SEB®
NET-PATH*m*™

Installation and Operation Guide

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SEB NET-PATH*m* Installation and Operation Guide

Teltronics, Inc.
2150 Whitfield Industrial Way
Sarasota, Florida 34243-4046 USA

Visit our web site at www.teltronics.com

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Revision History

02/09 - Revision I

- Updates to Command Line Interface table (Chapter 3)

04/08 - Revision H

- Added Failover section (Chapter 2)
- Added and Return to a Default State section (Chapter 2)

01/07 - Revision G

- Updates to DC Power Requirement section (Chapt. 1)
- Updates to Battery section (Chapt. 2)
- Added NET-PATHm DC Power section (Chapt. 5)

04/06 - Revision F

- Updates to the Power Requirements section (Chapt. 1)

09/05 - Revision E

- Updates to the Script command line interface command with the “ScriptParm” option (Chapt. 3).

07/05 - Revision D

- Added “Table 4-2: Country Code Definitions for Modem Type 239.”

05/05 - Revision C

- Updates to the “Table 3-1: NET-PATH Commands” with RLOGINIP, RLOGINHOST, and XPARA commands.

04/05 - Revision B

- Updates to the “Power Requirements” (Chapter 1).

01/05 - Revision A

- First release.

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Indicators and Diagnostics

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Warning

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can emit radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Caution

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch telephone wires or terminals that are not insulated unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

FCC Notice

FCC Requirements for Consumer Products

The Federal Communications Commission (FCC) has established Rules which permit this device to be directly connected to the telephone network. This equipment complies with FCC Part 68 and TIA 968. Standardized jacks are used for these connections. This equipment should not be used on party lines or coin lines.

If this device is malfunctioning, it may also be causing harm to the telephone network; this device should be disconnected until the source of the problem can be determined and until repair has been made. If this is not done, the telephone company may temporarily disconnect service.

The telephone company may make changes in its technical operations and procedures: if such changes affect the compatibility or use of this device, the telephone company is required to give adequate notice of the changes.

If the telephone company requests information on what equipment is connected to their lines, inform them of:

a) The telephone number that this unit is connected to

b) The ringer equivalence number

c) The USOC jack required [RJ-11-C], and

d) The FCC Registration Number

Items (b) and (d) are indicated on the label. The ringer equivalence number (REN) determines how many devices can be connected to your telephone line. In most areas,

the sum of the RENs of all devices on any one line should not exceed five (5.0). If too many devices are attached, they may not ring properly.

An FCC compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack, which is Part 68 compliant. See installation instructions for details.

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual. (The telephone number provided may not be a 900 number or any other number for which charges exceed local or long-distance transmission charges.)

Service Requirements

In the event of equipment malfunction, all repairs should be performed by our Company or an authorized agent. It is the responsibility of users requiring service to report the need for service to our Company or to one of our authorized agents. Service can be facilitated through our office at:

Teltronics Incorporated
2150 Whitfield Industrial Way
Sarasota, FL 34243-4046
TEL: (941) 753-5000

Canadian Notice

Canadian Department of Communications Requirements

- This equipment meets CS-03 Requirements for Terminal Equipment and Certified Protection Circuitry of the Canadian Department of Communications, meeting telecommunications requirements for safety, operation, and telephone network protection. The Department does not guarantee satisfactory equipment operation.
- Before installing this equipment:
- Be sure your local telecommunications company allows you to connect your equipment to its lines.
- Use approved connectors. Most companies prohibit using customer-supplied jacks. If using a single line, you may be able to use a telephone extension cord.
- Electrical ground connections for the power utility lines, telephone lines, and internal metallic water pipes are connected together, particularly in rural areas. DO NOT ATTEMPT TO MAKE GROUND CONNECTIONS YOURSELF. Contact the appropriate electrical inspection authority or electrician.
- Any equipment malfunctions, or repairs or alterations you make to this equipment, may cause the telecommunications company to ask you to disconnect the equipment. All repairs to this equipment should be made by an authorized Canadian maintenance facility designated by the suppliers.
- Compliance with the above conditions may not prevent degradation of service in some situations.

The Canadian Department of Communications requires notification of the following:

- Equipment Manufacturer: Teltronics, Inc.
- Equipment Load Number: SEBea – 9
- Connecting arrangement code: CA11A

The load number (LN) assigned to each terminal device denotes the ratio of its load to the total load connected to a telephone loop. The load number is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices, subject only to the requirement that the load number total for all the devices does not exceed 100.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassent les limites applicables aux appareils numérique de la class A prescrites dans le Réglement sur le brouillage radioélectrique édicté par le ministére des Communications du Canada.

Professional installation only, no user-serviceable parts inside except as indicated in this installation guide.

Warning *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions."*

Important Safety Instructions

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

Save These Instructions

Importantes Mesures De Sécurité

- Certaines mesures de sécurité doivent être prises pendant l'utilisation de matérial téléphonique afin de réduire les risques d'incendie, de choc électrique et de blessures. En voici quelquesunes:
- Ne pas utiliser l'appareil près de l'eau, p. ex., près d'une baignoire, d'un lavabo, d'un évier de cuisine, d'un bac à laver, dans un sous- sol humide ou près d'une piscine.
- Éviter d'utiliser le téléphone (sauf s'il s'agit d'un appareil sans fil) pendant un orage électrique. Ceci peut présenter un risque de choc électrique causé par la foudre.
- Ne pas utiliser l'appareil téléphonique pour signaler une fuite de gaz s'il est situé près de la fuite.
- Utiliser seulement le cordon d'alimentation et le type de piles indiqués dans ce manuel. Ne pas jeter les piles dans le feu: elles peuvent exploser. Se conformer aux règlements pertinents quant à l'élimination des piles.

Conserver Ces Instructions

Communication Certification Laboratory

This product has been safety tested and found compliant to USA safety standards. SEBea is certified the UL 60950 safety standard for Information Technology Equipment. This ensures safe operation in the office business environment.

CE

European Community Related Requirements

Warning

This is a Class A Product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures."

This equipment has been tested and is compliant with the EMC and Low Voltage directives of the European Community. A system with the CE marking meets or exceeds the following technical standards:

- EN 55022 "Limits and methods of measurement of radio interference characteristics of information technology equipment"
- EN 50024-1 "Information technology equipment - Immunity characteristics - Limits and methods of measurement"
- EN 60950 "Safety of information technology equipment, including electrical business equipment"
- In addition to the above standards, this system has also met the requirements of the following European standards:
- EN 61000-3-2 "Disturbances in supply systems caused by household appliances and similar electrical equipment Part 2: Harmonics"
- EN 61000-3-3 "Disturbances in supply systems caused by household appliances and similar electrical equipment Part 3: Voltage fluctuations"

International Modem Operation

Using the SEBea in Austria, Belgium, Germany, Spain and Switzerland

Teltronics is required to provide the following information as a condition of the telecommunications conformity to Common Technical Regulation 21 (CTR 21/TBR 21). You may also be responsible for meeting requirements other than those outlined in this document. **This SEBea product requires an RJ11 adapter to be installed on any line that receives Metering Pulses.** Metering pulses are used for billing purposes and are normally not present unless requested by the subscriber. The subscriber may request the Network Provider to add or remove Metering Pulse service. Metering pulses are present on all lines in Switzerland.

TeleAdapt Part number TLFTR (www.TeleAdapt.com) is the metering pulse filter recommended by Teltronics.

Using the SEBea in Norway & Spain

This product complies with all of the standard DC voltage requirements as specified in the EU standards document CTR 21/TBR 21. However, the SEBea does not meet the more unusual requirements for maximum voltage in the loop state, as specified in specification EG 201 121 V1.1.1 advisory note NO 02 for Norway and Advisory note ES 01 for Spain. In the unlikely event of low loop current, the DC voltage may exceed the 7.4 V maximum. If this occurs, the user may experience problems with the Central Office recognizing an off-hook condition. This condition could occur in the event that the subscriber is at the end of very long telephone lines, which are attached to older Central Office equipment.

Modem Configuration Restrictions

The modem used in this product is configured to meet specific country requirements. This configuration is in the form of AT command settings sent to the modem prior to installation. Changing settings may cause a modem to become non-compliant with national telecom requirements in specific countries.

SEBea factory settings configure the modem for use in North America. If you are installing the SEBea in a different country, do not connect the modem to the telephone interface until the proper country code is entered though the user interface switches on the LCD front panel.

Declaration of Conformity

We, Teltronics, Inc. located at 2150 Whitfield Industrial Way, Sarasota, Florida, USA 34234 declare under our sole responsibility that the SEBea product to which this declaration relates is in conformity with the following standards and / or other normative documents:

Low Voltage Directive 73/23/EEC

- IEC 609050 3rd Edition
- IECEE CB-Scheme US/781/ITS

EMC Directive 89/336/EEC

- EN55022 Class A
- EN55024-98
- EN61000-3-2
- EN61000-3-3
- EN60950

R&TTE Directive 1999/5/EC

- CTR 21/TBR 21

The technical documentation relevant to the above equipment will be held at:

Teltronics LTD
The Sun
27 Weston Rd.
Olney
Buckinghamshire
UK

Warranty and Repair

Warranty Statement. Teltronics warrants its products are free from defects in material and workmanship for a period of one year from the shipping date. Teltronics tracks serial numbers for its products. Teltronics can use the serial number to determine the shipping date.

Return for Repair. Customers can return to Teltronics, at customer's risk and expense, any Teltronics product that fails in normal service during the warranty period. The failed product will be repaired or replaced at the option of Teltronics and returned to the customer at Teltronics' risk and expense. Correction of defects by repair or replacement shall constitute the fulfillment of all obligations of Teltronics with respect to any product sold.

This warranty shall be void for any product that was subjected to (1) alteration or repair by persons not authorized by Teltronics, (2) misuse by negligence or accident, (3) operation beyond the design range, or (4) improper test or mishandling in any way.

Products sold by Teltronics but manufactured by others, such as, but not limited to, tape drives, printers, and CRT terminals, carry the warranty of the manufacturer. Diskettes are warranted for a period of sixty days from date of shipment. Additionally, Teltronics shall only be required to provide replacement or repair software whose purpose is to correct defects not disclosed in the Teltronics System Difficulties Product Bulletin in effect at the time of sale by Teltronics.

