Pro*link*

Serial Link
Basic Mode
Installation Manual

SERIAL LINK

RED JACKET

ACK SERVICE CONN ERROR RX TX START POWER

RED JACKET ™
ELECTRONICS

LLOYD'S REGISTER QUALITY ASSURANCE · ISO9001

Serial Link Basic Mode Installation Manual
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Certifications and Listings

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

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About This Manual

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

Organization

This manual is organized into two chapters:

Chapter 1: Serial Link Overview and Installation
Chapter 2: Connecting to a Network

It also includes a Parts List, and an Index.

Typographical Conventions

The various symbols and typographical conventions used in this manual are described here.

Numeric Formats	A numeric zero looks like 0 in this document. An uppercase letter "oh" is rendered as O.
	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).

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 hazard.

Chapter 1: Seriallink Overview and Installation

This Chapter Explains

- **System Functions**
- **System Description**
- **Installing the Serial Link**

System Functions

The Red Jacket Serial Link provides a method for sending and retrieving data to and from peripheral devices via an RS232 serial port. It also can provide a network termination for the Prolink network.

The Basic Mode application allows the Seriallink to retrieve line leak detection information and send it to a Prolink network, or Pathway Plus running locally or remotely. The Seriallink can also send this information to an ST Controller, a Star printer, a TLS 350/250 printer, or other brands of serial printers.

System Description

The Serial Link is housed in a small enclosure (approx. 6 in X 6 in) which can be wall mounted with the supplied bracket, or located on a desk or shelf. Multiple Serial Links may be used.

6VDC power for the Serial Link is supplied by the included AC adapter. (input 110VAC, output 6VDC)

Installing the Seriallink

Mount the Seriallink enclosure within 9-ft (depending on cable length) of the peripheral to be connected and within 6-ft of a 110 VAC electrical outlet. Use the wall mount bracket provided or locate the Seriallink on a desk or shelf. Be sure both front and rear panels are accessible. If using the wall mount bracket, attach the Serial Link to the bracket with the two screws provided. (wall mounting hardware not included) Do Not plug AC adapter into electrical outlet at this time.

Notice	DON'T connect the Seriallink unit directly to a telephone line. A modem MUST ALWAYS be used as the interface between Seriallink and a telephone system.
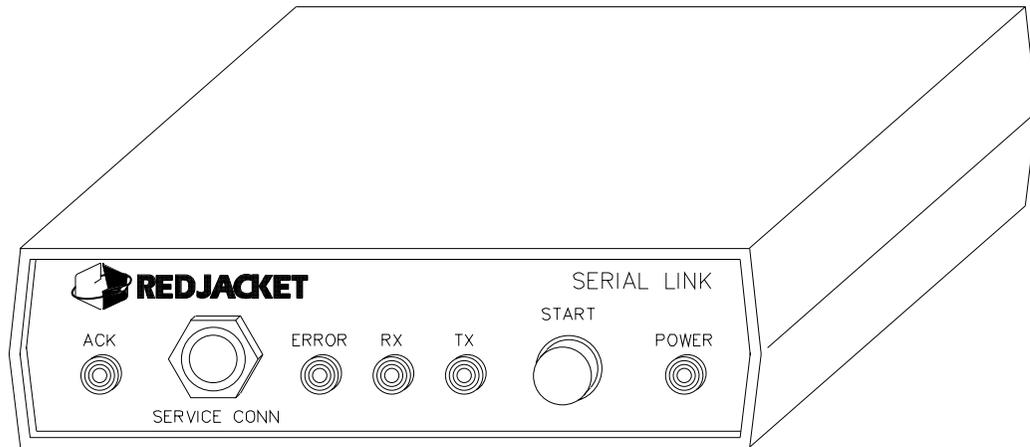
Figure 1.1 Serial Link, Front View

ACK Light: A red LED that reflects the state of the application (i.e., service acknowledge).

PCC-10 Jack: Jack for making a connection between a PCC-10 PCMCIA card on a laptop computer and the Seriallink to access the network.

Error Light: This is application-specific and not used by the Basic Mode application.

Receive (RX) Light: A red LED illuminates when the Seriallink is receiving data over the RS232 link.

Transmit (TX) light: A red LED illuminates when the Seriallink is sending data over the RS232 link.

Start Button: Prints a line leak report on demand.

Power Light: A green LED that is lit when the Seriallink is energized.
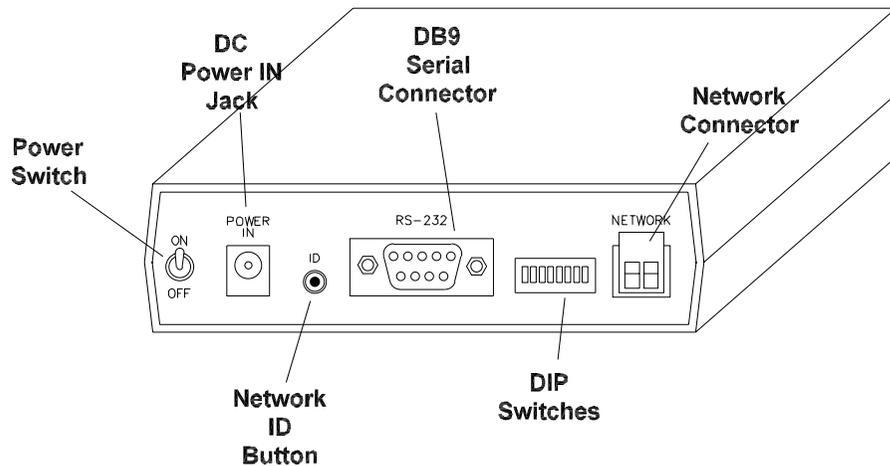
Figure 1.2 Serial Link, Rear View

On/Off switch: The toggle switch that turns the unit on or off.

