

Plug-in ADSL Module 751321B

Description and Installation



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TECHNICAL CUSTOMER SUPPORT

Should a problem arise, contact your customer support department. If the problem cannot be resolved by your support department or if you have any questions, contact Positron's Technical Customer Support department at 1-888-577-5254.

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1. The ADSL Module

The ADSL Module, model 751321B provides high voltage isolation between an incoming ADSL (Asymmetric Digital Subscriber Line) G-Lite line and the customer's phone and modem. The ADSL line module consists of two cards, one handling POTS and one handling the data signal. The ADSL daughter board also contains a splitter that separates the POTS signal from the data signal.

Its features include the following:

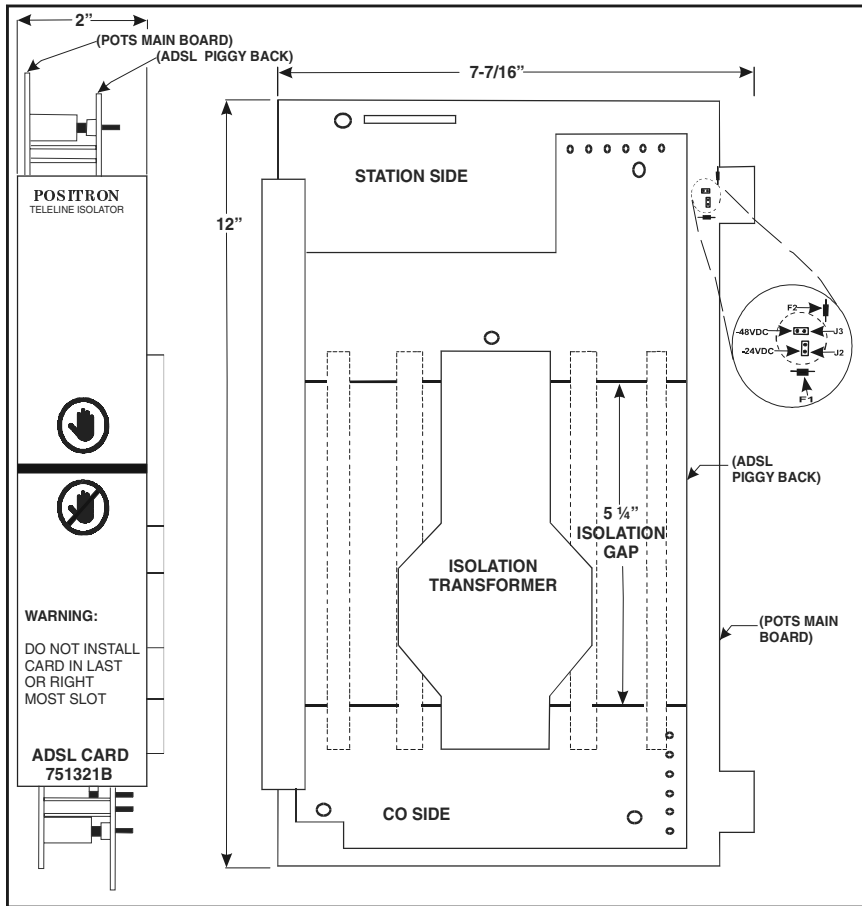
- It will allow one ADSL G-Lite line to be protected and isolated from GPR and lightning.
- The ADSL Module may be used with only the new generation Three, Five and Eight-card Teleline Shelves.
- High pass filter to prevent POTS signalling from interfering with data signal.
- Low pass filter to prevent data signal from creating audible interference.
- The ADSL Module provides up to 50 kV RMS and 70kV peak Voltage protection while maintaining communication before and after a GPR.
- The card operates from either a -24 or -48 Vdc supply provided by either the shelf's power supply or from a source external to the shelf.

Note

1. **When installing an ADSL module, the CO incoming line must be wired to the alphabetical pair of the slot. On the station side, the POTS line will be on the numerical pair of the slot and the ADSL line on the alphabetical pair. On the CO side, the numerical pair MUST be left unconnected.**
2. **Due to the module's size, it will not fit into the last, or right most slot of the shelf.**

For a view of the major components of the ADSL Module, refer to Figure 1.

Figure 1 Model 751321B Component Layout (Only Major Components Shown)



Attention

The CO line is wired to the alphabetical pair of the appropriate slot.