The warranty of repair or replacement at Teltronics' facility contained herein shall be the exclusive remedy for breach of warranty and shall be in lieu of and excludes all other express or implied warranties of merchandise, fitness, or otherwise.

Teltronics shall not be liable for any special or consequential damages or for loss, damage or expense arising from delays in delivery, use of the equipment or arising from the inability to use the equipment with any other equipment or from any other cause.

Spare Parts. Teltronics recommends that spare parts be maintained by those responsible for sustaining end-user, Teltronics equipment. Recommendations for spare parts inventory can be obtained from Teltronics upon request.

Spare parts for emergencies can be obtained from Teltronics, when available, at the customer’s expense. Such spare parts will be new or reconditioned parts and will carry a new parts warranty of ninety days from the shipping date.

Return Authorization. A return authorization number must accompany all equipment returned to Teltronics for repair or replacement. This number is obtained by telephone from the Customer Repair Department of Teltronics. This number shall be used for all paperwork or telephone transactions between the customer and Teltronics and shall be included in the shipment of the returned equipment and clearly marked on the outside of shipping containers.

A description of the mode of failure or exhibited trouble symptoms shall also accompany the equipment in order to assist Teltronics in better serving the customer's needs.

When equipment returned for repair is found to be free of defects, the customer will be billed in accordance with the then-current out-of-warranty repair charges.

Design Changes. Teltronics reserves the right to make any changes in design or construction of its products at any time without incurring the obligation to make any change whatsoever to products previously shipped.

Preface

This manual provides instructions for installing, verifying, and troubleshooting the NET-PATH*m* remote agent device.

The NET-PATH*m* is a highly flexible, solid-state data-collection and events-reporting device that you can use with a wide variety of applications. The NET-PATH*m* is a critical component of a larger system that usually consists of a computer, application software, and one or more NET-PATH*m* units. While this manual does not cover specific applications, it does cover how to properly install and check a NET-PATH*m*.

Before you can use the NET-PATH*m*, you must program it with the necessary options and parameters. This involves downloading a database to the NET-PATH*m*. A detailed discussion of the database and its interaction with the NET-PATH*m* is beyond the scope of this manual. This manual only covers the database to that point necessary for the installer to ensure the NET-PATH*m* functions properly.

This manual consists of the following sections:

Physical Description And Specifications: Details the specifications and requirements of the NET-PATH*m*.

Installation: Lists the requirements for installation, connector pin designations, and a procedure for verifying the proper functions of the NET-PATH*m*.

Operation: Includes instructions for accessing the NET-PATH*m* Interactive and Transparent modes. It also includes a description of the NET-PATH*m* function when events occur, and steps users can follow to retrieve information.

Indicators and Diagnostics: Describes the front panel indicators and their meaning. It also describes possible causes and actions necessary to rectify improper operations.

Serviceable Components: Lists the NET-PATH*m* components that can be upgraded or replaced and includes their service procedures.

Index: Locates the first, major usage of important terms.

Notes

1

Description and Specifications

Introduction

NET-PATH*m* is available in several configurations. All standard models include:

- 2 serial ports, 1 NIC
- 1 56K BPS modem
- 4 contact sensors
- 1 internal temperature sensor
- integrated UPS
- audible alarm
- basic event processing software including Python script execution

Configuration variables include SNMP Segment Management software, and AC or DC input power.

Determining the NET-PATH*m* Model

The serial number and model information is on a label attached to the bottom of the unit.

Figure 1-1 Sample Model Number

NET-PATH*m* Model Structure

The following figures show how to use the model number to determine basic hardware functions. Figure 1-1 shows model NET-PATH*m* 43308-U2OSA, which includes four serial ports, a North American modem, 20 MB of memory, and networking with management for twenty network elements.

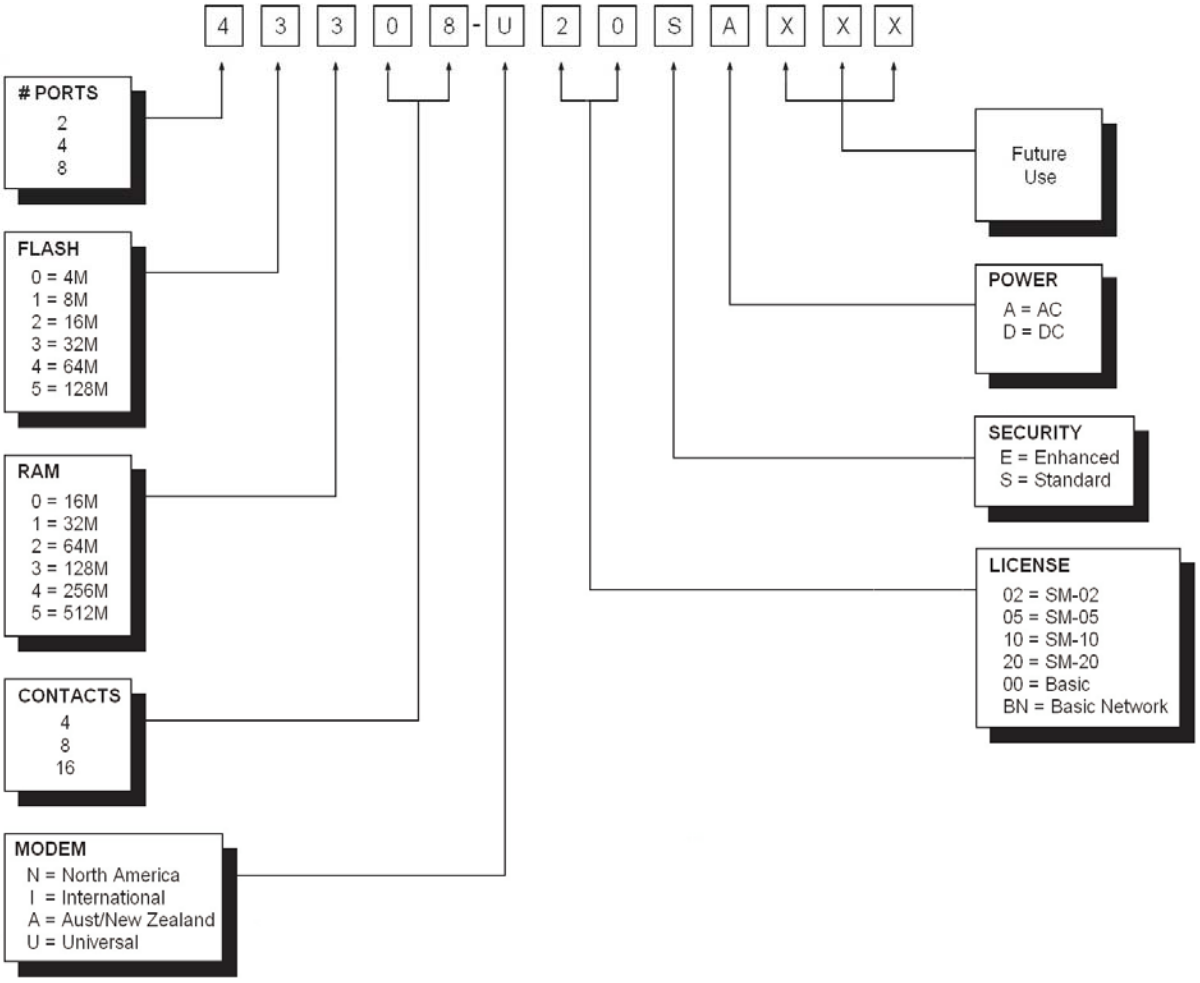


Figure 1-2 NET-PATH*m Model Number Format*

All units have two host ports. Technicians can use one of these ports as a dedicated local port, or as a standard host port.

Description

The NET-PATH*m* is housed in an aluminum case. Connections for commercial power, the host systems, external sensors, terminal, and the telephone line are on the back of the unit. See “Connections” on page 2-2. The LED status indicators on the front indicate the power status, battery charge status, application or database validity, and alarm conditions. See “Indicators” on page 4-1.

Hardware Features

Table 1-1 lists the NET-PATH*m* hardware features, connector arrangements, and field upgrade or replacement.

Table 1-1: Hardware Features and Connectors

Hardware Features	Description	Standard Configuration	Options
Communication Ports	RS232, make RJ45, DTE	2 RS232 ports	None
Network	10/100 Base-T	10/100 Base-T	None
Contact Sensors	hard contact sensors	4 contacts	N/A
Modem	56K, class 2 FAX, caller ID	US version	optional International and New Zealand
Flash Memory	Permanent Data Storage. Contains application and user data. Non-volatile	16 MB, embedded	None
SDRAM Operating Memory	Available memory for operating system and applications. Volatile, downloadable.	64 MB DIMM, single socket	None
RTC	Real Time Clock	Yes	N/A
Analog Sensors	Analog sensors report internal temperature	internal temperature (-10 to 190°F)	None
UPS Battery	UPS to maintain full function	2 hour, field replaceable batteries	None
System Power	Main system power source	110/220 VAC, 50-50 Hz	48 VDC
Indicators	System diagnostics	LEDs for battery, power, general software health, and alarm condition.	None
Power Control	All modems and the NET-PATH*m* main board support remote power cycling	N/A	N/A
Watchdog	Hardware watchdog timer reset by software.	Yes	N/A
Sleep Battery	Provides long-term backup for RTC.	Yes, lithium (field replaceable)	N/A

Hardware Specifications

Modem

- 56K internal modem
- V.42 MNP (2-4) error correction
- V.42 BIS MNP5 data compression
- Group 3 Fax

Microprocessor

- Motorola 860T
- 16 MB FLASH Memory
- 64 MB S DRAM

Dimensions

- Height 2.0 inches
- Width 9.7 inches
- Depth10.5 inches

Weight

- Approximately 12 lb.

Environmental Requirements

- 50° to 110° F operating temperature (10° to 43° C)
- 20° to 140° F non-operating temperature (-29° to 60° C)
- 20% to 80% relative humidity, nonconducting

Power Requirements

Input power	Voltage	Current	Watts	BTU/hr
AC	110/220 volts	98 mA	10.78	36.78
DC	-48 volts	240 mA	11.52	39.31

Host System Interface

The NET-PATH*m* has two EIA RS-232-C serial ports. Connectors for the NET-PATH*m* (labeled Host 1 and Host 2) are configured as Data Terminal Equipment (DTE), using RJ45 male connectors. Transmission rates can vary from 110 BPS to up to 115 KBPS.