Power In Jack: Jack for supplying DC power to the unit.

ID Button: Used to identify the individual Seriallink to the network configuration software.

DIP switches:, used to configure network termination, battery, demo and normal modes.

Network Connector: 2-pin Phoenix type network cable connector.

DIP Switch Settings

The DIP switches are arranged from 1 - 6, left to right.

Position	Switch Position	Description
1	Down	Battery backup is enabled.
	Up	Battery backup is disabled.
2	Down	Demo Mode.
	Up	Normal Mode
3	Down	Undefined.
	Up	Undefined
4	Down	Undefined
	Up	Undefined
5	Down	Network termination is enabled
	Up	Network termination is disabled
6	Down	Network type is single-ended termination
	Up	Network type is double-ended termination

Notice	DIP switch positions 3 and 4 are not used for the Basic Mode application; they may be used for future applications.

RS232 Cable Selections

The following table shows which type of serial cable to use in different applications. Refer to the Parts List in Appendix A for specific part numbers.

IF the Serial Link is to be connected to a:	THEN use the following type of cable:
TLS 250 or 350 printer	null modem
RS-232 port on a PC using direct-connection	null modem
modem	straight

Chapter 2: Connecting to a Network

This Chapter Explains

- **Network Connections**

- **Connecting to a CPT Controller**

  - Daisy Chaining CPT Controllers to the Serial Link

- **RS232 Connections**

- **Connecting to a Modem**

Network Connections

The two terminal network connector (located on the back of the Serial Link enclosure) provides a method for connecting the Serial Link to other pieces of equipment in the Prolink network. The Serial Link can also function as a network termination for the Prolink network.

The following sections show possible network connections for the Serial Link.
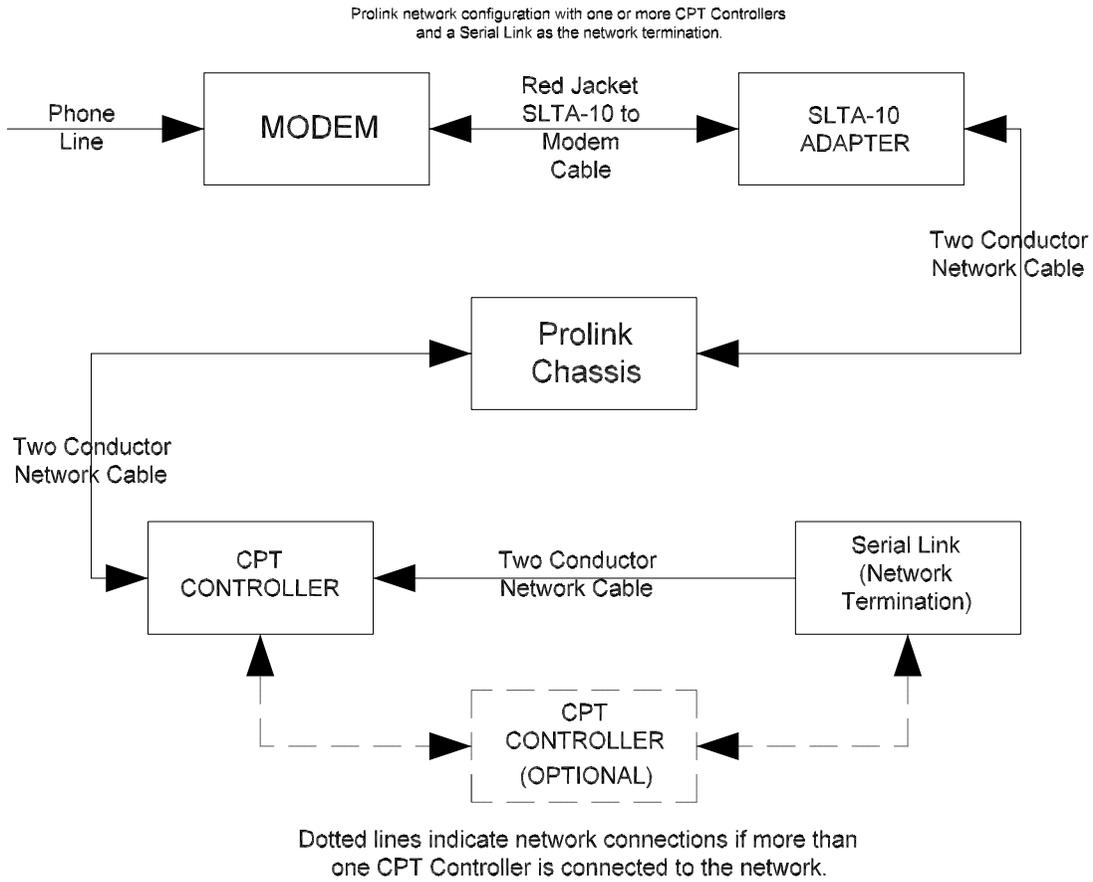
Figure 2.1 Prolink network with CPT Controller(s) and Serial Link

