

Teleline™

Plug-in -24 V Battery Backup Card, 751312 Description and Installation Guide

925W751025-08E



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Chapter 1

General Information

1.1 Publication Information

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Teleline Plug-in -24 V Battery Backup Card model 751312

Description and Installation Guide

Part number: 925W751025-08E

Publication date: April 5, 2010

Published By

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1.2 About this Guide

This guide introduces you to the Teleline Plug-in -24 V Battery Backup Card model 751312, and describes how to install it in a Teleline shelf. This guide was designed to be read from beginning to end.

1.2.1 Related Documentation

For any other technical document relating this system installation or applications cards and shelves, please refer to the Positron Web site:
www.PositronPower.com.

1.2.2 Positron Products and Services

Positron engineers and manufactures high voltage isolation products to protect personnel and telecommunications circuits in high voltage areas that are susceptible to the effects of Ground Potential Rise (GPR).

Positron is the leader in isolation technology with its Teleline wireline products and TeleLite optical fiber wireline isolation/protection product families. Positron provides total flexibility in product configuration – from standalone units protecting a single circuit to high-capacity, multi-shelf HVI preconfigured systems.

Positron also provides a wide range of consulting, analysis and training services for communications companies and electrical utilities.

Full details and contact information are available at: www.PositronPower.com

1.3 Compliance Information

1.3.1 FCC Part 15

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate 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 own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

1.4 Service and Support

1.4.1 Positron Contact Information

General information:	Positron Inc. 5101 Buchan Street, Suite 220 Montreal, Quebec, Canada H4P 2R9 US and Canada: 1-888-577-5254 International: 1-514-345-2220 Fax: 514-345-2271 E-mail: info@positronpower.com Website: www.positronpower.com
Customer Service and Repairs:	US and Canada: 1-888-577-5254 International: 1-514-345-2220 E-mail: customerservice@positronpower.com

1.4.2 Technical Customer Support

Positron is committed to providing excellent ongoing technical support to its customers. A team of specialists is always available for telephone consultations or for on-site visits to assist in the maintenance and troubleshooting of Positron equipment.

For pricing information or assistance in the planning, configuration and implementation of the installation of equipment, contact Technical Customer Service.

1.4.3 Customer Training

Full customer training courses on High Voltage Interface (HVI) are also available. For more information, contact Positron.

1.4.4 Product Safety

This equipment is compliant with CSA CAN/CSA-C22.2 No. 60950-1-07.

1.4.5 Repair Service

All warranty repairs are performed at no cost. Positron reserves the right to repair or replace any equipment that has been found to be defective.

For information about out-of-warranty repairs, contact Positron's Repair Department. Due to the varied nature of repairs, no specific turnaround can be guaranteed, but average turnaround time is 20 working days from date of receipt. In emergency situations, special arrangements can be made. All repaired items are warranted for a period of 90 days.

Before returning any items to Positron for repair, warranty repair or replacement, call the Repair department to obtain a Return Material Authorization (RMA) number. Parts returned without RMA numbers cannot be accepted. The RMA number must always be clearly marked on all boxes, crates, and shipping documents. Bulk repairs (more than five items) will require additional processing time, so please take this into consideration when requesting an RMA number.

To accelerate the repair process, whenever possible, include a report detailing the reason for return with the unit(s). Also, please include the name and phone number of a person who can be contacted should our Repair department need further information.

When packing items being returned for repair, please ensure they are properly packed to avoid further damage. Plug-in cards should never be shipped while installed in a shelf; this will cause damage that can extend the repair period.

1.5 Teleline Warranty

Subject to the provisions of this paragraph, Positron warrants that the equipment shall perform in accordance with Positron's specifications. The warranty remains valid for five (5) years from the date of shipment. The warranty fully covers workmanship, materials and labor. Positron shall, at its sole discretion, repair or replace the problem unit.

Freight costs to ship defective equipment to Positron are borne by the Customer, with return of replaced or repaired equipment to be at Positron's expense.