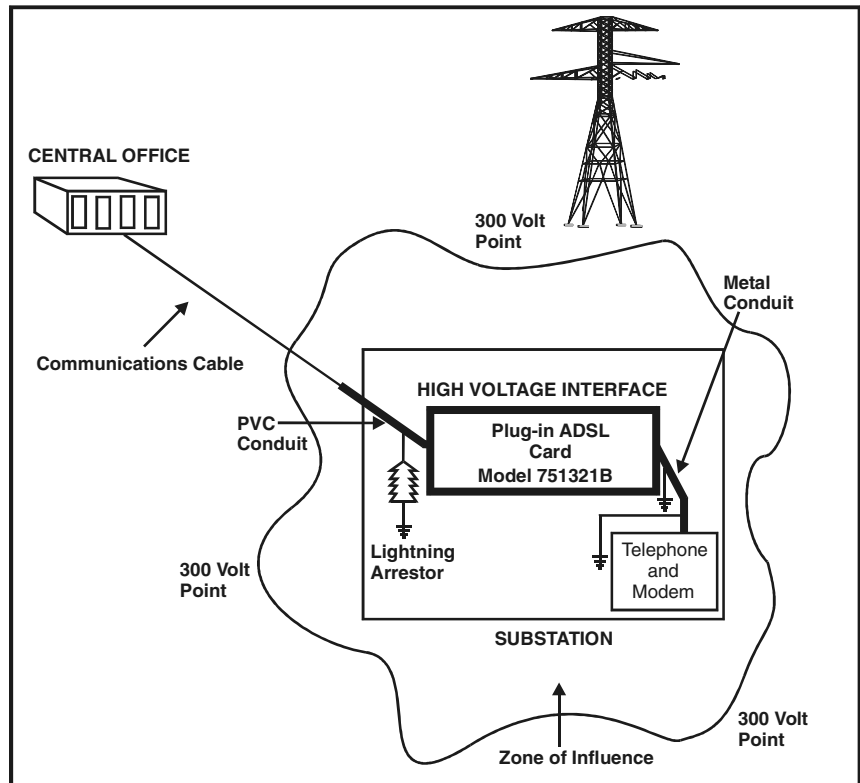
2. Applications

The applications of the ADSL Module include the following:

- ADSL G-Lite for high speed Internet access.
- This circuit is also known as ADSL Lite and Universal ADSL (UADSL).

For an illustration of the application, refer to Figure 2.

Figure 2 High Voltage Interface Applications



3. Hardware Description

The ADSL Module is comprised of two sides. With the card facing you the Station side is located on the upper portion of the card and the CO side is located on the lower portion of the card. The Station side is separated from the CO side by the opto-isolators and transformer which create a 5¼ inch isolation gap.

For the card's block diagram, the POTS portion, refer to Figure 3. For the block diagram of the ADSL Module, refer to Figure 4.

