to the Pump Sense or Pump Control network card in order to allow this information to be communicated to the LineMaster.





Figure 3.1 LineMaster wiring diagram



Chapter 4: Startup and Troubleshooting

Overview

- Startup Procedures
 - LineMaster Configuration
 - Testing the LineMaster
 - Adjusting the Functional Element
 - LED Identification

Startup Procedures

After the following tasks have been completed, the LineMaster is ready to be configured in Pathway Plus.

- LineMaster(s) have been installed at the site
- Prolink chassis has been installed
- Router and Pump Sense or Pump Control network cards installed

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LineMaster Configuration

The following steps are a basic guideline ONLY, for specific configuration information, refer to the online help in Pathway Plus.

Step 1: Turn on electrical power to the Prolink chassis, the pumps, and the dispensers.

Step 2: Check the RED (service) LED (D8) visible through the sight glass in the LineMaster enclosure. This LED should be blinking. Refer to figure 4.1







- **Step 3:** Connect to the Prolink network with Pathway Plus and allow Pathway Plus to recover the network.
- **Step 4:** The Prolink Setup Wizard will display after Pathway Plus has discovered the new LineMaster node(s). Follow the instructions on the screen, refer to the online help in each dialog for specific information.

	Refer to the Neuron ID label(s) placed on the Prolink Configuration
	Worksheet when the LineMaster was physically installed to identify where each LineMaster unit was installed. This will help when entering a name in the Node Configuration dialog of the Setup Wizard.
Notice	If the Neuron ID label was not placed on the Prolink Configuration Work- sheet or the worksheet is not available, click the BACK button to return to the previous dialog of the Setup Wizard. Click the Wink the Service LED button. This will blink the RED (D8)service LED on the LineMaster enclo- sure in the manhole. This allows you to identify which LineMaster the Setup Wizard is configuring. By physically identifying which LineMaster is which, this allows you to give a useful name to the node. (Unleaded, Midgrade, etc.)

Step 5: After the LineMaster has been configured, you must also associate the Pump Sense or Pump Control network card with the LineMaster in Pathway Plus.

Step 6: When the setup is complete in Pathway Plus, go to the following section.



Testing the LineMaster

Verify that the LineMaster is turning the pump on and off by lifting a dispenser handle connected to each tank and physically verify that the pump is running.

It may be necessary to adjust the precision functional element to allow the LineMaster leak detection to work. Refer to the section **Adjusting the Functional Element**.

WARNING! It is MANDATORY that you perform a catastrophic leak test on each line BEFORE leaving the site to verify that the LineMaster will shut the pump off if it detects a catastrophic leak.



Adjusting the Functional Element

The functional element is factory-set at 11.5 to 13 psi. To set the functional element for use with the LineMaster, you will need to increase the holding pressure for the adjustable functional element to about 2 psi below the pump's operating pressure.





WARNING!	When installing a siphon system, set the functional element at 5 psi below the pump operating pressure
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Notice	Make sure that the relief pressure is always lower than the pump running pressure.		
	Setting the relief pressure equal to or above pump desired pres- sure can cause failure to pressurize alarms.		



Step 1: Remove the brass hex cap on the top of the adjustable functional element.



Figure 4.3 Adjusting the Functional Element

Step 2: Set the holding pressure by adjusting the pressure adjustment screw:

To increase the pressure, turn the adjustment screw clockwise.

To decrease the pressure, turn the screw counterclockwise.

When the adjusting screw is fully down, the relief pressure is approximately 30 psi. When the adjusting screw is fully up, the relief pressure is approximately 3 psi.



After adjusting the screw, turn the pump on and off; then, observe the static pressure. Two methods exist for verifying the relief pressure setting:

- a) Relief pressure settings may be observed using Pathway Plus.
- b) Pressure may be observed using a gauge attached at the impact valve or the line-test port at the pump (see appropriate operating instruction manual).

If the pressure is not correct, adjust the screw again, as explained in Step 2.

When the pressure is correct, reinstall the brass hex cap and tighten until it touches the functional element body.

Notice If a siphon system is used, the operatin be approximately 5 psi greater than the ment.	g pressure of the pump must setting for the functional ele-
--	--

WARNING!	Verify that the LineMaster will detect a catastrophic leak and shut
	down the pump(s) BEFORE leaving the site!