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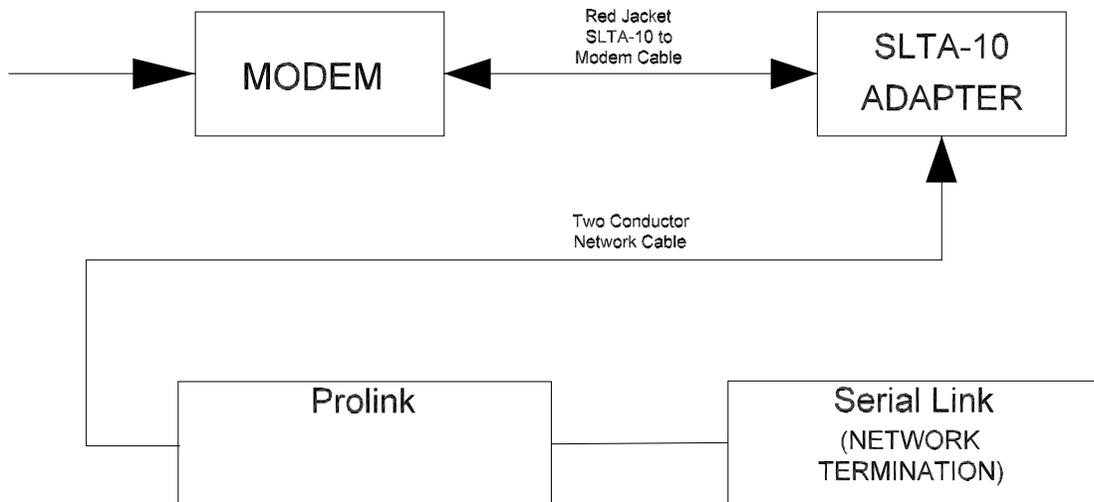
This is the simplest type of Prolink network.
It consists of a modem, an SLTA-10
network adapter, and a Prolink chassis as the
network terminator.

Figure 2.2 Prolink network using a Serial Link as the network termination

Notice	Single-ended termination on Serial Link is enabled by setting dip switches 5 and 6 to the down position.

Connecting to a CPT Controller

This section describes connecting the Serial Link to a CPT Controller, or controllers without being connected to a Prolink network.

This configuration shows a CPT Controller(s)
connected to the Serial Link without being
connected to a Prolink network.

Dotted lines indicate connections if more than one CPT Controller is connected.
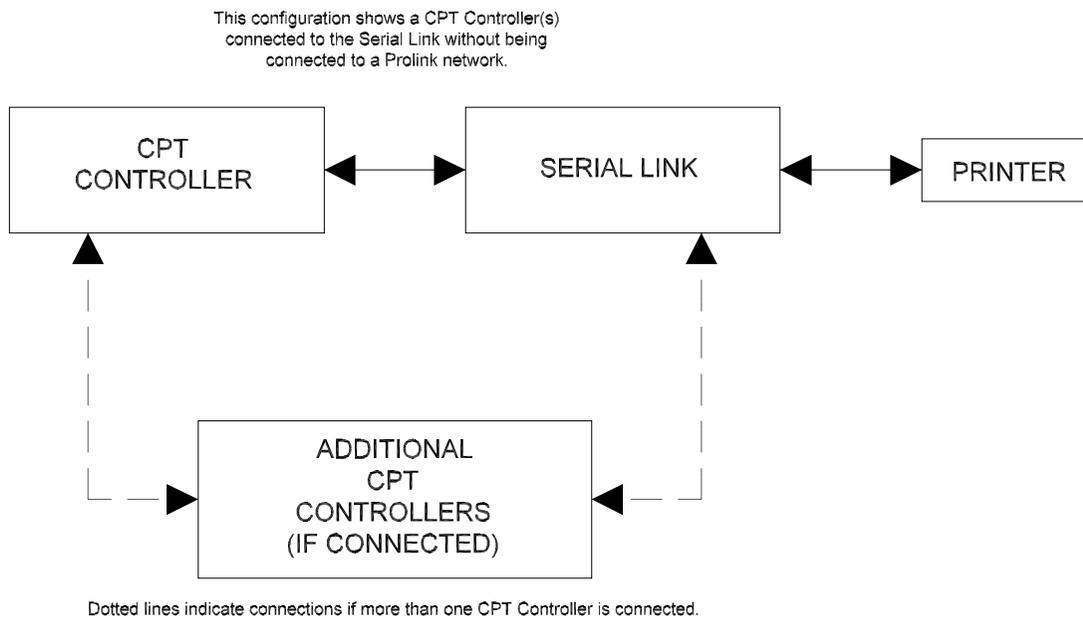
Figure 2.3 CPT Controller to Serial Link connections

Notice	Refer to the CPT Controller manual for instructions on powering the CPT Controller down.

Step 1: Disconnect power from the Serial Link and the CPT Controller.

Step 2: Run the network cable (see parts list) through the factory knockouts provided on the bottom of the CPT Controller. If *no* knockouts are available under the power supply use the tandem cable access knockout.

Step 3: Strip the outer insulation and shield from the shielded network cable(obtained from Red Jacket) approximately 1¼ -in. Strip both inner conductors the minimum amount to connect to the network connector.(approx. 1/8")