Figure 3 Block Diagram, POTS Portion

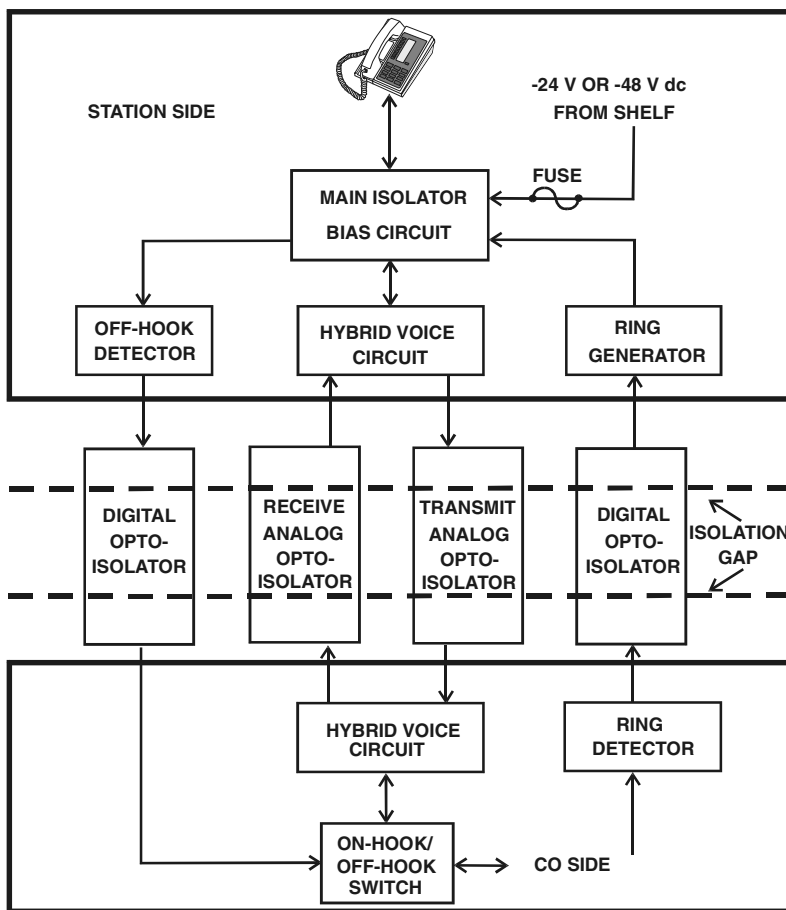
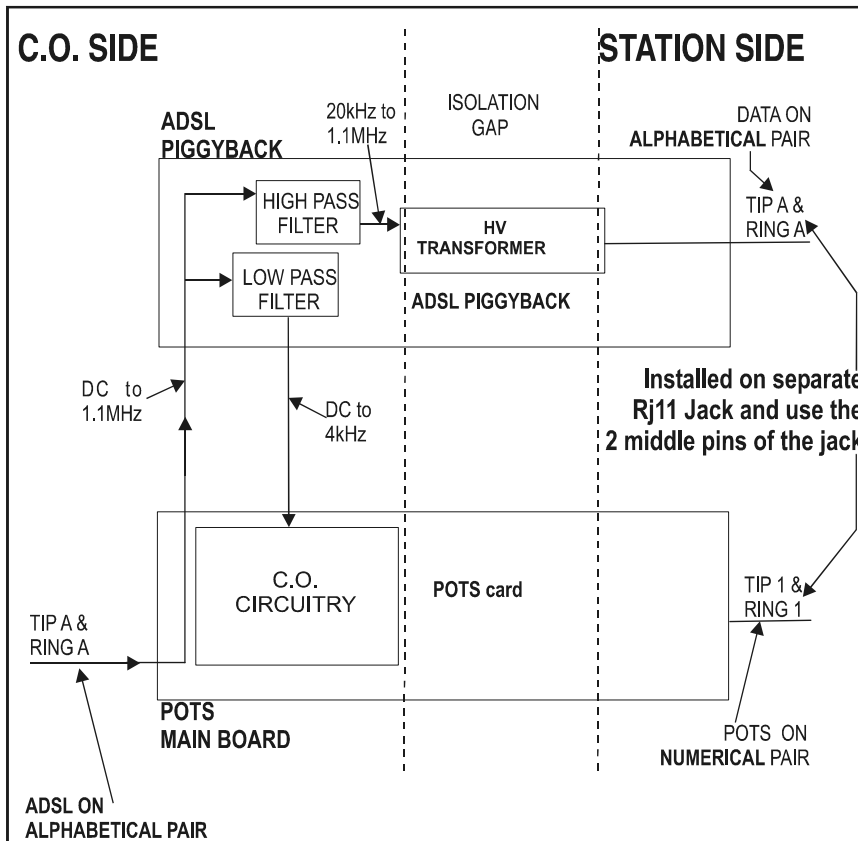


Figure 4 Block Diagram, ADSL Module



The following is a description of the elements of the POTS/ADSL block diagram.

On Hook/Off Hook Switch

The On Hook/Off Hook Switch is a metal oxide semiconductor field effect transistor (MOSFET) current limiting circuit that is turned on by the Off Hook signal. When switched on, it permits modulation of the hybrid voice circuits.

Hybrid Voice Circuits

The Hybrid Voice Circuits located on both the Station and CO sides of the card form a two-wire to four-wire to two-wire configuration that permits the separation of Transmit (TX) and Receive (RX) signals. These circuits also

perform an impedance matching function such that the Station side impedance is reflected to the CO side. This renders the card effectively transparent for communication purposes.

Ring Detector

The Ring Detector is a bandpass filter centered at about 30 Hz. It detects ringing signals and sends pulses to the ring generator on the Station side, via Digital Opto-Isolators.

Digital Opto-Isolators

Each Digital Opto-Isolator consists of a light emitting diode (LED) and a phototransistor pair operating in the infrared region of the electromagnetic spectrum. They provide lightwave digital signal transmission across the isolation gap.

Transmit and Receive Analog Opto-Isolators

The Transmit and Receive Analog Opto-Isolators consists of an LED (Light Emitting Diode) and a photodiode pair operating in the infrared region of the EM spectrum. A compensation circuit ensures that the performance of a card does not degrade with temperature change or time.