1.5.1 Limitation of Liability

Subject to anything to the contrary contained herein, Positron's sole obligation and liability and the customer's sole remedy for Positron's negligence, breach of warranty, breach of contract or for any other liability in any way connected with or arising out of, the equipment or any services performed by Positron shall be as follows:

- In all situations involving performance or non-performance of the equipment or any component thereof, the customer's sole remedy shall be, at Positron's option, the repair or replacement of the equipment or said component.
- For any other claim in any other way related to the subject matter of any order under, the customer shall be entitled to recover actual and direct damages; provided that Positron's liability for damages for any cause whatsoever, and regardless of the form of the action, whether in contract or in tort (including negligence), shall be limited to the value of the order.

Positron shall not be obligated to repair or replace any item of the equipment which has been repaired by others, abused or improperly handled, improperly stored, altered or used with third party material or equipment, which material, or equipment may be defective, of poor quality or incompatible with the equipment supplied by Positron, and Positron shall not be obligated to repair or replace any component of the equipment which has not been installed according to Positron specifications.

IN NO EVENT SHALL POSITRON BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, PUNITIVE, EXEMPLARY OR SIMILAR OR ADDITIONAL DAMAGES INCURRED OR SUFFERED INCLUDING

LOSS OF PROFITS, LOSS OF REVENUES, LOSS OF DATA, LOSS OF BUSINESS INFORMATION, LOSS OF GOODWILL, LOSS OF EXPECTED SAVINGS OR BUSINESS INTERRUPTION ARISING OUT OF OR IN CONNECTION WITH THE EQUIPMENT, A PURCHASE ORDER, SUPPLIES, MAINTENANCE SERVICES OR OTHER SERVICES FURNISHED HEREUNDER, EVEN IF POSITRON HAS BEEN ADVISED OR IS AWARE OF THE POSSIBILITY OF SUCH DAMAGES.

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1.5.2 Cancellation and Rescheduling Charges

Should the customer cancel, prior to shipment, any part of an order, the customer agrees to pay to Positron cancellation charges, not as a penalty, which shall total all expenses, including labor expenses, incurred by Positron prior to said cancellation. Equipment that has been specially developed for the customer's specific applications shall not be subject to cancellation. Cancellation or rescheduling is not permissible after shipment of the System.

Chapter 2

Overview

2.1 Introduction to the Plug-in -24 V Battery Backup Card model 751312

The Plug-in -24 V Battery Backup Card provides DC power to the Five-card Shelf, model 751112, or the Eight-card Shelf, model 751109, in the event of a power interruption.

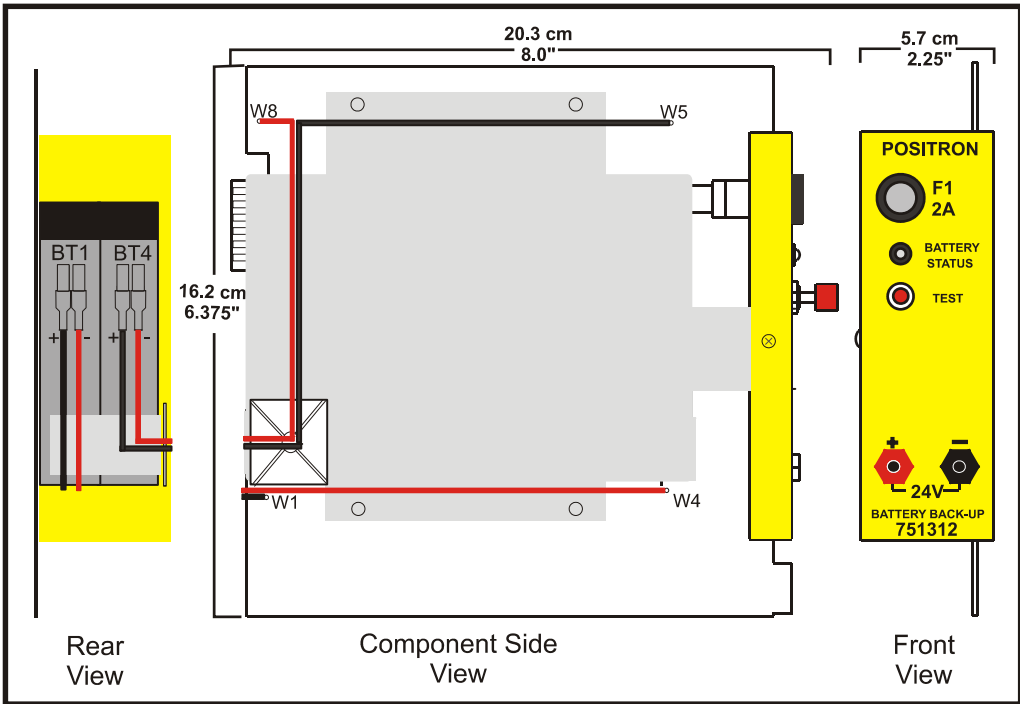
The unit indicates the battery charge status via a front panel LED, and provides front panel test jacks for direct measurement of the battery voltage under load/no-load conditions.