Notice	DO NOT connect the network cable shield to CPT Controller chassis ground!
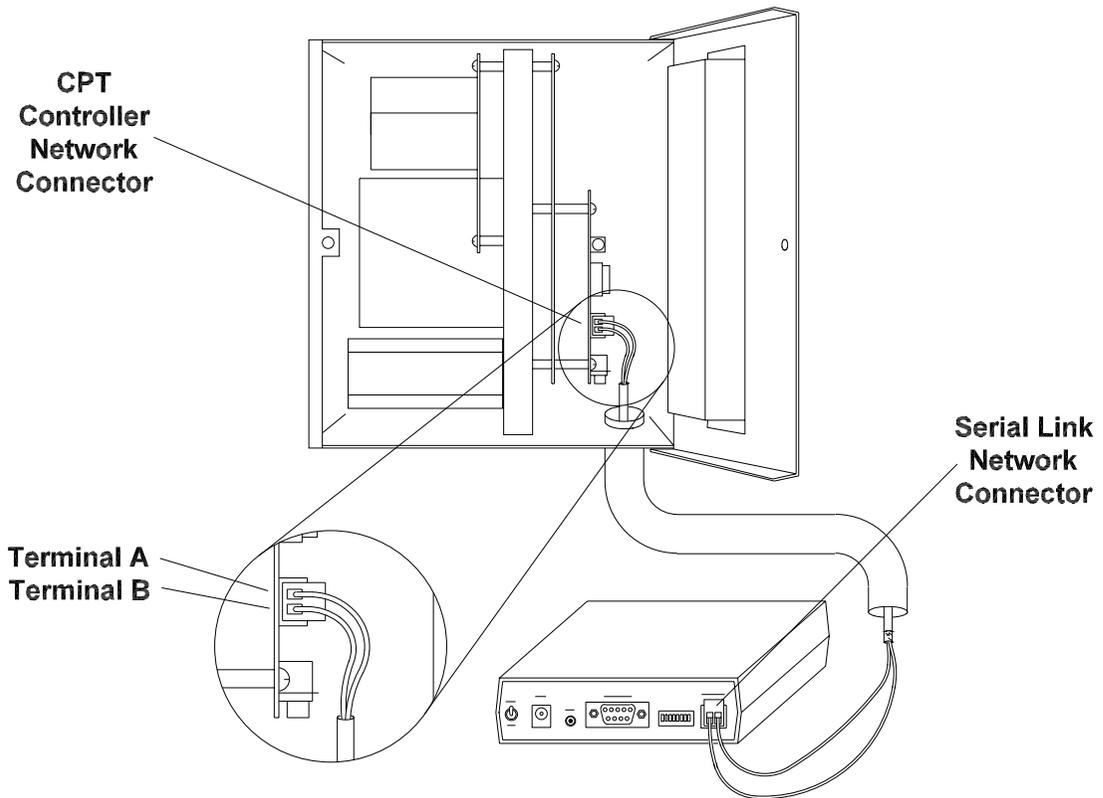
Figure 2.4 Connecting the Serial Link to the CPT Controller

Step 1: Connect the inner conductors to the network connector terminals. Polarity is not an issue, either conductor can go in either terminal.

Step 2: Set the dip switches on the Serial Link as shown below to enable network termination.

SW5	down enables termination
SW6	down-for single-ended termination

Step 3: Reconnect power to both systems.

Daisy Chaining CPT Controllers

The following instructions describe daisy chaining CPT Controllers. This is used when more than one CPT Controller is being connected to a Serial Link or a Prolink network. Refer to figure 2.5 when performing this operation.

Step 1: Run both network cables (see parts list) through the factory knockouts provided on the bottom of each CPT Controller. If *no* knockouts are available under the power supply use the tandem access.

Step 2: Strip the outer insulation from the network cables(refer to parts list) approximately 1¼-in. Strip the inner conductors approximately ¼". Take one conductor from each network cable, twist them together, and insert them into the CPT Controller terminal **A**.connector. Tighten the screw.

Step 3: Twist the second pair of conductors together and insert them into the CPT Controller terminal **B** connector. Tighten the screw.
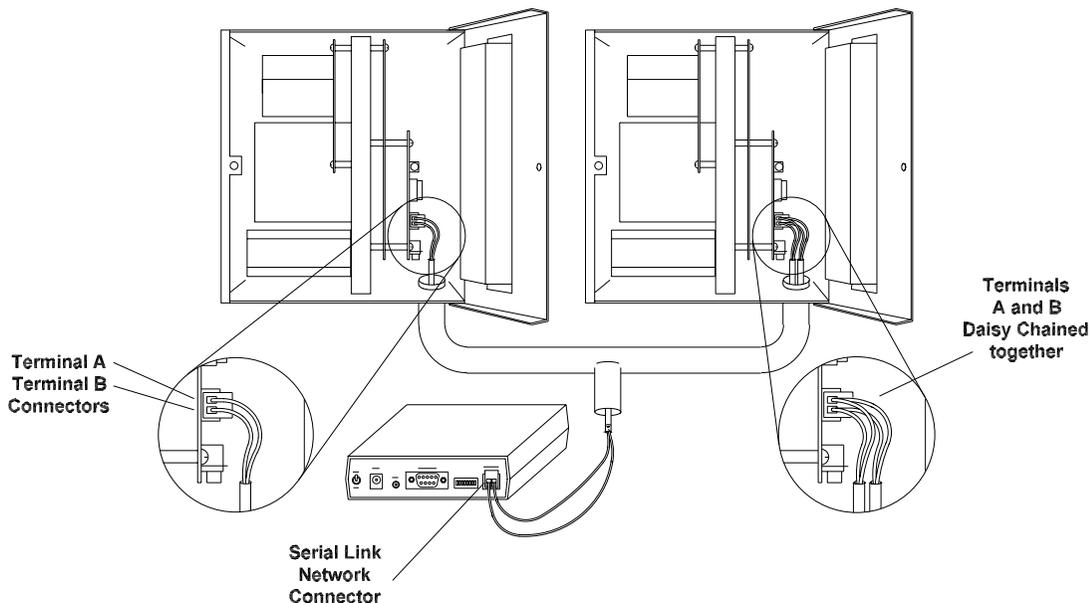
Figure 2.5 Daisy Chaining CPT Controllers

Step 4: Run the second network cable to either the Serial Link or another CPT Controller. Repeat the process above for adding to the daisy chain or follow the instructions in the section entitled, **Connecting to a CPT Controller** to connect to the Serial Link.