Telephone Line Interface

The telephone connection is a modular RJ11C interface. Pulse dialing or tone signaling (DTMF) is a software option.

Physical Sensor Inputs

Depending on the model you choose, the NET-PATH*m* provides multiple RJ45 connections to connect to external physical sensors. The terminals connect to circuits supplying approximately one milliampere when the terminals are shorted. You can set each pair of terminals individually, via software, to detect normally open or normally closed contacts.

Memory Backup

A 3.0 VDC lithium battery maintains a real-time clock for four to five years. This battery is used when external and internal power is not available.

The NET-PATH*m* provides non-volatile data storage using flash memory technology. Flash memory does not require a power source to retain stored data.

MTBF

Mean-Time-Between-Failure (MTBF) is in excess of 60,000 hours, per Bell IP 10425.

Battery Backup

When fully charged, a 12 VDC rechargeable battery provides full operation for two hours.

Battery Charge Time

The battery requires five minutes of charging for each minute of battery use. For example, a battery used for thirty minutes needs approximately two and one half hours to fully recharge.

Notes

2 Installation

Site Requirements

When selecting a site for your NET-PATH*m*, refer to the electrical and environmental requirements, see “Environmental Requirements” on page 1-4. The NET-PATH*m* is rated for a wide range of operating temperatures and humidity. However, the best performance and longest life occurs when the temperature is 72° F and relative humidity is 50%. Do not place the NET-PATH*m* in a cabinet where poor air circulation could cause the temperature to rise. Excessively dry areas can cause static charge buildup resulting in operating faults and the destruction of semiconductor devices.

Unpacking

Before opening the shipping container, inspect it for damage. If the container looks damaged, do not unpack it. Contact the carrier and report the damage. If the container passes inspection, do the following:

1. Open the package and save all packaging materials.
2. Visually inspect the unit and inventory parts. If the unit appears damaged or if parts are missing, contact the NET-PATH*m* supplier.
3. Remove the modem cable.
4. Remove the cables (if supplied).
5. Remove the power transformer.
6. Remove the NET-PATH*m*.

Mounting the NET-PATH*m*

The NET-PATH*m* includes rubber feet to prevent travel. We recommend that you do not stack additional equipment on top of the NET-PATH*m*.

Connections

Connect the host port lines, telephone line, physical sensors, network connections, and power supply connections to the appropriate sockets on the NET-PATH*m* connection panel.

Figure 2-1 NET-PATHm Rear Panel Connections

RS232C Connections

Connectors for the NET-PATH*m* (labeled Host 1 and Host 2) are configured as Data Terminal Equipment (DTE) and use RJ45 connectors. Connect the cables from the NET-PATH*m* host ports to the proper connectors on the host device.

If your host system does not provide the DSR signal, you must loopback the DSR and RTS signals on the end of the cable connected to the host and ensure the signal passes through to the cable to the remote agent. Doing so allows the remote agent to detect connector present from the host; however, it will not detect when the cable is unplugged. See Figure 2-1 for loopback configuration.

Table 2-1: Host Ports RJ-45 Connector Designations (DTE)

Pin	Signal	Description	Direction	Function
1	DSR	Data Set Ready	IN ⟵	Must be ON (TRUE) to indicate HOST CONNECTED. OFF indicates HOST NOT PRESENT.
2	DCD	Data Carrier Detect	IN ⟵	An inbound line from an external modem indicates that the carrier for the transmit data is ON.
3	DTR	Data Terminal Ready	OUT ⟶	ON or OFF, depending on the application and options selected in the database. Usually ON when the NET-PATH*m* is ready.
4	GND	Signal Ground		
5	RD	Receive Data	IN ⟵	Data from the host device
6	SD	Send Data	OUT ⟶	Data to the host device

Table 2-1: Host Ports RJ-45 Connector Designations (DTE)

7	CTS	Clear to Send	IN ←	Hardware handshake will be ON when connected host is ready to receive.
8	RTS	Request to Send	OUT →	Hardware handshake will be on when the NET-PATHm is ready to send.

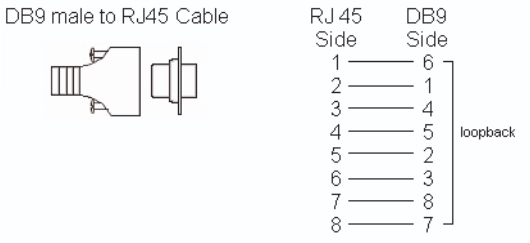


Figure 2-2 DB9 male to RJ45 Cable Connection Loopback

Telephone Line Connection

The RJ11C connector on the NET-PATHm mates with standard modular cables commonly used with telephone equipment. Connect one end of the cable to the NET-PATHm and the other end to the wall or floor jack assigned to the telephone line. The NET-PATHm must connect to a dedicated telephone line for reliable operation. We recommend that you use an external, business telephone line.

Warning *When configuring the NET-PATHm with an international modem, do not connect the modem to the telephone network until you have programmed it with the appropriate country code. If you are unsure of the modem type, you can review the model structure information displayed on the serial number label attached to the bottom of the unit. "Determining the NET-PATHm Model" on page 1-1*

Contact Sensor Inputs

The NET-PATHm provides four contact sensors. The RJ45 jacks on the back of the NET-PATHm accommodate four contact sensor inputs each. These jacks, labeled "Contact Sensor Inputs," are marked with a blue symbol. Each contact sensor input detects and reports when the state of an attached external device changes. You can configure each sensor as normally open or normally closed through software options in the NET-PATHm database.

NET-PATHm contact sensors support two types of input sensing. The first type of input sensing is based on RS232C and supports wet input. The second type is also based on RS232C and it supports dry input.

The general operation of each sensor is the same regardless of how it was configured. The sensor reports a change in state (inactive to active or active to inactive) when the input voltage passes through a detection threshold and remains at the new level for a user-defined period, usually several seconds.

Contact Sensor Wiring

For distances of up to 50 feet, we recommend a 24-gauge wire to connect the terminal pairs and the physical sensors. Use a larger gauge for longer runs. For reliable operation, the cable length should not exceed 1000 feet.

Dry Contact Applications

Dry contact applications are supported by optioning the sensor for RS232C logic (factory default). The NET-PATH*m* contact sensor circuit provides approximately one milliampere of current when shorted. The user-supplied, physical sensors must provide a dry-contact mechanical closure, such as a relay contact, or the solid state equivalent. In dry-contact applications the external loop resistance must be 800 ohm or less to be considered active (closed) and 15k ohm or higher to be considered inactive (open). These values assume worst-case tolerances. Logical states include “active” and “inactive” and though database options, may be considered the “alarm” or “no-alarm” state, depending on the application requirements.

Wet Contact Application RS232C

Wet contact applications (such as TTL voltage levels) are supported by optioning the sensor for RS232C logic (factory default). Be sure to observe input polarity or damage to the external device may occur. The attached sensor must provide -15.0 to +.70 VDC for the active state and +2.3 to +15.0 VDC for the inactive state. These values assume worst-case tolerances.

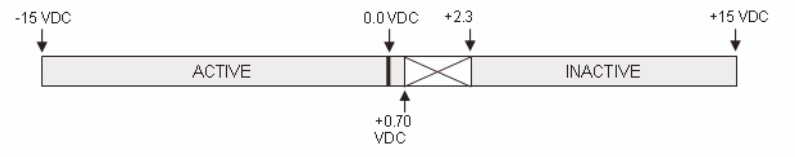


Figure 2-3 NET-PATHm Input Sensor Optioned for RS232C

Caution *This sensor circuit is designed for lower voltage applications. The input voltage is limited to 22 VDC maximum.*

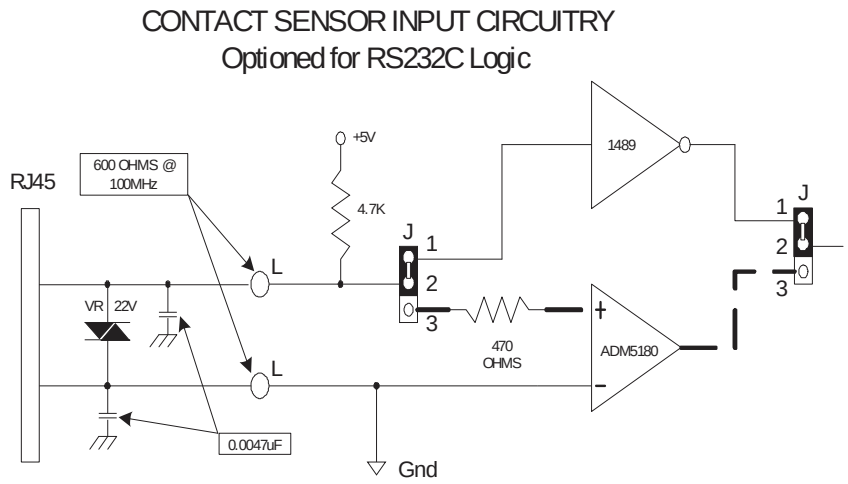
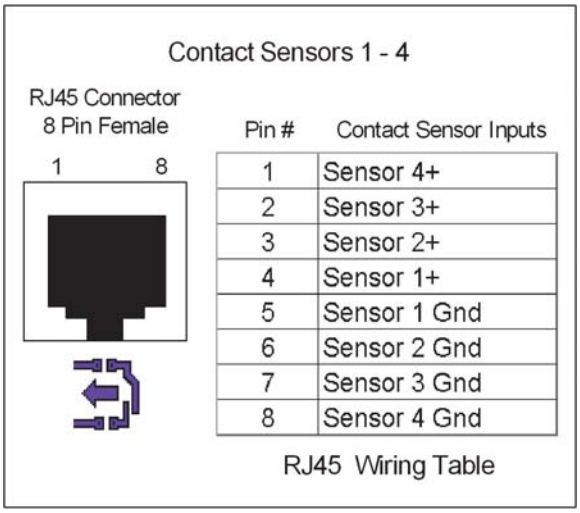


Figure 2-4 NET-PATHm Input Sensor Circuitry for RS232C

Note *Ground is common for all sensors but individual sensor grounds must be maintained to provide surge protection for each sensor circuit.*

Contact Sensor Wiring Tables



NET-PATH*m* supports contact sensors 1– 4.