LED Identification

The five LEDs visible through the sightglass on the top of the LineMaster enclosure display various information. Refer to the following table:

LED Color & ID	Display	Definition
RED (D8)		
	Blinking	Unconfigured, this will be the normal state after the LineMaster has been installed and powered up, but BEFORE configuring with Pathway Plus.
		Note: After the Linemaster is config- ured, if the Wink button is clicked, this LED will blink, allowing you to identify individual LineMaster units.
	Solid	The only time this LED will glow contin- uously is if the ambient light level is high enough to trigger the photocell. (usually only sunlight is bright enough to do this)
	OFF	This is the normal operating state after the LineMaster has been configured in Pathway Plus
GRN (D6)	ON	This indicates that a pump alarm has occurred. A line leak has been detected and the pump has been shut down.

LED Table



LED Table

LED Color & ID	Display	Definition
	Blinking	Under normal operating conditions, this LED will indicate the current level of line leak detection. A sequence of three (3) blinks, a pause, then three (3) blinks indicates that the LineMaster is operating at a 3 gph line leak detection level. A sequence of one (1) blink, a pause, then one (1) blink indicates the LineMaster is operating at a .1/.2 line leak detection level.
GRN (D7)	ON	This LED is used when unconfiguring the LineMaster. Refer to the section Unconfiguring the LineMaster for more detailed information.
YEL (D9)	Flash	This LED indicates a 'Packet Detect' state. The LED will flash whenever it detects a data packet being transmit- ted over the powerline
YEL (D10)	Flash	This LED indicates "Band in Use". The LED flashing indicates the presence of electrical activity on the powerlines in the frequency band used by the Line- Master for communication. This activity can be data or may indicate noise on the line.

Unconfiguring the LineMaster

In certain situations, such as the network not discovering the LineMaster, it may be necessary to unconfigure the LineMaster. This is accomplished using the following procedure.

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- **Step 1:** Shield the sight glass on the LineMaster unit from direct sunlight or other bright light.
- **Step 2:** Shine a flashlight at the photocell visible through the sight glass on the top of the LineMaster enclosure. Hold the light on the photocell until the RED (service) LED lights up AND the GRN LED (D7) lights. Refer to figure 4.1.
- **Step 3:** Remove the light within 1-2 seconds from the photocell and wait until the GRN LED (D7) goes out after approximately 10 seconds.
- **Step 4:** After the GRN LED (D7) goes out IMMEDIATELY return the light to the photocell and hold it there until the GRN LED (D7) lights.
- **Step 5:** Repeat Step 3 and 4
- **Step 6:** Remove the light from the photocell and watch the RED service LED, it should be blinking ON and OFF.
- Step 7: The LineMaster should now be unconfigured.

	The only TRUE indicator that the LineMaster is unconfigured is when the RED service LED is blinking ON and OFF.
Notice	If this is not the case, the unconfiguring sequence has been interrupted and must be repeated.
	For example: If the light is not returned to the photocell within 1-2 sec- onds after the GRN LED (D7) goes out, the unconfiguring sequence is restarted and all three cycles must be repeated.



Chapter 5: Pathway Plus Setup

This Chapter Explains

• LineMaster Setup in Pathway

LineMaster Setup in Pathway

Pathway Plus - Gas Land / LineMaster #1	? ×	Wink: Click on this button to
LineMaster Properties	0	node. This is helpful in situations
Prolink Setup Wizard The Prolink Setup Wizard will now aid in the setup of the following device: LineMaster #1. This device can be identified by the neuron ID below or by pressing the "Wink" button which will flash the service LED for the device.		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 con- figured.
Node Name: LineMaster #1 Neuron Id: 0100527C3600 Wink the service LED for this device	_	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.
Previous Next Cancel Help	0	
Connected to "Gas Land".		



Pathway Plus - Gas Land / LineMaster #1	? ×
LineMaster Properties	0
Node ID Neuron ID: 0100527C3600 Version: LINEMASTER@1-00	
Node Name To change the node name, enter the name in the LineMaster #1 box to the right:	
Node State The current node state is: Configured Online To change the node state, click the check box to the right: Image: Node Online	
Node Address Assign the chassis and slot number for the node in Chassis: 2 the boxes to the right: Slot: 1	
Previous Next Cancel Help Connected to "Gas Land".	