RS-232 Connections

Connecting Serial Link to the Prolink

The following diagram shows the network connections to the Prolink network.
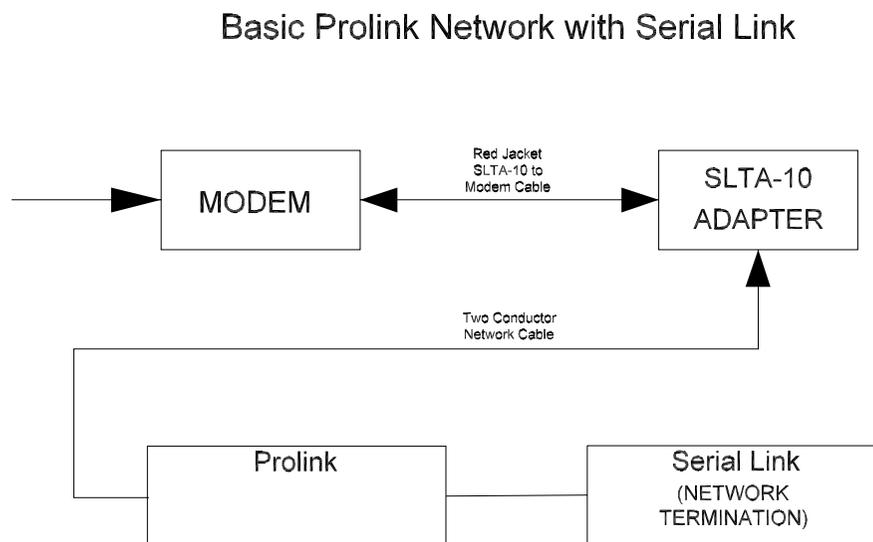
Basic Prolink Network with Serial Link

```
                                   Red Jacket
                                   SLTA-10 to
           ┌──────────┐          Modem Cable     ┌──────────┐
    ───────▶│  MODEM   │◀──────────────────────▶ │ SLTA-10  │
           └──────────┘                          │ ADAPTER  │
                                                 └──────────┘
                         Two Conductor                ▲
                         Network Cable                │
              ┌──────────────────────────────────────┘
              │
        ┌──────────┐                    ┌──────────────┐
        │ Prolink  │────────────────────│ Serial Link  │
        │          │                    │  (NETWORK    │
        │          │                    │ TERMINATION) │
        └──────────┘                    └──────────────┘
```

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 2.6 Prolink to Serial Link network connections

The following procedures should be followed when connecting the Serial Link to the Prolink chassis.

Step 1: Route the network cable into the Prolink enclosure through a free knockout on the bottom of the enclosure.

Step 2: Connect the two network cable conductors to the network terminals **A** and **B** on the Prolink power supply board. See *figure 2.7.*
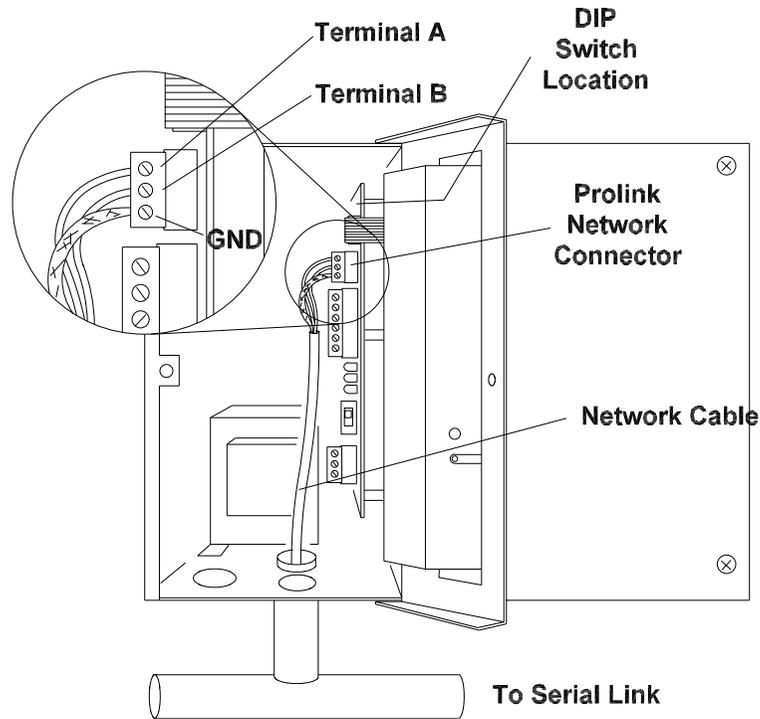
Figure 2.7 Network cable connections to Prolink

Step 3: Route the network cable from the Prolink to the Serial Link.

Step 4: Connect the two network cable conductors to the **A** and **B** terminals on the Serial Link. See *figure 2.8*.

Step 5: After connecting the cables, turn the Serial Link on by moving the toggle switch located on the back of the enclosure to the *ON* position.
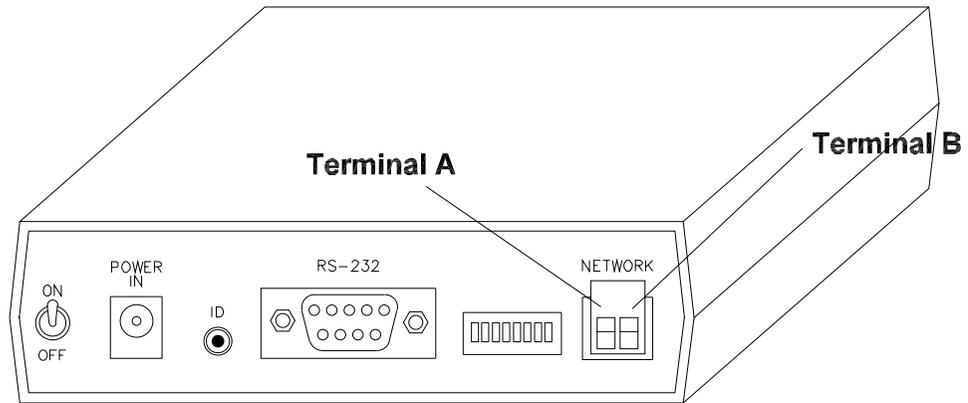
Figure 2.8 Serial Link network connectors