Temperature Sensor

The NET-PATH*m* provides one internal temperature sensor. The temperature range is from -10° to 190° F, with an accuracy and resolution of +/- 1° F. User-specified temperature deltas determine when change in temperature events are generated. The NET-PATH*m* can be programmed to detect specific temperature values to determine reportable temperature events. Temperatures can be reported in Fahrenheit, Celsius, and Kelvin.

Internal Temperature Sensor

The internal temperature sensor is positioned near the UPS battery charging circuit and is used to detect excessive charging temperatures that may occur during abnormal charging conditions. The battery charger is turned off until the internal temperature returns to an acceptable level. You can program your NET-PATH*m* to report specific internal temperature events based on database parameters, or generate an event when the battery charger turns off or on.

Power

The NET-PATH*m* comes with a standard AC power adaptor. The internal power supply is rated 110/220 V, 50/60 Hz. In international applications, the external power cord must be replaced with one that supports the local wiring configuration.

Reset Button

The recessed **Reset** button located on the back of the NET-PATH*m* resets the microprocessor in the NET-PATH*m* and initiates a warm boot. Both warm and cold boots result in the loss of active event data. Data stored in flash memory is retained, while the date stored in RAM is lost.

Battery

The NET-PATH*m* contains a 12-volt, rechargeable battery. This battery does not require field maintenance. This battery life expectancy is one to three years. The NET-PATH*m* reports battery conditions and capacity. Batteries can be replaced in the field.

Warning *Use care when working with your battery. Do not touch the battery with conducting materials, such as rings, bracelets, keys, and tools. Do not open or mutilate the battery. Do not dispose of the battery in fire.*

You risk explosion if you replace a battery with an incorrect type. Dispose of used batteries in accordance the manufacturer's instructions.

The UPS battery ships from the factory fully charged. The following graph shows the battery discharge characteristics when the unit is stored for an extended period. Extended storage does not affect the battery's ability to recharge to full capacity when the unit is operational.

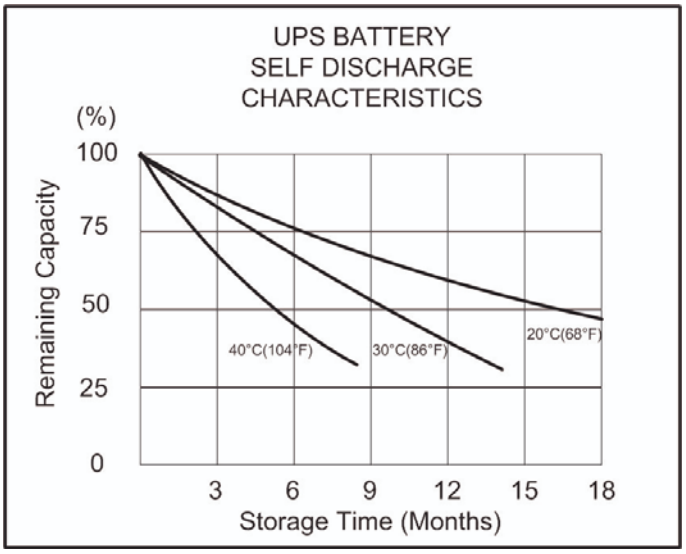


Figure 2-5 UPS Battery Self-Discharge Characteristics

Power-Up and Verification

Apply commercial power to the unit and observe the front panel indicators. After several seconds, the Power indicator should illuminate. The unit displays different conditions depending on the NET-PATH*m* internal programming. The usual event sequence follows.

1. The Status indicator flashes while the unit is initializing
2. After the unit initializes, the Battery indicator illuminates. This indicator is on when the battery is fully charged and flashes when the battery is charging.
3. The indicators for Power, Battery, and Status illuminate. The battery indicator may flash to indicate that the battery is charging.

4 The NET-PATH*m* beeps when the boot process completes. A single beep indicates that the unit has rebooted and the database loaded without errors. Two beeps indicate that the unit rebooted, but the database did not load properly. Three beeps indicate the unit rebooted and is in a default state.

5 If the Status indicator does not illuminate, the NET-PATH*m* does not have a valid database loaded. Contact your network system administrator at the Polling and Analysis Center.

Failover

During the boot process, the Loader starts the APP. Should it encounter problems with the APP – for example, the APP is corrupt – the Loader will make two additional attempts to start the APP before it performs a failover and loads the OS. Once the Loader loads the OS, you can download a new APP and DB to the NET-PATH*m*.

Return the Database to a Default State

You can return a Database to its default state.

1 On the back of the NET-PATH*m*, press the **Reset** button once to initiate the reboot process.

2 The Status light begins flashing and remains flashing for approximately forty seconds.

3 After about fifty seconds (this may vary with your unit) the Alarm LCD flashes red once. When this occurs, press the **Reset** button again.

4 The database will return to its default state.

Note *This procedure is considered an uncontrolled shutdown. If you attempt this procedure more than three times, the* NET-PATH*m will perform a failover and load the OS.*

Internal Battery Test

To perform an internal battery test

1 Confirm that the internal battery is operating properly.

2 While the unit power is on, unplug the NET-PATH*m*'s power cord.

3 Verify the Status and Battery indicators are on and the Power indicator is off.

4 Restore commercial power to the NET-PATH*m* and verify the Power, Status, and Battery indicators are on.

5 The Battery LED flashes to indicate the battery is charging.

Note *If no battery is present in the remote agent, removing power causes it to shut normally within a few seconds.*

Functional Verification

Verify that the NET-PATH*m* can receive calls by initiating calls from the Polling and Analysis Center. If you can call the NET-PATH*m*, it is ready for operation. Should problems occur during the NET-PATH*m* installation, refer to "Troubleshooting" on page 4-6 for troubleshooting procedures.

If the NET-PATH*m* contains an international modem, you must enter the country code before the modem can function.

NET-PATH*m* Test, Incoming

Inform your Polling and Analysis Center that the NET-PATH*m* is ready to receive its database. The technician there should verify the database contains parameters for reporting fixed events, such as a change of state in sensor inputs. Use this capability to verify outgoing calls.

Transparency to Host

Perform a transparency test to verify the installation. After downloading the initial database to the NET-PATH*m*, the system administrator or a technician at the Polling and Analysis Center should establish a transparent connection to each of the attached serial devices to verify that communication parameters are correct. If the Polling and Analysis Center is not available, you can go transparent to an attached host device using the NET-PATH*m* Command Line Interface. See “Useful Command Line Interface Commands” on page 3-5.

If a serial connection does not function as expected, verify the port communications parameters in the NET-PATH*m* database match those of the attached host device, and that the proper cable is installed.

NET-PATH*m* Test Outgoing

Create a fixed event that the NET-PATH*m* can detect and report. This event must be defined in the database that the Polling and Analysis Center downloads.

1. Confirm with the Polling and Analysis Center that they received the event. Additional configuration may be required at the Center before the received data displays properly, but the Center should be able to confirm delivery of the alarm.
2. If the Center does not receive the call, see “Troubleshooting” on page 4-6.

Storage/Relocation

To store or relocate the NET-PATH*m*, unplug the commercial power and perform a Shutdown procedure.

3

Operation

General

The NET-PATH*m* has four distinct software components: the Loader, Operating System (OS), Application (App), and Database. These components are contained in non-volatile flash memory and share a common file system. The following figure shows these components.

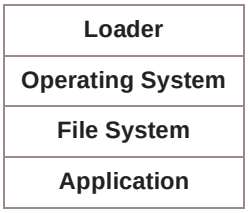


Figure 3-1. Flash Memory Software Components

Flash memory storage capacity is 16 MB. The flash memory is non-volatile, which means it retains the data when the power is off. The NET-PATH*m* maintains a second file system in SDRAM. This file system is used for general data storage. It retains stored data only as long as commercial power or battery backup is available. SDRAM is 64 MB.

The loader boots the NET-PATH*m* and loads an application or Operating System (OS) into SDRAM for execution. The OS software loads when the system does not have a valid application. The OS controls all of the functions required to permit users access to the NET-PATH*m* and program it with an application and a database.

The application contains all operating software for the NET-PATH*m* features. A license key controls the enabled features. The application software requires a database. If the application is loaded and no database is present, the NET-PATH*m* uses a default database. An NET-PATH*m* that is in the default state (no application or no database) offers the OS functions that enable the user to contact the unit and download the application and/or database.

The database contains all of the configuration parameters, programmed by the user. When the NET-PATH*m* ships from the factory, it contains the operating system, application program, and a default database. The default database provides many basic power-on parameters used during the installation. The default database parameters include, but are not limited to:

- Host 1 and Host 2 are set to 9600, 8, N, 1.
- physical sensors input not enabled
- modem configured for North America and auto-answer

These parameters remain active until a new database downloads to the NET-PATH*m*.

The NET-PATH*m* can operate for two hours after primary power fails. Power loss that exceeds the internal UPS capacity results in the NET-PATH*m* performing an orderly shutdown. Data stored in Flash memory is unaffected by a power loss. Data stored in SDRAM is lost when the NET-PATH*m* shuts down after the UPS battery depletes. When the power restores, the processor checks the memory and reboots the unit. This initializes all hardware but does not affect the data stored in Flash memory. This includes the user database. You can program internal NET-PATH*m* fixed events to signal power loss, power return, or an orderly shutdown. These fixed events allow the user to intervene and retrieve data stored in SDRAM, preventing data loss.

Interactive Command Mode

You can communicate with the NET-PATH*m* through the internal modem, a serial port, or via Telnet. All modes offer access to the NET-PATH*m* Command Line Interface that allows a technician to examine status and control several NET-PATH*m* functions.

Use any unassigned port to establish communication with the NET-PATH*m* Command Line Interface. You must enter a user name and password to gain access. Your system administrator can provide you with a login and password. To access the command line on the NET-PATH*m*, use one of the following methods:

- Use a third-party terminal program to connect (via null modem cable) to a serial port on the NET-PATH*m*.
- Use a third-party terminal program to connect to the NET-PATH*m* via modem.
- Use a third-party telnet client to connect to the NET-PATH*m* via the network.
- Use IRISnGEN Remote Agent Manager to establish a dial-up connection and go transparent to the NET-PATH*m*.
- Use IRISnGEN Remote Agent Manager to establish a Telnet connection and go transparent to the NET-PATH*m*.