Node ID: Neuron ID: The neuron id is a read only field that contains a unique set of numbers and letters that identify the device. (No two Prolink devices have the same neuron ID) The neuron ID should match the printed label found on the device as well as the corresponding label on the configuration worksheet.

Node Name: Name: Each device has a default name assigned to it. If you want to change this name, enter it in this field. The name in this field will be displayed by Pathway Plus anywhere this node appears. (Max. of 12 characters)

Node State: Current Node State: This is a read only field that shows the current node state.

Online Configured-This is the normal operating state. In this case the application is loaded, configured, and connected to the Prolink network.

Soft Offline-In this case the application is loaded and configured, however the application is not running. This state would be used when performing service at the station to prevent this node from going into alarm.

Node Online: In most cases this check box should remain selected. To take the node offline to allow service work to be performed at the station, uncheck this box.

Node Address: The address is used to uniquely identify each network node.



Pathway Plus -	Gas Land / LineMaster #1 ? 🔀
0	LineMaster Properties 🥥
Use the buttons belo Note: Setting the leal	w to get or set the current line leak mode for this device. k mode requires an unlock code. Contact Red Jacket Electronics customer
service if required.	- Leak Mode
	Current Mode: LD_3GPH_MODE
	O Bypass Leak Detection
	G 3 GPH Mode (Hourly)
	O .1/.2 GPH Mode (Annual / Monthly)
	Get Mode Set Mode
Previous Next	t Cancel Help

.

This dialog can be used to verify and/or change the line leak detection level in the LineMaster. To retrieve the current leak detection mode, select 'Get Mode.' To change/set the leak detection mode, use the radio buttons to select the desired mode and select 'Set Mode.'



Pathway Plus -	Gas Land / LineMaster #1	?
3	LineMaster Pi	roperties 🧉
Set the temperatu	e threshold for the LineMaster belo	w.
Press the button b	elow to read the current temperatu	re:
Temperature (F):	84.7932 Update Temperature	
Previous	t	Cancel Help
nected to "Gas L	nd".	

This section allows the user to set the temperature threshold for the LineMaster. This threshold determines the point at which the LineMaster will switch on its internal heater to compensate for low temperature situations. To read the current temperature you must press the 'update temperature' button.



Rathway Plus - Gas Land / LineMaster #1	? ×
LineMaster Properties	s 🥥
Setup of LineMaster Objects	
To run the setup wizard for the Line Sensor on the LineMaster, ch below:	eck the setup box
Run setup wizard for: Sensor Object #01	Enabled
To run the setup wizard for a generic sensor on the Line Mast setup box below:	er node, check the
Run setup wizard for: Sensor Object #02	Disabled
Run setup wizard for: Sensor Object #03	Disabled
Previous Next Connected to "Gas Land".	Cancel Help

This section allows the user to select which type of objects that they want the Prolink Setup Wizard to configure at this time.



Pathway Plus - Gas Land / LineMaster #1	? ×
O LineMaster Properties	0
	[
Prolink Setup Wizard	
T TOILIK Setup Wizard	
This concludes the setup parameters for LineMaster #1. Select "Next" to store these settings in the device.	
22	
Previous Next Cancel	
Connected to "Gas Land".	

Setup parameters for the LineMaster Node are complete! To move on select 'Next' and this will store these settings in the device.



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #01
🔁 Line Sensor Properties 🧉
Prolink Setup Wizard
The Prolink Setup Wizard will now aid in the setup of the following object: Sensor Object #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: Sensor Object #01
Wink the service LED for this device
Previous Next Cancel Help

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



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #01	? ×
Line Sensor Properties	0
Object ID	
Object Number: 1	
Object Name	
To change the sensor name, enter the name of the object in the box to the right:	1
Enabled State	
To enable the object, check the box to the right: 🔽 Object Enable	d:
Previous Next Ca	ancel 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 object.