Connecting Serial Link to an ST Controller

The Serial Link Basic mode can be connected to an ST Controller to allow a CPT Controller to send line leak information to the ST Controller. This connection can be accomplished in one of two configurations, either directly to the ST Controller or through a Chameleon Port Controller. Both connection types require that 4M software be installed in the ST Controller.

Direct Connection to the ST Controller

To directly connect the Serial Link to the ST Controller, use a female DB9 to female DB9 null serial cable. (See Parts List)

Step 1: Disconnect power to the ST Controller, the Serial Link , and the CPT Controller.

Step 2: Connect the serial cable to the serial ports on the ST Controller and the Serial Link.

```
┌──────────────┐
│ Serial Link  │
└──────────────┘
                          ┌──────────────┐
┌──────────────┐          │ ST Controller│
│     CPT      │          └──────────────┘
│  Controller  │      Serial
└──────────────┘      Cable
      Two Conductor
      Network Cable
```
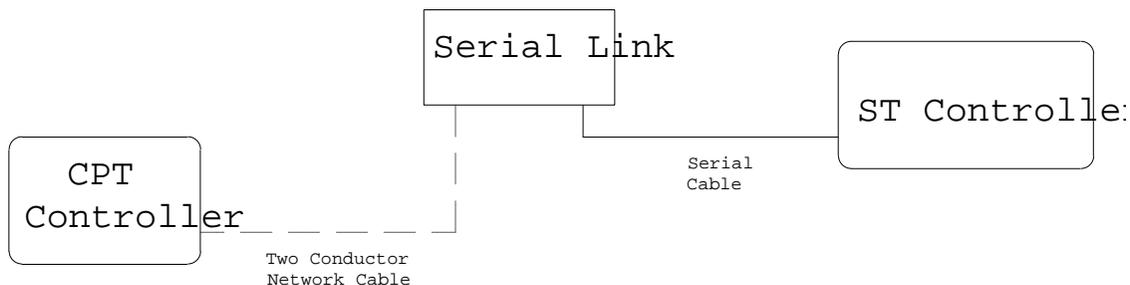
Figure 2.9 Serial Link to ST Controller connections

Step 3: Connect the Serial Link to the CPT Controller using two conductor network cable. Refer to the earlier section **Connecting to a CPT Controller** for specific instructions on making the network connection.

Step 4: Reconnect power to the ST Controller, the Serial Link , and the CPT Controller.

Connecting the Serial Link to the ST Controller with a Chameleon

This configuration allows the ST Controller to access CPT Controller line leak information through the Serial Link and remain connected to a modem. This allows both dial in and dial out functions through the modem.

Step 1: Disconnect power to the ST Controller, the Serial Link , the CPT Controller and the Chameleon Port Controller.

Step 2: Connect the Serial Link to Port A on the Chameleon.

Step 3: Connect the modem to Port B on the Chameleon.

Step 4: Connect the ST Controller to the MAIN port on the Chameleon. See the **Chameleon Port Controller** manual for instructions on connecting and configuring the Chameleon Port Controller.
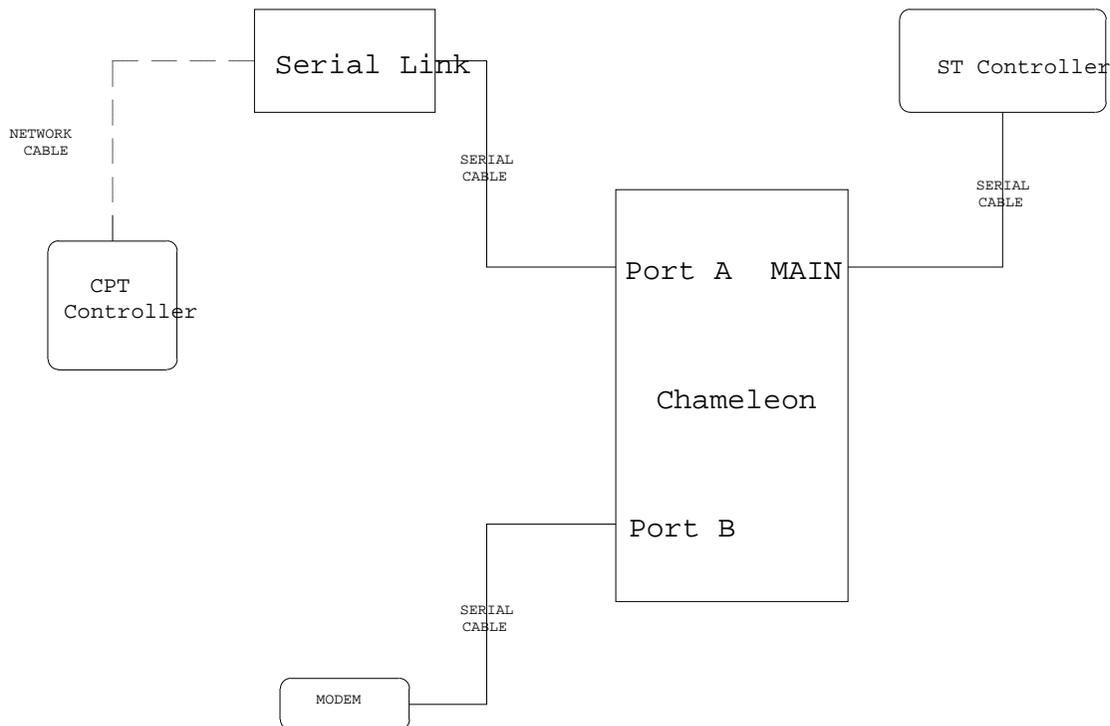
Figure 2.10 Serial Link, Chameleon, and ST Controller connections

Step 5: Connect the CPT Controller to the Serial Link using two conductor network cable. Refer to the earlier section **Connecting to the CPT Controller** for instructions.