Connecting to the NET-PATH*m* Serial Port

To connect to the NET-PATH*m* serial port

1. Use a null modem cable to connect a serial port on the NET-PATH*m* to a serial port on your laptop or PC.
2. Using a terminal program such as ProComm or HyperTerminal, connect the COM port you are using on your computer to the NET-PATH*m*. Verify that the port settings for the baud rate, parity, data bits, and stop bits correspond to the port settings on the NET-PATH*m*. Default settings for the NET-PATH*m* ports are 9600, 8-N-1.

Note *You cannot use a NET-PATHm port for local communications if that port is assigned to monitor a host device!*

3. Type login and then press the **Enter** key.
   The *User name:* prompt displays.
4. Type your user name and then press the **Enter** key.
   The *Password:* prompt displays.
5. Type your password and then press the **Enter** key.
6. If the user name and password you enter are correct, the NET-PATH> prompt displays, indicating a successful logon to the NET-PATH*m*.

Connecting to the NET-PATH*m* via Modem

To connect to the NET-PATH*m* using a modem

1. Using a terminal program, such as ProComm or HyperTerminal, configure the modem on your laptop or PC to dial the telephone number for NET-PATH*m*'s internal modem.
2. When you successfully establish a connection to the NET-PATH*m*, type login; then, press the **Enter** key.
   The *User name:* prompt displays.
3. Type your user name; then, press **Enter**.
   The *Password:* prompt displays.
4. Type your password; then, press the **Enter** key.
5. If the user name and password you enter are correct, the NET-PATH> prompt displays indicating a successful logon to the NET-PATH*m*.

Connecting to the NET-PATH*m* via the Network

To connect a network capable NET-PATH*m* using the network

1. Launch your preferred Telnet client and connect to the IP address for the NET-PATH*m*. You may need to contact your Polling and Analysis Center to obtain the IP address.

Note *You must load a valid database in the NET-PATHm for it to have an IP address.*

2. When you establish the connection, the Telnet Client window displays "Teltronics, Inc.," along with the version number for the application currently running on the NET-PATH*m*.
3. Type login; then, press the **Enter** key.
   The *User name:* prompt displays.
4. Type your user name; then, press the **Enter** key.
   The *Password:* prompt displays
5. Type your password; then, press **Enter**.
6. If the user name and password you enter are correct, the NET-PATH> prompt displays, indicating successful logon to the NET-PATH*m*.

Using the Remote Agent Manager to Establish a Dial-Up Connection

To establish a dial-up connection using Remote Agent Manager

1. In the IRISnGEN tree view, browse to the NET-PATH*m* with which you wish to communicate. Select the NET-PATH*m* by right-clicking it. From the pop-up menu, select **Remote Agent Manager**.
2. When the Remote Agent Manager screen finishes loading, select the telephone icon from the toolbar. This prompts a drop-down list that displays the methods you can use to connect to the NET-PATH*m*. You can connect via a modem or the network. For each connection option, the connection information is shown. The Modem option displays the telephone number; the Network option displays the IP address.
3. For a dial-up connection, select the Modem option. IRISnGEN will select (by default) the first available dial-out modem and dial the NET-PATH*m*.

4 When the Remote Agent Manager reports that it has connected successfully, select the remote agent and press (Transparency). Remote Agent Manager will log you into the NET-PATH*m* using the Remote Agent username and password. The NET-PATH> prompt will display when the transparency session becomes active.

5 Alternately, once you establish a dial-up connection, you can simply select a desired host and press the Transparency button to go directly transparent with that host.

Using the Remote Agent Manager to Establish a Network Connection

1 In the IRISnGEN tree view, browse to the NET-PATH*m* with which you wish to communicate.

2 Select the NET-PATH*m* by right-clicking the icon. From the pop-up menu, select **Remote Agent Manager**.

3 When the RA Manager screen finishes loading, select the telephone icon from the toolbar. This accesses a drop-down list that displays the methods you can use to connect to the NET-PATH*m*. You can connect via the modem or via the network. For each connection option, the connection Information is shown. The modem option displays the telephone number, and the network option displays the IP address.

4 For a network connection, select the Network option. IRISnGEN will establish a Telnet connection with the NET-PATH*m*.

5 Once you establish the Telnet connection, you can press the Transparency button. You are then logged in using your IRISnGEN user name and password. The NET-PATH*m* prompt appears.

Useful Command Line Interface Commands

Once you establish a command line connection, many commands are available to communicate with the NET-PATH*m* and the monitored hosts. Your access to these commands depends on your security authorization level (user name and password). Some of these commands can have a harmful effect on the NET-PATH*m*. Do not execute a command unless you are fully aware of its impact.

To obtain a list of commands, type **help** at the command line as shown below.

```
NET-PATH> help
```

The table below shows the NET-PATH*m* commands, their description, and syntax examples. The brackets ([ ]) indicate optional operands. You can use standard wildcards, such as * and ?.

Table 3-1: NET-PATHm Commands

Command	Syntax and Examples	Description

BATTERYTEST	BATTERYTEST *Option*
	Example:
	`BATTERYTEST START`
	`BATTERYTEST STOP`
		Performs a battery load test.
		Option: START/STOP

BEEP	BEEP *Option*
	Example:
	`BEEP ENABLED`
	`BEEP DISABLED`
		Enables or disables the buzzer.
		Option: ENABLED/ DISABLED

CD	CD *Directory* **Examples:** CD *TEMP* CD *\FLASH\TEST*	Changes the current directory. Cannot change from a directory in one media (e.g. FLASH) to a directory in the other media (e.g. RAM) with one CD command.

CHECKDISK	CHECKDISK *Drive*
	Example:
	`CHECKDISK \FLASH`
	`CHECKDISK \RAM`
		Checks a drive for errors.
		Drive = FLASH or RAM

CLEANDISK	CLEANDISK *Drive* **Example:** `CLEANDISK \FLASH`	Forces a complete cleaning and reclaiming of dirty sectors on the disk. *Drive* = FLASH

COPY	COPY *[Path\]SourceFileSpec[Path\] DestinationFileSpec*
	Examples:
	`COPY *.DAT *.BAK`
	`COPY LOG.DAT USER\LOG1.DAT`
	`COPY CATALOG.* CAT.*`
	`COPY CAT.??? INF.???`
	`COPY *.yyy \FLASH\SCRIPTS\*.SSS`
		Copies one or more files from one location to another. To copy multiple files to a directory, use the asterisk (*) for multiple characters or the question mark (?) to specify single characters. You must always specify a destination file name.
		SourceFileSpec = original file
		DestinationFileSpec = destination location

Table 3-1: NET-PATHm Commands

CYCLEPOWER	CYCLEPOWER MODEM *Cycletime [DeviceAddress]*
	Example:
	`CYCLEPOWER MODEM 4 1`
	`CYCLEPOWER MODEM 4 2`
	`CYCLEPOWER MODEM 4`
		Cycles power on a modem.
		Cycletime = in seconds
		DeviceAddress = Modem Instance
		Note:
		The *DeviceAddress* is only used to distinguish between multiple modems. Therefore, you can set this value to either 1 or 2 (mapping to AUX1 or AUX2). You can also specify the instance/name. If no instance/name is specified and there is only one modem, the modem instance will default to 2. If more than one modem is on the NET-PATH, the user is presented with modem instances and names as follows:
		There is more than one modem configured.
		Please specify the modem instance or name.
		1 Main Modem
		2 Secondary Modem
		If you specify any device other than MODEM, an error is returned.
		When entering strings (e.g. Modem Name) surrounding quotes are not required. However, when a name contains spaces, the quotes are required.

DATE	Date *[MM-DD-YYYY]*
	Examples:
	`DATE 12-05-2003`
	`DATE`
		Sets and /or retrieves the date. If you do not specify a date, the current date is returned. The format depends on the local format specified in the Personality Module.

DATETIME	DATETIME *[MM-DD-YYYY HH:MM:SS]*
	Examples:
	`DATETIME 12-05-2003 11:12:00`
	`DATETIME`
		Sets and/or gets the date and time. You do not specify a date and time, the current date and time is returned. The format depends on the local format specified in the Personality Module.

Table 3-1: NET-PATHm Commands

DEBUG	DEBUG *[Type] [Head=xxx] [Tail=xxx] [Clear] [Comm] [Show] [Set=opt1,opt2…optn]* **Examples:** DEBUG SET=ACT, MOD, MAT DEBUG SHOW **Returned:** ACT MAT MOD	Debug Information will be stored to the DEBUG.DAT (128Kb) file. *Type* = displays contents of the Debug File. *Head*=xxx = displays the first xxx bytes of the Debug File. *Tail*=xxx = displays the last xxx bytes of the Debug File. *Clear* = clears the contents of the Debug File. *Comm* = enables debugging via the access port (serial, NIC, modem). *Show* = displays the current Debug Options. *SET*=x,y,z = changes the Debug Options and persist it to the PM. SET options: ALL - All NONE - None LOG - Log to the DEBUG.DAT ACT - Action ACW - Action Window APP - Application CLH - Command Handler CMS - Command Session CON - Contact COR - Correlation DBM - Database Manager DET - Event Detect DVM - Device Manager ERR - General Error EVE - Event EXP - Expect EXS - Expression FAX - Fax FIL – Filter FIX - Fix Event FLM - File Manager HLT - High Level Thread MAT - Event Match MOD - Modem NIC - Network PPP - Point to Point Protocol PRT - Protocol PY - Python REL - Relay SER - Serial Port SCH - Scheduler SCR - Script SNM - SNMP THE - Threshold

Table 3-1: NET-PATHm Commands

DEFAULTNETWORK	DEFAULTNETWORK *[IPAddress Gateway SubnetMask TelnetPort]* **Examples:** DEFAULTNETWORK The example returns the following: DEFAULT IP ADDRESS: 172.16.3.226 DEFAULT GATEWAY: 172.16.3.1 DEFAULT SUBNET MASK: 255.255.255.0 TELNETPORT: 23	Display or change the default network settings for the NET-PATH device. This includes the IP address, gateway, subnet mask, and telnet port.
DEL	DEL *FileSpecification* **Example:** `DEL *.DAT`	Deletes one or more files.