Pathway Plus - Gas Land #	46 7 LineMaster	#1 / Sensor Object #01	? ×
🔁 Liv	e Sensor	Properties	0
	Sensor Pro	operties	
Set the sensor type below:			
Sensor	Type: Pressure	-	
The sensor will sound the but	zzer when the sens	sor goes into alarm. Set the	length of time to
Alarm Duration: 2	secs	C Sound until user pres	sses Quiet Switch.
Previous		Ce	ancel Help
onnected to "Gas Land #46".			Idle

This is where the user can select the type of sensor to use. The user can also set the length of time for how long the buzzer will sound.

Alarm Duration: The user can select how many seconds they want the alarm to sound by clicking on the arrows in the alarm duration box.



Pathway Plus - Gas Land / LineMaster #1 / Sensor Ot	oject #01	? ×
🖄 Line Sensor Prope	erties	0
If the manifold group of this line sensor needs to be changed in the box below (the current manifold groups are listed at the Manifold Group: A (No Manifold)	, select the new manifold e bottom).	group
Current list of Manifold groupings for this node:		_
Line Sensor Name	Manifold Group	
LineMaster #1: Sensor Object #01	A (No manifold)	
Previous	Cancel	Help
Connected to "Gas Land".		Idle

In certain installations where two lines share a common section of piping, it may be necessary to configure two or more LineMasters as 'manifolded' lines. A common scenario requiring manifolded lines can occur when two lines are blended at the dispenser to create a secondary fuel, and the blend valve allows pressure leakage across the two pipelines. To manifold two LineMasters together, assign them both above to the same manifolded group.



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #01 🔹 🛛 🖓
Line Sensor Properties
Select the tank associated with this sensors pump control object in the box below:
To shut down the pump on monthly and annual fails, select the box below: ▼ Shut down on monthly and annual fails.
Cooperate with leak detection
Previous Next Connected to "Gas Land"

If this Prolink network also contains a tank card, use the pull down edit box to select the tank which corresponds to the pump and LineMaster in question.

The LineMaster can be configured to optionally shut down on monthly (.2gph) and annual (.1gph) level failures. By default, the LineMaster is set to shut down on all leak failures.

In certain situations where tank cards exist on the network that do not support continuous testing, it may be necessary to enable addition cooperation from the LineMaster if the LineMaster jogs the line frequently enough to prevent tank leak detection from completing. This mode should only be used if known difficulties exist within completing tank testing. Check the checkbox labeled 'Cooperate with leak detection' if required.



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #01	? ×
Line Sensor Properties	0
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.	
Previous Next Cancel	Help
Connected to "Gas Land".	Idle

This is the user's opportunity to make any notes to have for future reference. The notes from above are locally stored on the PC in Pathway Plus, and do not get stored to the station.



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #01	? ×
Line Sensor Properties	0
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 H	elp
Connected to "Gas Land".	Idle

This section allows the user to select the Status Monitor. The Status Monitor is used to view the current state of the object and to verify that it is working correctly.



Pathway Plus - Gas Land #46 /	LineMaster #1 / Sensor Object #01	? ×
🔁 Line S	Sensor Properties	0
Line Status Pressure: 7.85 StdTime: 0 Target: 0 Accum: 1 Phase: 4 Status: LINE_OK PrecTime: 0 AirCount: 0 Time: 8:30:24 AM Monitor Interval: (secs) 2	Line Pressure	
Previous Next	Cancel	Help
Connected to "Gas Land #46".		



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #01
🖄 Line Sensor Properties 🧉
Prolink Setup Wizard
This concludes the setup parameters for Sensor Object #01. Select "Next" to store these settings in the device.
Previous Next Cancel
Connected to "Gas Land". Canceling a Poll Request

Setup is complete for Sensor Object #01!



athway Plus - G	as Land / LineMaster #1 / Sensor Object #02	? >
\mathcal{V}	Sensor Properties	0
	Prolink Setup Wizard	
The Prolink Se #02. The dev by pressing th	tup Wizard will now aid in the setup of the following object: Sensor Object ce to which this object belongs can be identified by the neuron id below or e "wink" button which will flash the service LED for the device.	
	Object Name: Sensor Object #02	
	Neuron Id: 0100527C3600	
Previous Ne	cancel Help	
nnected to "Gas	land"	Idle

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



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #02	? ×
Sensor Properties	0
Object ID	[
Object Number: 2	
Cobject Name	
To change the sensor 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: Voliect Enabled:	
Previous Next Cancel	Help
Connected to "Gas Land".	Idle

Object ID id 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 tank.