Step 6: Reconnect power to the ST Controller, the Serial Link , the CPT Controller and the Chameleon Port Controller.

Connecting Serial Link to a Star or Onmi serial printer

The Serial Link can send line leak reports to the Star serial printer. Refer to the Red Jacket Prolink Serial Printer Kit Installation Sheet for specific connection and configuration instructions.

Connecting Serial Link to TLS Printers

Notice	The Serial Link uses the RS232 serial port on the TLS printer. This does not affect any other hardware or software on the TLS.

TLS 250/350 Series

The Red Jacket Serial Link can be connected to the TLS 250/350 series printers, provided that an RS232 port is available on the TLS. If no RS232 port is available, contact a service representative to order the necessary equipment. The parameters for communications with the Serial Link are as follows: odd, 7 data bits, and 1 parity bit. These are the factory default settings for the TLS 250/350 series. These Serial Link parameters are set in Pathway Plus.

The following steps describe how to connect to a TLS 250 or 350 printer.

Step 1: Disconnect power from the TLS and the Serial Link.

Step 2: Connect the DB9 to the DB25 Null Modem Cable (see parts list) between the Serial Link and the TLS.

Step 3: Refer to the section entitled **Network Connections** for information on creating connections between the Serial Link and the network.

Step 4: Reconnect power to the system.

After connecting the cables, turn the Serial Link on by moving the toggle switch located on the back of the enclosure to the *ON* position. The green light will illuminate when the system is on.

Programming the TLS 350 Series

On the TLS keypad, enter the programming menu by pressing the <**Backup**> key until the "All Functions Normal" screen appears. If a security code is active, you must deactivate it before programming.

Press < **Mode** > then press the < **Function** > key until you enter communications setup.

Step 1: Press the <**Step**> key then the < **Enter** > key to access the port settings menu.

Step 2: Press the <**Change**> key to select the baud rate that matches the baud rate for Serial Link. (9600 baud) Press the <**Enter**> key to save the settings.

Step 3: Press the <**Step**> key to move to the next communication setting.

Repeat steps 2 and 3 until all communication port programming is complete. Press the <**Backup**> key until "All Functions Normal" screen appears.

Programming the TLS 250 Series

Baud Rate

Change the baud rate by turning the rotary switch located on the outer edge of the door. Baud rate settings are 1 though 8 on the rotary switch. Select the baud rate from the following chart and set the rotary switch accordingly. The parameters for communications with the Serial Link are as follows: odd, 7 data bits, and 1 parity bit. These are the factory default settings for the TLS 250. The Serial Link default baud rate is 9600. All Serial Link parameters must be set in Pathway Plus.

Switch Position	Baud Rate
1	9600 baud
2	4800 baud
3	2400 baud
4	1200 baud
5	600 baud
6	300 baud
7	150 baud
8	110 baud

Parity, Security Code

A five-position dip switch (located on the main board) controls parity (SW1) and the security code enable/disable function in the TLS system.

Notice	For safety and operating reasons, shut off the power to the TLS while changing switch settings.

The TLS system "reads" these switches during power-up or after depressing the reset button. The communication settings of the TLS must match the communication settings of the Serial Link being used.

The security code switch disables the system security code while troubleshooting the communications port. You **must** disable the security code before servicing the system. Shut down power to the TLS-250 system. Disable the code by moving the switch to the disable (open) position and return power to the system.

After servicing is complete, be sure to re-enable the security code by turning off power to the system, moving the switch to the enabled position (closed), and turning on the power.

Switch assignments are as follows:

Position 4	**Parity**
Closed	Odd
Position 5	**Security Code**
Open	Disabled

Connecting Serial Link to other brands of serial printers

The Serial Link can send line leak report information to other brands of serial printers. Red Jacket does not make any recommendations on how to configure either the Serial Link or other brands of printer

Connecting to a Modem

The Serial Link connects to an external Hayes compatible modem. Refer to the parts list at the end of this manual for modem kits that have been tested with the Serial Link to ensure compatibility.

Notice	DON'T connect the Serial Link unit directly to a telephone line. A modem MUST ALWAYS be used as the interface between Serial Link and a telephone system.