DEVICES	DEVICES *[Type]*
	Examples:
	`DEVICES`
	`DEVICES PORTS`
		Gets a list of configured devices. If you do not specify a device type, all devices are listed.
		options:
		BATTERY, POWER, VOLTAGE, MEMORY, MODEM, NIC, PORTS, SYSTEM, UI, CONTACT, RELAY, TEMPERATURE

DIR	DIR *[Path] [-s]*
	Examples:
	`DIR`
	`DIR \FLASH\TEST\ -s`
	`DIR –s`
		Gets the directory structure. If you do not specify a path, the current directory is used.
		Path = specified path for directory structure.
		-s = displays files in specified directory and all subdirectories.

DISABLE	DISABLE *[DeviceName]* **Examples:** DISABLE SERIAL1	Disables a serial port. *DeviceName* = name of the NET-PATH's serial port. If you do not know the device name, use the DEVICES command (see above). Use the STATUS command to confirm a device is disabled or enabled.
DISPLAYNAME	DISPLAYNAME *CompanyName ProductName* **Examples:** DISPLAYNAME XYZCORP NET-PATH DISPLAYNAME returns the following: COMPANY NAME: XYZCORP PRODUCTNAME: NET-PATH	Display or change the company name and product information. *CompanyName* = the customer's company name *ProductName* = user-defined product description

Table 3-1: NET-PATHm Commands

DPOLL	DPOLL *MEDIA FileType HostName*
	Examples:
	`DPOLL RAM WRAP100K MyHost`
	`DPOLL FLASH "Wrap100K, T1-50%" "Host 1"`
		Destructive poll. Displays the results of the poll on the screen. TYPE, HOST and LAYOUT specifications are optional.
		Media = FLASH or RAM
		FileType = name of file type that controls maximum file size and file handling
		HostName = host attached to NET-PATH
		Note: When entering strings (for example, HostName), surrounding quotes are not required. However, when a name contains spaces, the quotes are required.
		Asterisk (*) in place of the host name denotes polling of shared data as opposed to a specific host.

ENABLE	ENABLE *DeviceName* **Example:** ENABLE SERIAL1	Enables a serial port. Use the DEVICES command to view available serial device names.
ENGINE	ENGINE *[Host] [Action] [Summary] [Noevent] [Full]* **Example:** ENGINE HOST	Used to give a snapshot of the active components in the Event pipeline. *Host* = displays only host-related engine information *Action* = displays only action-related engine information *Summary* = displays information in a summary format *Noevent* = does not display any event information *Full* = displays all event variables
FORMAT	FORMAT \ FLASH	Formats a FLASH drive.
GETPM*	GETPM	Gives a listing of all current Personality Module variables and their corresponding values.

GREP	GREP *[-i] [-r] FileSpec RegExpr [FileName]*
	Example:
	`GREP *.LOG ERROR`
	This example finds all occurrences in all files ending with .LOG (in the current directory) of the string "ERROR".
	`GREP -i –r *.LOG ERROR`
	This example finds all occurrences in all files ending in .LOG in the current directory and subdirectories of the string "Error" regardless of case.
		Searches for a string in a file(s) and places the results in the file you specify. If you do not specify a file name, the results display on screen.
		-i = not case sensitive
		-r = grep recursive
		FileSpec = name of file to search
		RegExpr = string to search. For strings containing spaces, use double quotes–for example, "Error 13".
		FileName = name of output file

Table 3-1: NET-PATHm Commands

HELP	HELP *[Command]*
	Examples:
	`HELP DPOLL`
	`HELP`
	`HELP PINGHOST`
		Displays help for all the commands or for a specific command. If you do not specify a command, a list of all available commands displays.

LOG	LOG *[-s] [-x] DeviceType DeviceName [SearchString]*
	Examples:
	`LOG -s`
	`LOG -x SERIAL "Serial 1" "ERR225 1 0"`
		Used to view, clear, or search log files.
		-s = returns a status of all log-enabled devices to show the percentage of log space used.
		Note: Empty log files are not listed until a fixed event is logged for that device.
		-x = reads the log (destructive, i.e., clears the log) and searches records using the specified search string
		DeviceType = any device with logging capabilities
		options:
		BATTERY, POWER, VOLTAGE, MEMORY, MODEM, NIC, SERIAL, SYSTEM, UI, CONTACT, RELAY, TEMPERATURE, BUZZER, LED, and RTC
		DeviceName = name of the device that we are logging
		SearchString = the search parameters used to control the data set returned when reading a log. The search string is case sensitive.
		Note When entering strings—for example, DeviceName—surrounding quotes are not required. When a name contains spaces, the quotes are required.

LOGIN	LOGIN **Examples:** LOGIN returns the following: USERNAME: <*enter user ID*> PASSWORD: <*enter your password*>	Begins a new interactive session with the NET-PATH.
LOGOUT	LOGOUT	Terminates a session.
MD	MD *Directory* **Example:** `MD MyDirectory`	Makes a new directory. *Directory* = name of new directory **Note** The directory name cannot include spaces.

MEDIA	MEDIA *Media*
	Examples:
	`MEDIA FLASH`
	`MEDIA RAM`
		Change the current media or list all the available media.
		Media = FLASH or RAM

Table 3-1: NET-PATHm Commands

MODEM*	Modem *ModemName* **Examples:** MODEM Modem	Initiates a transparency session to a modem if connected via a serial port or network. Modem is the default name of the NET-PATH modem and seldom changes.

MODEMCOUNTRY	MODEMCOUNTRY *PhysicalInstance EnumCode*
	Examples:
	`MODEMCOUNTRY 2 4`
	`MODEMCOUNTRY 2 5`
		Sets the Country Code for the modem. This command only works with universal modems.
		PhysicalInstance = 1 or 2. If you have a single internal modem in your unit, its physical instance is 2.
		EnumCode = Country Code for the Modem 1-33.
		See Table 4-1 and Table 4-2.
		Note: When changing the country code using the MODEMCOUNTRY command, the remote agent will not display on its LCD the * (asterisk) character next to the country code you selected until you reboot the remote agent.

MOVE	MOVE *FileSpec DirSpec* **Example:** `MOVE File1 TempDir`	Moves files. *FileSpec* = original file to move *DirSpec* = final location of file
NDPOLL	NDPOLL *MEDIA:FileType HostName [Search Expression]* **Examples:** `NDPOLL FLASH "File-Wrap100k,t1-75%" "ABC Host 1" "DTA005 22"` **Note:** Alternately, you can just type NDPOLL to display a menu list of file types and host names from which to choose. **Note:** The Search Expression option is not available with this menu method.	Non-destructive poll. Displays the results of the poll on the screen. *Media* = FLASH or RAM *FileType* = name of file type that controls maximum file size and file handling *HostName* = name of host attached to NET-PATH *Search Expression* = polls selected data, retrieving only those records containing the search string. **Note:** When entering strings—for example, HostName—surrounding quotes are not required. However, when a name contains spaces, the quotes are required. Asterisk (*) in place of the host name denotes polling of shared data as opposed to a specific host.
PINGHOST	PINGHOST *HostName Count Delay* **Example:** `PINGHOST "MyHost" 3 30`	Pings a specified Host. *HostName* = name of host attached to the remote agent *Count* = number of ping requests to send *Delay* = timeout to wait for each reply **Note:** When entering strings surrounding quotes are not required. When a name contains spaces, quotes are required.

Table 3-1: NET-PATHm Commands

PINGIP	PINGIP *IPAaddress Count Delay* **Example:** `PINGIP 172.16.3.24 3 30`	Pings a specified IP address. *IPAddress* = the IP address of a device on your network *Count* = number of ping requests to send *Delay* = timeout to wait for each reply
PROMPT*	PROMPT *PromptText* **Example:** PROMPT NET-PATH	Change the command line prompt. *PromptText* = the text that displays on the remote agent's command line
PWD	PWD	Gets the current working directory. A current directory is maintained for each drive.
RAW	RAW *SerialPortName Direction* **Example:** `RAW "Serial 2" OUT`	The RAW command displays on the screen the contents of the raw data buffer. *SerialPortName* = name of NET-PATH serial ports (1-8) *Direction* = IN or OUT
RD	RD *Directory* **Example:** `RD \FLASH\Users\Jones`	Removes an existing directory. *Directory* = name of directory to remove
REBOOT	REBOOT	Forces the NET-PATH to reboot.
RELAY	RELAY *RelayName State* **Example:** `RELAY "Relay 2" ACTIVATE`	Activates or deactivates a relay. *RelayName* = actual device name of the relay as defined on the Devices and Host tab in the Remote Agent record *State* = ACTIVATE, DEACTIVATE, or TOGGLE
RENAME	RENAME *OldFileName NewFileName* **Example:** `RENAME "OldName" "NewName"`	Renames a file. *OldFileName* = original file name *NewFileName* = target file name When entering strings, surrounding quotes are not required. However, when a name contains spaces, the quotes are required.

Table 3-1: NET-PATHm Commands

RLOGINIP	RLOGINIP *IPaddress ServerUsername ClientUsername Port TerminalType/Speed* **Example:** `RLOGINIP 172.16.3.24 XYZServer XYZClient 513 TTY/9600`	Establish an RLOGIN session using the target host's IP address. *IPaddress* = the targeted address of the remote device **Note:** The IP address is a required parameter. *ServerUsername* = the name that the server uses to execute the command on the server *ClientUsername* = username that requests the RLOGIN session *Port* = the port number that is dedicated to RLOGIN communications. The default value is 513. *TerminalType/Speed* = the terminal type or speed used
RLOGINHOST	RLOGINHOST *HostName* **Example:** `RLOGINHOST XYXHost`	Establish an RLOGIN session using the target host name *HostName* = the name of the target host device
RUN*	RUN *ScriptName* **Examples:** `RUN "MyScript"`	Executes a Python automation script that is contained in RAM or FLASH memory. The script name is case sensitive.