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #02	? ×
Sensor Properties	0
Sensor Properties	
Set the sensor type below:	
Sensor Type: Floating Vapor	
The sensor will sound the buzzer when the sensor goes into alarm. Set the length of tim turn on the buzzer below: Alarm Duration: 30	e to witch.
Set the threshold for the sensor below: Sensor Threshold: 8000 RRUs	
Check this box to allow sensor alarm on this object to shut down the pump directly. Shut Down Pump Directly	
Previous Next Cancel H Connected to "Gas Land".	elp

This is where the user can select the type of sensor to use. The user can also set the length of time for how long the piezo will sound on an alarm condition.

Alarm Duration: The user can select how many seconds they want the alarm to sound by clicking on the arrows in the 'alarm duration' box.

On certain sensor types (such as the floating vapor), the installer should provide an RRU threshold for defining the alarm trip value.

The user has the option of specifying whether an alarm on this peripheral sensor will disable the associated pump on which this LineMaster is installed. Check the box provided to allow the sensor to disable the pump.



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #02		? ×
Sensor Properties		\bigcirc
Use this space to make any notes concerning the setup or operation of t Note: These notes are for local reference and are not stored in the devic	his device. :e.	
Previous	Cancel	Help
Connected to "Gas Land".		Idle

This is the user's opportunity to make any notes to have for future reference. The notes from above are locally stored on the PC in Pathway Plus, and do not get stored to the station.



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #02	? ×
Sensor Properties	0
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?	
Previous Next Cancel H	lelp
Connected to "Gas Land".	Idle

This section allows the user to select the Status Monitor. The Status Monitor is used to view the current state of the object and to verify that it is working correctly.



Pathway Plus - Gas Land / LineMaster #1 / Sensor Object #02 🔹 🔀					
🛷 Sensor Properties 🥥					
Sensor Status CH1: 4.97 Volts CH2: 9831.09 RRUs Status: SENSOR_ALARM Time: 11:11:49 AM	Floating Vapor				
Monitor Interval: (secs) 2	ਤਿੰ ਹੈ 11:11:11 AM 11:11:27 AM 11:11:41 AM				
Previous Next	Cancel Help				



hway Plus - Gas	Land / LineMa	ister #1 / Sens	or Object #02	?
\triangleright	Sens	or Prop	erties	
	Prolin	k Setup ∖	Nizard	
This concludes the settings in the dev	setup parameters	s for Sensor Obje	ct #02. Select "Ne	ext" to store these
revious Next	1			Cancel
		Dell De misert		

Setup for Sensor Object #02 is complete!



Appendix A: Replacement Parts

Part Number	Description
Contact Red Jacket	Prolink Chassis
RJ400-767-5	Router Network Card
RJ400-756-5	Pump Sense Network Card
RJ400-599-5	Pump Control Network Card
323-001-5	Functional Element, Precision (Gas)
RJ340-222-5	Pressure Transducer
RJ400-204-5	Sensor, Dispenser Pan
RJ400-377-5	Sensor, Groundwater–10 ft (3m)
RJ400-378-5	Sensor, Groundwater–15 ft (4.6m)
RJ400-381-5	Sensor, Groundwater–20 ft (6.1m)
RJ400-058-5	Sensor, High Level–2 in. (5cm)
RJ400-059-5	Sensor, High Level– 4 in (10)
Contact Red Jacket	Sensor, High/Low, Various sizes
RJ400-042-5	Sensor, Hydrostatic
RJ400-180-5	Sensor, Liquid Refraction
RJ400-203-5	Sensor, Optical Liquid Discrimination (OLDS)
RJ400-204-5	Sensor, Sump
RJ400-219-5	Sensor, Vapor Conductivity–2 in (5cm) Floating Sensor
RJ330-180-5	Replacement Sensor Connector Board Housing
RJ400-783-5	Replacement Standard Connector Board Housing
RJ400-765-5	Replacement Standard LineMaster Collar
RJ400-220-5	Sensor, Vapor Conductivity–4 in (10.1cm) Floating Sensor



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