Plug-in Two-wire HDSL/ Plug-in Two-wire Universal HDSL, (751340/751340R2)

Description and Installation

POSITRON
Positron Inc.

DOCUMENT CONTROL INFORMATION

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DISCLAIMER NOTICE

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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.

1. Introduction

Both plug-in cards (models 751340 & 751340R2) provide high-voltage isolation between an incoming HDSL line and a data transmitting or receiving device located in the substation. Two, two-wire HDSL cards are used when you need to isolate a four-wire circuit, or when customer equipment needs to be powered from the Central Office (CO).

Features include the following:

- Cards provide isolation of up to 50 kVrms (70 kV peak), while maintaining communication on a two-wire circuit.
- Communication is maintained across the gap by an isolation transformer, granting high MTBF and reliability.
- Cards do not require power input from either the CO or the Teleline shelf.
- Jumper settings enable you to configure cards to provide a loop sealing return path on the CO side. The current will not be transferred to the Station side. Cards are shipped with this option disabled.
- If two cards are installed in following slots, a simplex sealing current return path is provided on a four-wire HDSL circuit: slots 1 and 2 of the 3-card shelf; slots 1 and 2 or 3 and 4 of the 5-card shelf; slots 1 and 2, 3 and 4, 5 and 6, or 7 and 8 of the 8-card shelf. This current is not transferred to the Station side.
- Teleline shelf power can be maintained during card installation.

For an illustration of the Plug-in Two-wire HDSL Card, see Figure 1 on page 2.

For an illustration of the Plug-in Universal Two-wire HDSL Card, see Figure 2 on page 3.

Figure 1 Model 751340 Component Layout (Only Major Components Shown)

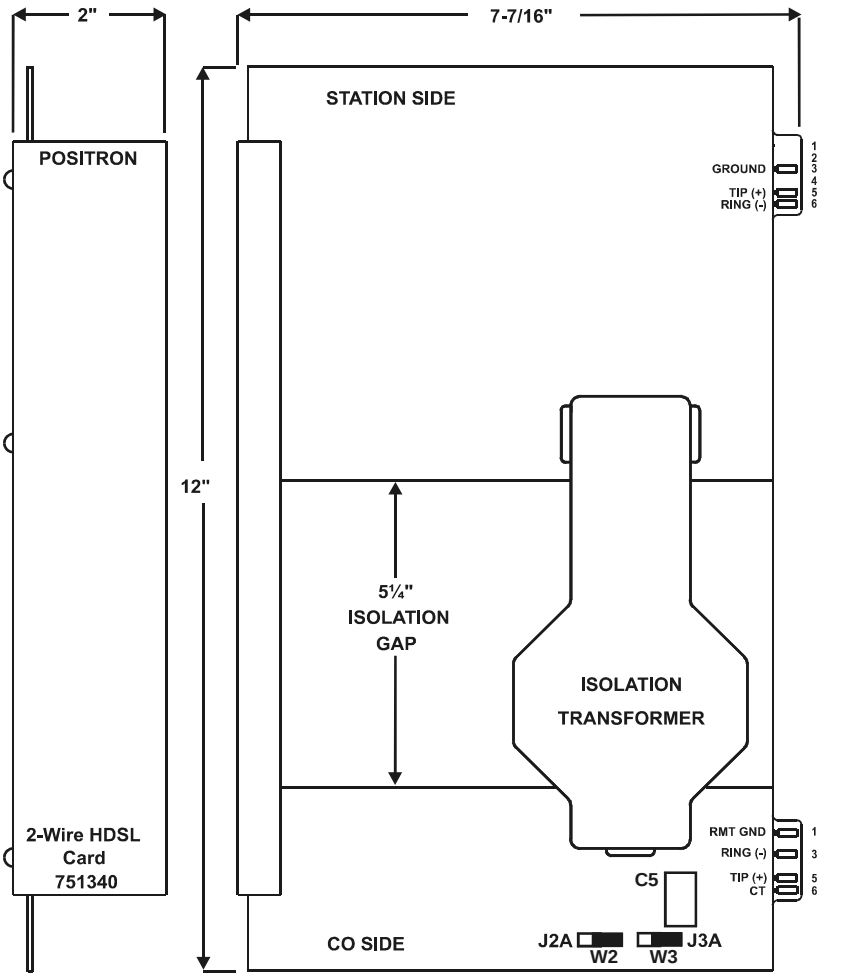
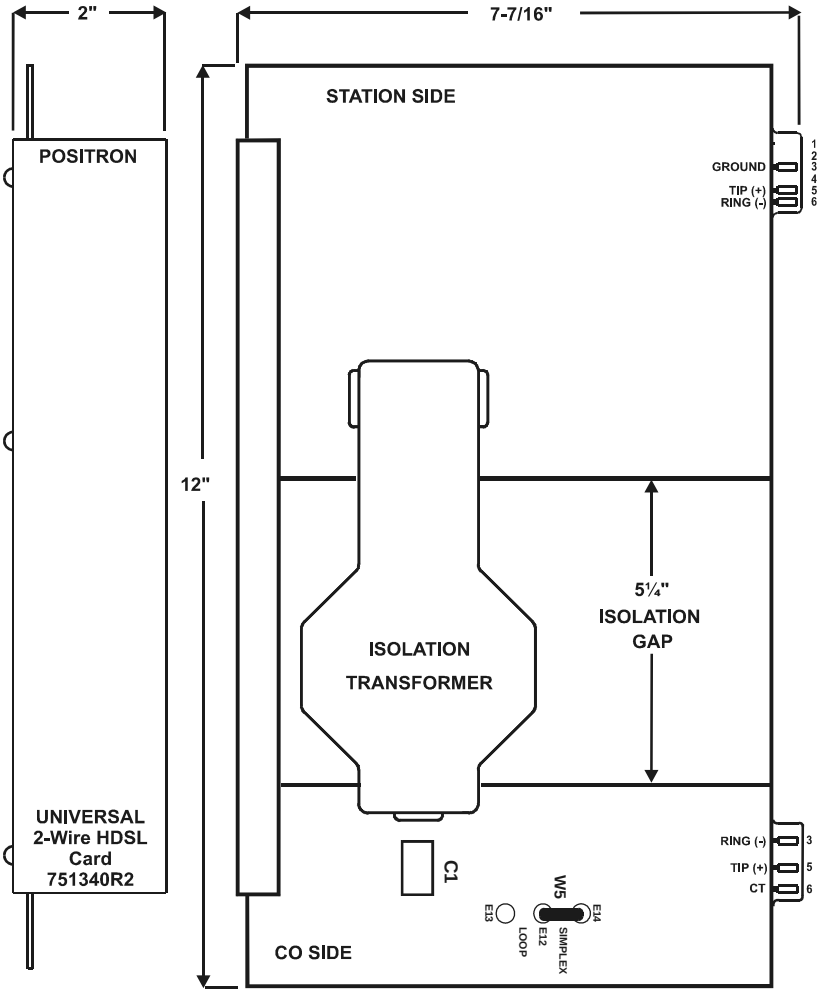