Follow these procedures to connect the Serial Link to a modem linked to the telephone system.
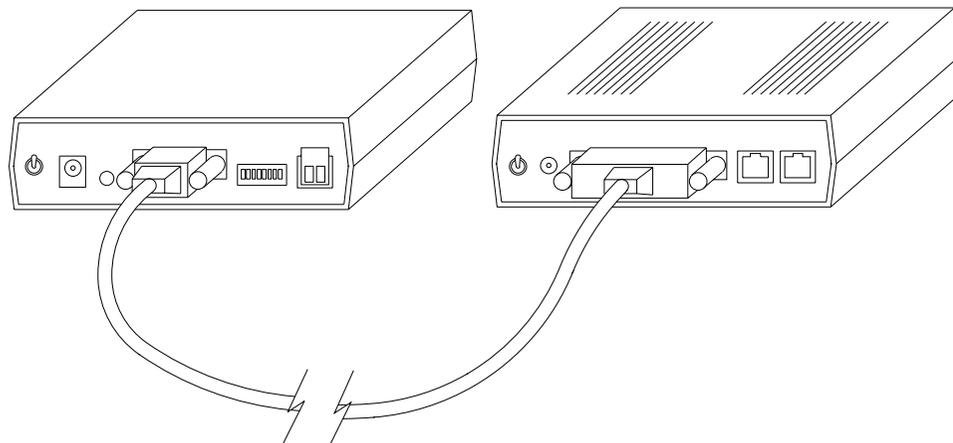
Figure 2.11 Serial Link to Modem Connection

Step 1: Disconnect power from both the Serial Link and the modem.

Step 2: Connect the DB9 end of the modem cable to the Serial Link and the DB25 end to the modem.

Step 3: Reconnect power to both the Serial Link and the modem.

Connecting to a Laptop Computer

The Serial Link can be connected to a laptop computer using the PCC-10 PCMCIA card adapter and cable assembly. This allows the Serial Link to send line leak information to Pathway Plus running on the laptop computer.

Step 1: Turn the laptop computer and the Serial Link OFF.

Step 2: Insert the PCC-10 PCMCIA card into an open PCMCIA type II slot on the computer.

Step 3: Connect the PCC-10 connector on the cable to the Service Conn jack on the face of the Serial Link .
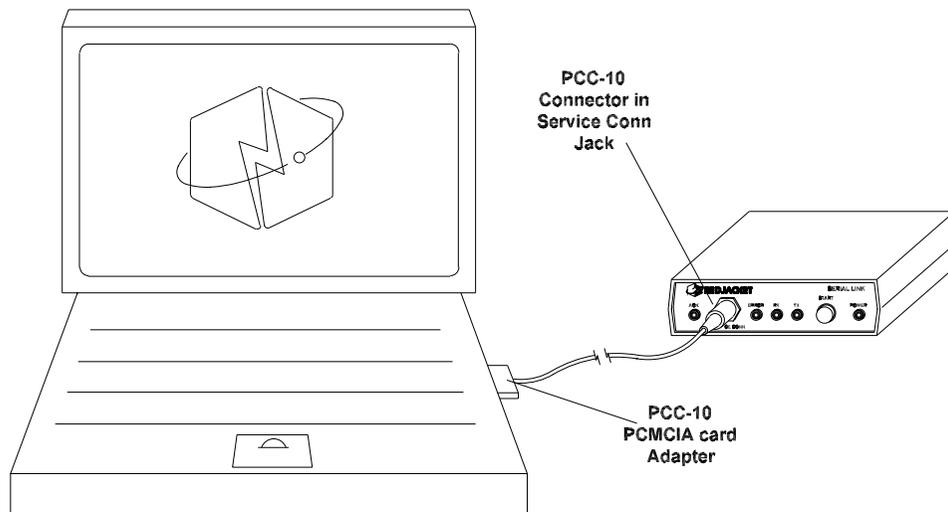
Figure 2.12 PCC-10 connection from a laptop computer to the Serial Link

Step 4: Turn the Serial Link back ON.

Step 5: Start the computer and run Pathway Plus to retrieve line leak information from the Serial Link.

Appendix A: Replacement Parts

Part Number	Description
RE400-653-5	Seriallink, Basic Mode
RE400-679-5	KIT, PCC-10 Network adapter
RE125-153	PCLTA-10 Network Adapter
RE400-680	22-gauge, 2-conductor Twisted Pair Cable with PVC Jacket (network cable)
RE350-158-5	Cable, DB9 to DB25-Null Modem
RE350-159-5	Cable, DB9 to DB9-Null Modem
RE350-160-5	Cable, DB9 to DB9-Straight
RE350-151-5	Cable, DB9 to DB25-Straight (modem)
RE400-634	Modem kit, high speed
RE400-636	Modem kit, high speed, with call router
RE400-633	Modem kit, low speed
RE400-635	Modem kit, low speed, with call router
RE350-157	PCC-10 Network cable
RE350-161	Cable, PCC-10 Network to Fly-wire Adapter

Appendix B: Glossary of Terms

AC	Alternating current
Adapter	A device used to make different parts of an apparatus compatible.
Ampere (A)	A unit of electric current equivalent to a steady current produced by 1 V applied across a resistance of 1 Ω.
CPT	Constant Pressure Turbine. The CPT pump uses controlled pressure technology and includes the constant pressure turbine and compliance pressure testing. The CPT System has three components: controller, final pump and motor, and a transducer kit.
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.
EMI	Electromagnetic interference; interference relating to the magnetism developed by a current of electricity.
EPA	U.S. Environmental Protection Agency. The EPA line leak test protocols include hourly, monthly, and annual testing.
Ground	A conductor that connects with the earth; to connect electrically with ground (earth ground, chassis ground, analog ground, digital ground).
HDPE	High-density polyethylene.
Intrinsically safe barrier	A barrier to keep intrinsically safe wiring physically separated from all other wiring.
LED	Light-emitting diode.
Ohm (Ω)	A unit of electrical resistance equal to the resistance of a circuit in which a potential difference of 1 V produces a current of 1 ampere.
Peripheral	A device connected to the system that provides communication or auxiliary functions.
TIM	Transaction interface module.
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.
UL-listed	A designation for products that have been evaluated by Underwriters Laboratories with respect to reasonably foreseeable hazards to life and property, and in which the risks of such hazards have been reduced to an acceptable degree.

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