Ring Generator

The Ring Generator receives pulses from the CO side and regenerates a ringing signal at the same frequency and in synchrony with the CO side, which permits selective ringing.

Off Hook Detector

The Off Hook Detector transmits a signal to the CO side to go off hook when the telephone is lifted.

Main Isolator Bias Circuit

The Main Isolator Bias Circuit generates the off hook and ring trip signals, and feeds a -24 V dc (on-hook potential) bias to the Station side telephones. It will feed -48 V to the Station side if the card is powered from -48 V.

Fuse

Fuses F1 and F2 (1 A, 125 V Pico Fuse) provide overcurrent protection on the power input.

4. Technical Specifications

4.1 751321B

For a listing of the 751321B electrical specifications, refer to Table 1. For a listing of the module's physical specifications, refer to Table 2.

Table 1 Electrical Specifications (measured at 77°F or 25°C, 50% R.H.)

Parameter	Specifications
ISOLATION DATA	
Isolation resistance	100 000 M Ω
Metallic surge	3 kV max
Insulation voltage	50 kVrms (70 kV peak)
POTS PORTION (600 Ω impedance)	
INPUT VOLTAGE REQUIREMENT	-24 V or -48 V dc
ON-HOOK	
Ringling generator voltage	>84 V rms with 5 ringers (type 500) at 20 Hz
CO side input ringling detection	50 V to 105 V rms, 17 to 50 Hz
Terminal resistance (CO side)	>5 M Ω at \pm 100 V dc
OFF-HOOK (40 mA dc)	
Minimum loop current (CO)	20 mA dc
Maximum loop current (CO)	Current limiting at 60 mA dc + 10%
Minimum loop current (station)	Will detect off-hook down to 20 mA dc
Maximum loop current (station)	Current limiting at 50 mA dc
Maximum loop resistance (station, 20 mA dc)	850 Ω maximum at -24 V, 1875 Ω maximum at -48 V (including telephone)

Parameter	Specifications
DATA PORTION	
Input power requirement	NONE
Power dissipation	NONE
Insertion loss @ 100 kHz	< 1.5 dB
Bandwidth (-3 dB referenced to 100 kHz)	20 kHz to 5 MHz

Table 2 Physical Specifications

Parameter	Specifications
Operating temperature range battery	-4°F to +149°F (-20°C to 65°C)
Height	12" (30.5 cm)
Width	2.75" (6.99 cm)
Depth	7-7/16" (18.9 cm)
Weight	~1.5 lbs (.7 kg)

5. Installation

5.1 751321B

The ADSL Module plugs into any slot with the exception of the last or right most slot of the new generation Teleline Three, Five, or Eight-card Shelf. However, the card must be installed into the slot which has been pre-wired according to the installation diagram of the specific shelf.

Caution

- Stand on a thick rubber mat and wear rubber gloves during the installation. 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.
- This card utilizes CMOS circuitry that can be damaged by static electricity procedure. Observe normal CMOS handling procedures to avoid static discharge. Manipulate the card exclusively by the faceplate to prevent any damage to the card and to limit the possibility of electric shock. When moving the card, carry it in an ESD safe container or the antistatic bag, provided with the card. Failure to follow ESD precautions may void the warranty. For further information concerning ESD precautions, contact Positron's Customer Support department.

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1. Unpack the ADSL Module from its protective box and shielded anti-static bag.
 2. Confirm that the isolation unit is the ADSL Module by identifying the name and model number on the faceplate of the card.
 3. Verify that fuses F1 and F2 are intact. To view the location of the fuses, refer to Figure 1.

If a fuse is blown contact Positron Customer Support for a card replacement.

4. Set jumper J2 or J3 to -24 V or -48 V depending upon the available shelf voltage.

The card is factory set to -24 V. To view the location of J2 and J3, refer to Figure 1.

5. The card must be inserted rightside up and may be plugged into the shelf with the power ON or OFF.
 - ▶ Slide the card into its designated pre-wired shelf slot until the two card-edge connectors lock into the Teleline shelf and the retaining clip snaps into place.
6. Verify the installation by making and receiving a call.

Attention

When installing an ADSL module, the CO incoming line must be wired to the alphabetical pair of the slot. On the station side, the POTS line will be on the numerical pair of the slot and the ADSL line on the alphabetical pair. On the CO side, the numerical pair MUST be left unconnected.