A momentary contact push-button on the front panel enables the introduction of a test load on the batteries to permit accurate LED indications when the Battery Backup Card is not actually powering the shelf.

The Battery Backup Card is normally kept recharged by CSA-approved Positron Plug-in Power Supplies, model 751313MC or 751316.

For a view of the Plug-in -24 V Battery Backup Card, see Figure 1 on page 15.

Figure 1: Plug-in -24 V Battery Backup Card



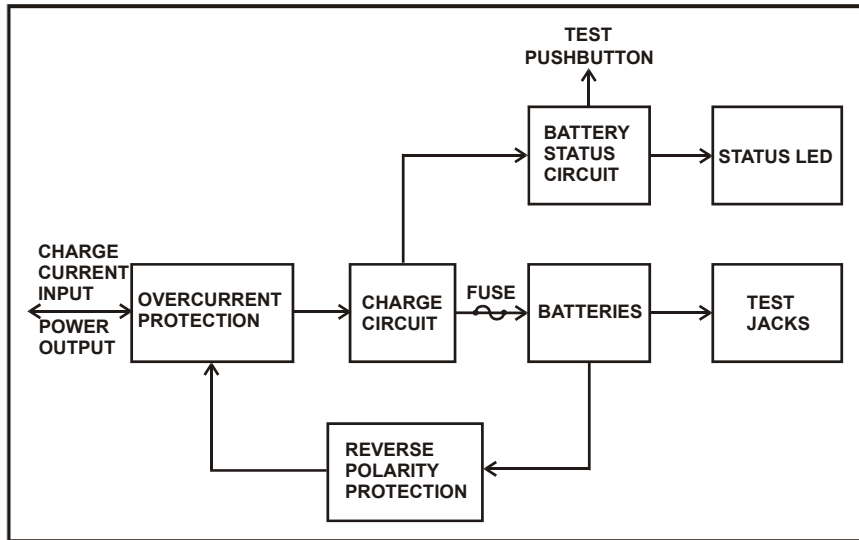
NOTE

- Fuse F1 is 2A, 250 Vac, slow blow

2.2 Hardware Description

For the card's block diagram, see Figure 2.

Figure 2: Plug-in -24 V Battery Backup Card Block Diagram



2.2.1 Battery Backup Elements

The following is a description of the elements of the Plug-in -24 V Battery Backup Card block diagram.

2.2.1.1 Charge Current Input

The Charge Current Input varies depending on the charge state of the batteries. A fully discharged battery will draw a maximum of 1 A, which will rapidly decrease to the normal charge current of 300 mA. A fully charged battery backup unit will typically draw only 10 mA.

2.2.1.2 Power Output

The Power Output of the unit is 2 A (maximum), at -26 Vdc.

2.2.1.3 Overcurrent Protection

The Overcurrent Protection circuit limits the current to 2 A in both directions.

2.2.1.4 Charge Circuit

The Charge Circuit limits the current to the batteries to prolong their life.

2.2.1.5 Batteries

The Batteries are of the maintenance free, sealed lead-acid type with float service (i.e., constantly charging). Their service life is 4 years minimum.

2.2.1.6 Reverse Polarity Protection

The Reverse Polarity Protection protects the battery backup circuitry from damage should the batteries be connected improperly. In such a case, the Fuse F1 is 2A, 250 Vac, (slow blow) will simply blow.