SCHEDULER	SCHEDULER *[START \ STOP \ HOSTNAME]*
	Examples:
	`SCHEDULER START`
	`SCHEDULER STOP`
	`SCHEDULER`
	`SCHEDULER "My Host"`
		Starts, stops, or views scheduled tasks that are defined in the database. If no options are present, all scheduled tasks display. If a host name is given, only tasks for that host display. If a command is given, it is sent to the scheduler.
		START = start the scheduler
		STOP = stop the scheduler
		HOSTNAME = lists scheduled tasks for the specified host.

Table 3-1: NET-PATHm Commands

SCRIPT	SCRIPT *[HostName] [Options [detail]] [ScriptParm]*
	
	Example:
	`SCRIPT "424pt1" KILL`
	The example above kills the script currently active on the 424pt1 host.
	Example:
	`SCRIPT "Meridian PBX" GRACEFUL 5000`
	The example above gives the currently active script on the Meridian PBX host five seconds to exit before killing it.
	Example:
	`SCRIPT "Meridian PBX" QUEUE "FTP PUSH" DEBUG`
	The example above starts the FTP PUSH script in DEBUG mode.
		Gets the status of scripts.
		HostName = name of host attached to the remote agent
		Options:
		KILL - Stops the currently running script on the specified host
		SUSPEND- Suspend the queue for the specified host; do not add any new scripts to it, and do not remove scripts from the queue.
		GRACEFUL [ms]- Takes an additional argument of time in milliseconds. Issue a graceful stop to the script. If it does not respond within the time given, kill it.
		RESUME -Resume normal queue operation from the point at which it was suspended.
		QUEUE [script name] -Takes an additional argument of script name. Adds the specified script to the queue for the specified host.
		FLUSH - Flush all pending scripts from the queue for the specified host.
		You can specify all command options by using the first letter of the command.
		detail = the specific parameters for the selected option
		ScriptParm = any parameter supported by the script. Refer to your script release notes

SETPM*	SETPM *VariableName NewValue* **Examples:** SETPM MYPRODUCT TELTRONICS Returns the following: PM VARIBLE 'MYPRODUCT' set to 'TELTRONICS'	Sets a Personality Module variable.

STATUS	STATUS *[Device]*
	Examples:
	`STATUS`
	`STATUS SERIAL`
	`STATUS MEMORY ALL`
	`STATUS MEMORY`
		Requests that the NET-PATH return information about the specified device. If you do not specify a device, the status for all devices displays.
		Options:
		BATTERY, POWER, VOLTAGE, MEMORY, MODEM, NIC, SERIAL, SYSTEM, UI, CONTACT, RELAY, TEMPERATURE
		The STATUS MEMORY ALL command provides added information about the RAM memory block sizes and storage status.
		The STATUS MEMORY command displays the overall memory size and storage status.

Table 3-1: NET-PATHm Commands

TELNETHOST	TELNETHOST *HostName [Port]* **Examples:** `TELNETHOST "MyHost"`	Telnets to specified host. This command does not function from a non-protocol telnet session (i.e., a session outside of RA Manager). *HostName* = name of host attached to the remote agent

TELNETIP	TELNETIP *IPAddress [Port]*
	Examples:
	`TELNETIP 172.16.3.24`
	`TELNETIP 172.16.3.24 2300`
		Telnets to specified IP Address. This command does not function from a non-protocol telnet session (i.e., a session outside of RA Manager).
		IPAddress = the IP address of a device on your network
		Port = the TCP port required to telnet to the target host. The default is 23.

TERMINATE	TERMINATE	Closes all command line interface sessions and / or disconnects modem or network connections.
TIME	TIME *[HH:MM:SS]* **Examples:** TIME TIME *14:02:00*	Sets / gets the current time. If you do not specify time, the current time is retrieved.
TYPE	TYPE *filename* **Examples:** `TYPE MyFile`	Brings the specified file content to the screen for viewing.
XPAR	XPAR *[hostname]* **Examples:** XPAR XPAR "My Host" XPAR -b	Initiates a transparent serial connection to an attached host. If you do not specify a host name, and there is more than one host available, a menu displays all possible host names, but not the system host name (remote agent). The user may then select the desired host from this menu. If there is only one available host, the transparent session starts. Exiting the transparent session returns you to the command line prompt. Use the **-b** (binary) option to prevent exiting from transparency using an escape sequence. You must disconnect manually (hang up) to exit transparency. This option is most helpful when backing up and restoring binary data.

Table 3-1: NET-PATHm Commands

XPARA	XPARA *[hostname]* **Examples:** XPARA XPARA “My Host”	Initiates an active transparency to a host. When a user issues a command, an enumerated list of the serial hosts accessible to the current user displays. If only one serial host is accessible to the user, an active bridge transparency session immediately initiates for that host. Once a session is established, the system sends any characters received from the host to the connected user and also passes them to the application (or script) for processing. Characters, sent from the port via a terminal action or script, are sent to the host, but not to the connected user (unless the host is echoing characters). Any characters sent by the user are sent directly to the host port. A user can terminate a command line active bridge transparency session using the same escape characters that are used to terminate standard transparency (CTRL-[A). Terminating the transparency session this way returns the user to the remote agent command prompt.

* This command is only available to Teltronics personnel.

A user access group assigned to a user profile controls access to commands. Some commands listed in the table above are only available to users who enter the master access password or the factory password.

4

Indicators and Diagnostics

Front Panel Indicators

The NET-PATH*m* front panel contains four Light Emitting Diode (LED) indicators. The LEDs indicate the power status, battery charge status, application or database status, and alarm conditions.

Figure 4-1 NET-PATHm Front Panel Indicators

Indicators

The four LED indicators on the NET-PATH*m* front panel indicate the following conditions.

LED	Description
Power	ON indicates the NET-PATH*m* is using commercial power. Off indicates the NET-PATH*m* is operating on battery power.
Battery	ON indicates the battery is fully charged. FLASHING, indicates the battery is charging. OFF, indicates the battery is disconnected.
Status	FLASHING indicates the NET-PATH*m* is loading the application and database. ON indicates the NET-PATH*m* has a valid database loaded. OFF indicates the NET-PATH*m* does not have a valid application or database loaded.
Alarm	ON indicates that an alarm condition exists. OFF indicates normal operation

System Reset Button

The recessed Reset button on the back of the NET-PATH*m* resets the microprocessor in the NET-PATH*m* and initiates a warm boot. Both warm and cold boots may result in the loss of active event data. Data stored in flash memory is not affected.

UPS Off Button

To power down the NET-PATH*m*, remove commercial power; then, press the UPS Off button on the back of the unit. The NET-PATH*m* performs a safe shutdown.

Modems

International Modems

When installing the NET-PATH*m* remote agent, you may need to adjust the modem's country code setting for Multi-Tech modems with model number MT5634SMI.

To display the country code currently in use:

Type "Status Modem" on the command line. The system returns the modem initialization string characters (shown below) in the Country Code field.

Table 4-1: Country Code Definitions for Multi-Tech Modem Model MT5634SMI

NET-PATH*m* Country Code	Countries	Modem Initialization String
1	New Zealand	at%t19,0,9
2	Hong Kong Hungary India Indonesia Israel Malaysia Philippines Poland Singapore Slovenia South Korea Vietnam	at%t19,0,30
3	Czech Republic	at%t19,0,25
4	South Africa	at%t19,0,35
5	Argentina Aruba Austria Bahrain Belgium Brazil Brunei Canada Cayman Islands Chili China Columbia Costa Rica Denmark Equador Egypt	at%t19,0,34

Table 4-1: Country Code Definitions for Multi-Tech Modem Model MT5634SMI (Cont.)

NET-PATH*m* Country Code	Countries	Modem Initialization String
5	Finland France Germany Greece Guatemala Iceland Ireland Italy Jamaica Luxemburg Macao Mexico Netherlands Netherlands Antilles Norway Pakistan Panama Peru Portugal Qatar United Arab Emirates (Dubai) United Kingdom United States Uruguay Venezuela Romania Russia Saudi Arabia Slovakia Spain Sri-Lanka Sweden Switzerland Trinidad Turkey Ukraine	at%t19,0,34
6	Japan	at%t19,0,10
7	Australia	at%t19,0,1

Universal Modems

When installing the NET-PATH*m* remote agent, you may need to adjust the modem's country code setting for Multi-Tech modems with model number MT5656SMI.

1. Determine your modem type.

Do one of the following:

- Look at the model number on the bottom of your NET-PATH*m*. If a "U" (Universal) appears in the sixth position, your NET-PATH*m* has the Multi-Tech modem.
- Login to the NET-PATH*m* command line and type the command "STATUS MODEM." A "modem enum" value of "0239" indicates your NET-PATH*m* has the Multi-Tech modem.

2. Change the country code.

Login to the NET-PATH*m* command line and type "STATUS MODEM." The modem returns a status modem response, shown below. Use the "MODEMCOUNTRY" command to modify the country code. Refer to Table 3-1.

Table 4-2: Country Code Definitions for Multi-Tech Modem Model MT5656SMI

NET-PATH*m* Country Code	Countries	Status Modem Response
1	Japan	0
2	Argentina	07
3	Australia	09
6	Brazil	16
17	Malaysia	6C
20	New Zealand	7E
24	Hong Kong India Indonesia	99
25	Singapore	9C
26	South Africa	9F
31	Israel Philippines Canada Chile China Mexico United States Korea-Republic Of Thailand	B5

Table 4-2: Country Code Definitions for Multi-Tech Modem Model MT5656SMI (Cont)

NET-PATH*m* Country Code	Countries	Status Modem Response
32	Hungary Poland Slovenia Czech Republic Austria Belgium Denmark Finland France Germany Greece Iceland Ireland Italy Luxembourg Netherlands Norway Portugal Russian Federation Slovakia Spain Sweden Switzerland Turkey United Kingdom Cyprus Liechtenstein Lithuania	FD
33	Taiwan	FE

Note *When programming a Multi-Tech modem (model MT5656SMI) for international use, you must first download a NET-PATHm 2.0 application (or higher) to your NET-PATHm device. Failure to do so may cause the device to function improperly. Users programming a Multi-Tech modem (MT5656SMI) with the country code "31" do not need to download a NET-PATHm 2.0 application first.*

Troubleshooting

Refer to the following troubleshooting aids. Find the symptom that most closely matches your situation, and then perform the checks described for that symptom. If these steps fail to correct the problem, contact your NOC system administrator for technical assistance.