6. Service and Support

Technical Customer Support

Positron is committed to providing excellent ongoing technical support to its customers. A team of specialists is always available at our Technical Support Center in Montreal for either telephone consultations or on-site visits, to assist Field Technical personnel in the maintenance and troubleshooting of Positron equipment. During normal business hours, (8:30 a.m to 5:00 p.m. EST), any one of our Technical Customer Support (TCS) staff may be reached by dialing 1-888-577-5254 from anywhere in the continental United States or from Canada. Customers outside North America should dial 1-514-345-2200. Staff may also be contacted via fax at 514-345-2271 or e-mail at powerdivision@positron.qc.ca.

Positron TCS staff are available to provide technical assistance and/or to supervise the installation of Positron equipment. Assistance in the planning, configuration, and implementation of the installation will be provided as requested. Arrangements and pricing information regarding field assistance may be obtained by contacting the Technical Customer Support department. Please contact Positron for scheduling at least four weeks prior to the actual requested visit date.

Customer Training

Positron offers full customer training courses, as requested. Seminars are also available on High Voltage Interface (HVI). For more information, contact a customer representative by dialing 1-888-577-5254 or use our e-mail address, powerdivision@positron.qc.ca.

Warranty

Positron warrants that all equipment shall perform in accordance with Positron's specifications. The warranty remains valid for five (5) years from the date of shipment. The warranty will be honored provided that the equipment has not been abused and provided that the equipment has been installed and used in accordance with Positron's installation instructions and specifications. The warranty fully covers workmanship, materials and labor.

This warranty is in lieu of all other warranties, whether expressed or implied, including warranties of merchantability and fitness for a particular purpose. Positron guarantees that all equipment shall perform in accordance with Positron's specifications. Positron disclaims any warranty that Positron

equipment will meet customer requirements beyond the product specification. Positron disclaims any warranty that operations will be uninterrupted or error free.

Repair Service

Positron Inc. offers repair services by which customers can count on timely and quality repairs, regardless of customer location.

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

For information about out-of-warranty repairs, contact Positron's Repair department at 1-800-661-4911 (from anywhere in the continental United States or from Canada) or dial 514-345-2228. Due to the varied nature of repairs, no one time frame for turnaround can be guaranteed. However, average turnaround time is two weeks from date of receipt. In emergency situations, special arrangements can be made by contacting our Repair department. All repaired items are warranted for a period of 90 days. Bulk repairs (more than five items) will require additional processing time, therefore, please take this into consideration when requesting a Return Material Authorization (RMA) number.

Before returning any items to Positron for repair, warranty repair or replacement, call the Repair department to obtain an RMA number. Parts returned without RMA numbers cannot be accepted. The RMA number must always be clearly marked on all boxes and crates and on all shipping documents.

Items under warranty are to be shipped prepaid to Positron and will be returned prepaid to the customer. Items that are not under warranty are to be shipped prepaid to Positron and will be returned prepaid with freight charges included on the invoice. Positron cannot accept items shipped collect. A purchase order number is required for all repairs.

To accelerate the repair process, whenever possible, customers should include a report detailing the reason for return with the unit(s) being returned. 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 that the item(s) is properly packed to avoid further damage. Teleline Isolator cards should never be shipped while installed in a shelf; this will cause damage and will almost invariably extend the repair period.

Ordering Information

Positron's Teleline equipment can be ordered by telephone, facsimile, or by mail. All orders should be directed to the Positron Inside Sales department. Ordering by telephone, or facsimile will eliminate any delays arising from postal services. However, a hard copy purchase order is required as a confirmation. In addition to the model numbers of the items being ordered, the following information is required:

- Company name, contact name and telephone number
- Purchase order number
- "Ship To" address
- "Bill To" address
- Date required on site

All orders must be followed by a confirming order. Equipment will not be shipped until such confirmation is received.

For a list of our contact information, refer to Table 3.

Table 3 Positron Contact Information

Address	Positron Inc.
	5101 Buchan St.
	Montreal, Quebec, Canada
	H4P 2R9
Main telephone number	514-345-2200
Customer Service department telephone number	514-345-2200, 1-888-577-5254
General e-mail address	powerdivision@positron.qc.ca
Customer Service department fax number	514-345-2271
TCS department toll-free number	1-888-577-5254
TCS department fax number	514-345-2271
TCS department e-mail address	scarbonaro@positron.qc.ca
Repair department telephone numbers	514-345-2228 or 1-800-661-4911
Customer representative e-mail address	customerservicepower@positron.qc.ca