2.2.1.7 Battery Status Circuit

The Battery Status Circuit continuously monitors the battery voltage once the unit is plugged into either the 5- or 8-card Shelf, and provides essential status information via the front panel LED as described below.

2.2.1.8 Battery Status LED

The Battery Status LED indicates the battery status as shown in the following table.

Table 1: Battery Status LED Indications

LED Indication	Battery Backup Card Status
ON (Amber)	Battery voltage is greater than -20V (normal condition)
ON (Red)	Battery voltage is less than or equal to -20V
OFF	Battery voltage is less than -1.5V

2.2.1.9 Test Pushbutton

When the Test Pushbutton is pressed, the output is disconnected from the shelf and a fixed load is introduced across the batteries to provide a meaningful LED indication.

2.2.1.10 Test Jacks

The miniature banana Test Jacks permit the connection of a voltmeter to measure the exact battery voltage. To be meaningful, the measurement must be performed with the battery backup under load. This can only be guaranteed by pressing the test pushbutton to introduce the test load in the circuit.

2.2.1.11 Fuse

The Fuse F1 is 2A, 250 Vac, slow blow, and protects both the battery backup unit from excessive current drawn by the shelf, and the power supply in the event of a Battery Backup Card malfunction.

2.3 Technical Specifications

Table 2: Model 751312 Electrical Specifications
(measured at 25°C or 77°F, 50% R.H.)

Parameter	Specifications
Charging voltage	-27 Vdc ± 0.1 Vdc
Maximum input current	1 A
Output voltage (fully charged, no load)	-25.5 Vdc ± 0.5 Vdc
Maximum output current	2 A
Service life	4 years
Storage life upon full charge	16 months
Battery replacement	Power-Sonic PS1221S Energys NPH2-12FR Sentry PM1250C Yuasa NP2-12 or equivalent CSA approved batteries


Table 3: Model 751312 Physical Specifications

Parameter	Specifications
Operating temperature range	0°C to +40°C (+32°F to + 104°F)
Height	16.2 cm (6.375")
Width	5.7 cm (2.25")
Depth	20.3 cm (8.0")
Weight	2.3 kg (5.1 lbs)

Chapter 3

Installation

3.1 Installation

 <p>ATTENTION ELECTROSTATIC SENSITIVE DEVICES HANDLE ONLY AT STATIC SAFE WORKSTATION</p>	<p>ESD Precaution INCORRECT HANDLING MAY VOID WARRANTY</p>
	<p>These procedures must be followed when handling an electrostatic sensitive device.</p>
	<ul style="list-style-type: none">• A grounded wrist strap must be worn at all times during installation.• When unpacking, place the antistatic bag containing the device on an electrostatic discharge (ESD) safe surface. An ESD safe surface is a conductive surface connected directly to an earth ground.• When moving, carry the device in an ESD safe container or the antistatic bag, provided with the device.

The Plug-in -24 V Battery Backup Card plugs into its upper left-hand location on the 5- or 8-card Teleline Shelf.

Battery replacement should only be performed by trained personnel.

CAUTION



- Stand on a thick rubber mat and wear rubber gloves during the installation procedures. It is preferable to perform these procedures on a clear dry day when a Ground Potential Rise (GPR) or transients are less likely to occur.
- When using an internal or an external power supply as part of a Teleline installation, the power leads feeding the shelf **MUST** be fed through disconnect devices rated at 3A, 125 Vac
- Grounding of the card is done through the shelf. See the grounding section of the shelf's installation manual for more information.
- The test jacks are wired directly to the batteries, and caution must be exercised never to short the terminals together (either with a test lead or using a multimeter inadvertently set to the AMMETER position).
- The Battery Backup Card must not be placed on an exposed metal surface, as doing so would result in a short circuit and seriously damage the board.