Troubleshooting Incoming Calls

NET-PATH*m* does not answer or is busy.

Possible Cause:

- The telephone line is inoperative. Verify the telephone line can dial out and receive calls. If not, contact your local telephone representative.
- The NET-PATH*m* is off-hook, trying to place a call. Use the CLI Status command to check the modem status.
- Defective telephone cable. Replace cable.

NET-PATH*m* answers (off-hook), but no carrier is detected (DCD is OFF).

Possible Cause:

- Calling modem is bad. Replace modem.
- Calling with non-compatible modem. Replace with correct modem.
- Noisy or bad telephone line. Contact your local telephone representative.

NET-PATH*m* answers, but the database or APP cannot download.

Possible Cause:

- Noisy or defective telephone line. Contact your local telephone representative.
- Mismatched database (wrong password/site ID). Verify with Polling and Analysis Center.

Call terminates before the download completes.

Possible Cause:

- Noisy or defective telephone line. Contact your local telephone representative.

Troubleshooting Outgoing Calls

NET-PATH*m* does not go off-hook.

Possible Cause:

- Incorrect database. Event is not programmed, is not programmed correctly, current time is not in the Action window, or event duration is too long.
- No App loaded.

Incoming calls are not received at the Polling and Analysis Center.

Possible Cause:

- Bad database. Incorrect telephone number.
- Modem at the receiving end is not set for auto-answer.
- Restricted telephone line. Contact your local telephone representative.

Call was received at the Polling and Analysis Center, but did not have a carrier.

Possible Cause:

- Non-compatible or defective modem at the Polling and Analysis Center.
- The modem at Polling and Analysis Center is not in data mode.
- You selected an incorrect database option.

Call received at Polling and Analysis Center, modem connected, but message not received.

Possible Cause:

- Bad database. Incorrect protocol flag.
- Bad telephone line. Contact your local telephone representative.
- Incorrect receiving option (parity, speed, stop bits, data bits)

Notes

5

Serviceable Components

General

The following NET-PATH*m* components can be serviced either at the factory or in the field.

Field	Description
UPS Battery	Replacement kits are available from Teltronics. You can replace this unit in the field. See “UPS Battery Replacement Procedure” on page 5-2.
Coin Cell Battery	The coin cell battery has a service life is four to five years. This unit can be replaced in the field. See “Coin Cell Battery” on page 5-2.

UPS Battery

The NET-PATH*m* contains a 12-volt, rechargeable UPS battery. The life expectancy is one to three years, depending on variables such as temperature and recharge cycles. The NET-PATH*m* fixed event messages signal when the battery is unable to hold a charge, or is constantly charging. Battery replacement kits are available from Teltronics.

Warning *There is a danger of explosion if you replace the battery incorrectly. Replace* ***only*** *with the same or equivalent battery type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

Use care when working with your battery. Do not to touch the battery with conducting materials, such as rings, bracelets, keys, and tools. Do not open or mutilate the battery. Do not dispose of the battery in fire.

UPS Battery Replacement Procedure

The replacement battery assembly includes a metal bracket and cable assembly.

To replace the NET-PATH*m* UPS battery

1. Remove the commercial power connection from the rear of the NET-PATH*m*.
2. Press the **UPS Off** button to perform a **Safe Shutdown**.
3. Disconnect the cables from the back of the NET-PATH*m*. Be sure to mark your cables so you can reconnect them quickly.
4. Remove the screws that secure the NET-PATH*m* rear panel.
5. Remove the battery retaining screws on the bottom of the NET-PATH*m*.
6. Carefully slide the main board from the case.
7. Disconnect the battery power connector from the main board.
8. Remove the screw that secures the battery to the main board.
9. Lift the battery off the main board .
10. Insert the new battery assembly and secure it with the retaining screws. Be sure the new battery has the same physical and electrical orientation as the old battery.
11. Attach the new battery power connector to the main board making sure the red wire is on the left when viewed from the front of the NET-PATH*m*. Be careful. The connector is keyed, but it is possible to force it in backwards. This will change the polarity of the battery and will damage the NET-PATH*m*.
12. Reinstall the cover and replace the retaining screws.
13. Attach the cables to NET-PATH*m.*
14. Apply power to the unit.
15. The battery LED indicator should illuminate to indicate that the battery is fully charged, or flash slowly to indicate that the battery is charging. If the battery LED indicator is off, the new battery may be defective, or its polarity may be incorrectly oriented. Check the connector to ensure it is plugged in correctly. Red connects to the positive terminal and black to the negative terminal of the battery.

Coin Cell Battery

A 3-volt, 175 mAh lithium coin cell battery maintains the NET-PATH*m* Real Time Clock (RTC) settings. The life of this battery is normally four to five years.

Teltronics recommends that you replace this battery whenever you replace the NET-PATH*m* 12-volt UPS battery. Replace the battery with a Panasonic BR2325, or equivalent.

To replace the coin cell battery

1. Remove the commercial power connector from the back of the NET-PATH*m*.
2. Press the **UPS Off** button to perform a Safe Shutdown.
3. Disconnect the cables from the back of the NET-PATH*m*. Be sure to mark you cables so you can reconnect them quickly.
4. Remove the screws that hold the NET-PATH*m* rear panel.
5. Remove the battery retaining screw on the bottom of the unit and slide the main board attachment out of the case.
6. Locate the coin cell battery. Note the polarity. You should see a positive (+) symbol on top of the battery.

7 Gently lift the retaining clip. Use care – too much pressure on the retaining clip can cause it to break.

8 Carefully remove the battery from the molded housing.

9 Insert the new battery. Be sure that it is properly seated in the housing and the positive (+) symbol is on top.

10 Reinstall the main board and replace the retaining screws.

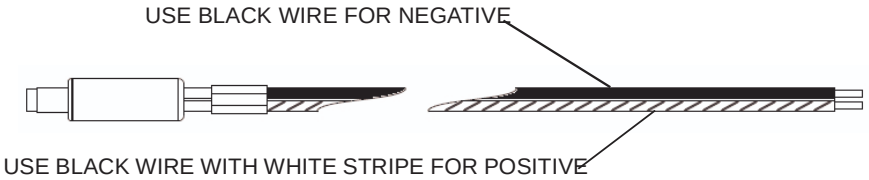
11 Attach the cables to NET-PATH*m*.

12 Apply power to the unit.

13 You may need to reset the time using the Command Line Interface, or by downloading a new database. See “Useful Command Line Interface Commands” on page 3-5.

NET-PATH*m* DC Power

If you purchased a NET-PATH*m* with a DC power connection, you must connect the power cable to a standard DC power source.



To install the NET-PATH*m* DC power connection

1 Remote the DC power cord from its packaging.

2 Attach the cord to your DC power source.
- Connect the black wire with the white stripe to positive.
- Connect the black wire to negative.

3 Plug the cord’s barrel connector into the electrical receptacle on the back of the NET-PATH*m*.

4 The NET-PATH*m* will boot automatically when you apply power.

External Power Supplies

The NET-PATHm remote agents—as with Teltronics' SEBea, SEB II, and SEBjr remote agents—use external power supplies that may become separated from the devices after delivery. To ensure you attach the proper power supply to your NET-PATH*m* remote agent, please refer to the table below.

The **Markings on Supply** column lists the part number found on the plastic housing for each power supply. Power supplies delivered after January 2005 have an additional label identifying the Teltronics part number. Locate the Teltronics part number or the part number on the housing for your power supply; then, move across the table to the **Compatibility** column to determine which remote agents use that supply. **Only use the power supply rated for your remote agent.**

Teltronics Part Number	Item Description	Input Power	Form Factor	Plug[a] Size	Vendor	Markings on Supply	Compatibility
540-2000-0042	AC Transformer 120 VAC, 14VAC, 10VA	120 VAC	Transformer	2.1 mm	AULT, INC.	T41140700A030G	SEB Jr. only
540-2000-0043	AC Power Supply 100-240VAC, 18VDC, 1A	100-240 VAC	In Line Brick	2.1 mm	AULT, INC.	PW118RA1802F01	All SEB-II models. All SEBea
700-1000-0009 [b]	AC Power Supply 100-240VAC, 18VDC, 1A	100-240 VAC	In Line Brick	2.5 mm	AULT, INC.	PW118RA1802F01	NET-PATH*m* only. Initial shipments.
540-2000-0044	AC Power Supply 100-240VAC, 18VDC, 1A	100-240 VAC	In Line Brick	2.5 mm	AULT, INC.	PW118RA1803F01	NET-PATH*m* only. Standard offering after initial shipments.
540-2000-0049	AC Transformer 120VAC, 14V-20V, 20W	120 VAC	Transformer	2.1 mm	AULT, INC.	T48151333A050G	DO NOT USE. Return to factory for replacement
540-2000-0056	AC Power Supply 100-250VAC, 18VDC, 30W	100-250 VAC	In Line Brick	2.5 mm	AULT, INC.	PW128RA1803N01	NET-PATH*m* All SEBea units[c] All SEB-II/Jr. units[c] This power supply is available as a spare unit and is delivered with the optional adapter so that it may be used with any unit.
4900025	AC Transformer 240V 50HZ, 14VAC	240 VAC	Transformer	2.1 mm	APS	HET-57/2-216	SEB-II all models. International shipments only
4900019	AC Transformer 120 VAC, 14VAC, 20VA	120 VAC	Transformer	2.1 mm	BASLER ELECTRIC	BE114920AAA	SEBea 4 port units. All SEB-II units.

a. All SEB II and SEBjr units were delivered with 2.1 mm power receptacles. SEBea units shipped before 12/14/2004 and containing serial numbers 3004500014 or lower have 2.1 mm receptacles. SEBea units shipped after 12/14/2004 and containing serial numbers 30045000015 or higher have 2.5 mm receptacles.

b. Uses the same power module as 540-22000-0043, but includes a permanently attached adapter to convert the 2.1 mm plug to 2.5 mm.

c. May be used with SEB II and SEBjr units, or older SEBea units with 2.1 mm receptacles, by attaching adapter part number 420-5000-0137, available from Teltronics, Inc.

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SEB NET-PATH*m* Installation and Operation Guide

Teltronics, Inc.
2150 Whitfield Industrial Way
Sarasota, FL 34243
941.753.5000

Part Number 610-0000-0447 Rev. I