WARNING

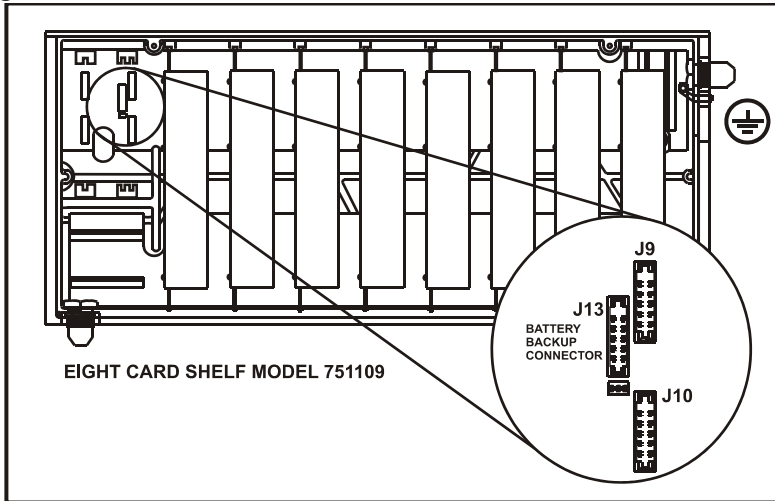
- There is a risk of explosion if batteries are replaced by an incorrect type.
- All batteries must be replaced at the same time.
- All batteries should be from the same manufacturer.

► To install the Plug-in -24 V Battery Backup Card

1. Unpack the Plug-in -24 V Battery Backup Card from its protective box and anti-static bag.
2. Confirm that the unit is a Battery Backup Card by identifying the name and model number on the faceplate of the card.
3. The Battery Backup Card uses two batteries connected in series.
4. The card must be inserted rightside up and may be plugged into the shelf with the power ON or OFF.
5. Slide the card into its designated shelf slot until the single card-edge connectors lock into the Teleline shelf. The unit components will be facing left.

For an illustration of its installation location, see Figure 3.

Figure 3: Model 751312 Installation Location in Shelf



NOTE

- The five-card shelf (model 751112) has the same connector layout.
- The J9 and J10 connectors are used to connect the 751313MC, 751316 or 751318MC power supplies.

► To verify the Battery Backup Card installation:

NOTE

- It is recommended that the Battery Backup Card be left in a powered shelf for three hours to fully recharge the batteries prior to performing the verification procedure.

1. Depress the card's front panel test push-button to introduce a test load across the batteries, and observe the front panel LED. For a listing of the possible battery status LED indications, see Table 1 on page 17.
2. If the LED glows amber, then the battery backup is functioning normally. In this case, the shelf cover may be closed and secured.
3. If the LED glows red, make sure the voltage of the shelf is -26 V to -27 V and let the batteries charge for another hour.
4. If the LED is off, verify that the fuse F1 is not blown. If it is damaged, replace it.

Otherwise make sure the battery cables are properly connected.

Finally, measure the battery voltage across the front panel test jacks. If the voltage is below 20 V with the test push-button depressed, replace the batteries.

3.2 Battery Replacement Procedure

Replacement of the batteries will be necessary after their rated service life of four years (minimum). They are to be replaced with Power-Sonic PS1221S or equivalents as shown in Table 2 on page 19.

WARNING



- There is a risk of explosion if batteries are replaced by an incorrect type.

► To replace the batteries

1. Unscrew the metal retaining clamp holding the batteries in place.
2. Disconnect the batteries, and dispose of them in a government approved waste site.

CAUTION



- The batteries contain toxic lead and corrosive acid, and as they are user-replaceable, should only be disposed of in government approved waste sites.

3. Position the new batteries and reconnect the leads.
4. Replace the retaining clamp, and reverify the installation.

NOTE

- Although the batteries themselves are considered user-replaceable, there are no other PCB adjustments or jumper settings required.
- The card is to be shipped to Positron should servicing be necessary.

Appendix A

Acronyms

Acronyms

CSA	Canadian Standards Association
FCC	Federal Communications Commission
GND	Ground
GPR	Ground Potential Rise
HVI	High-Voltage Interface
LED	Light-Emitting Diode
PCB	Printed Circuit Board
RMA	Returned Material Authorization
RTU	Remote Termination Unit
SLA	Sealed Lead-Acid Batteries
UL	Underwriter's Laboratories
VRLA	Valve Regulated Lead Acid Batteries