Figure 2 Model 751340R2 Component Layout (Only Major Components Shown)



2. Applications

2.1 Applications for 751340

The Plug-in Two-wire HDSL Card applications include the following:

Using One Card

- ½ HDSL Classic (2B1Q)
- Data transmission lines within the passband of the card.

Using Two Cards

- 4-wire HDSL Classic (2B1Q)
- Data transmission lines within the passband of the card.

For an illustration of the card's application, see Figure 3.

2.2 Applications for 751340R2

The Plug-in Universal Two-wire HDSL Card applications include the following:

Using Two Cards

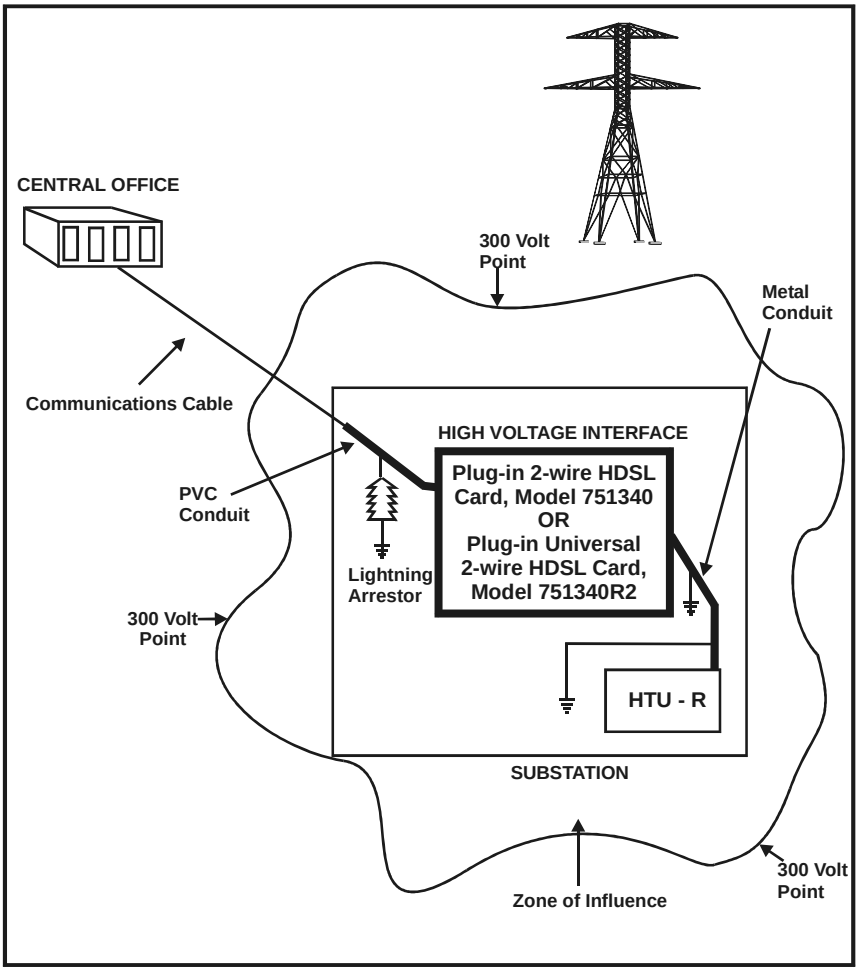
- HDSL 2, ½ HDSL Classic (2B1Q), or ½ HDSL 4 with support of 130 V and 190 V on the loop

Using Two Cards

- 4-wire HDSL Classic (2B1Q), HDSL 2, HDSL 4, with support of 130 V and 190 V on the loop; see Figure 5 on page 11.
- Data transmission lines within the passband of the card.

For an illustration of the card's application, see Figure 3.

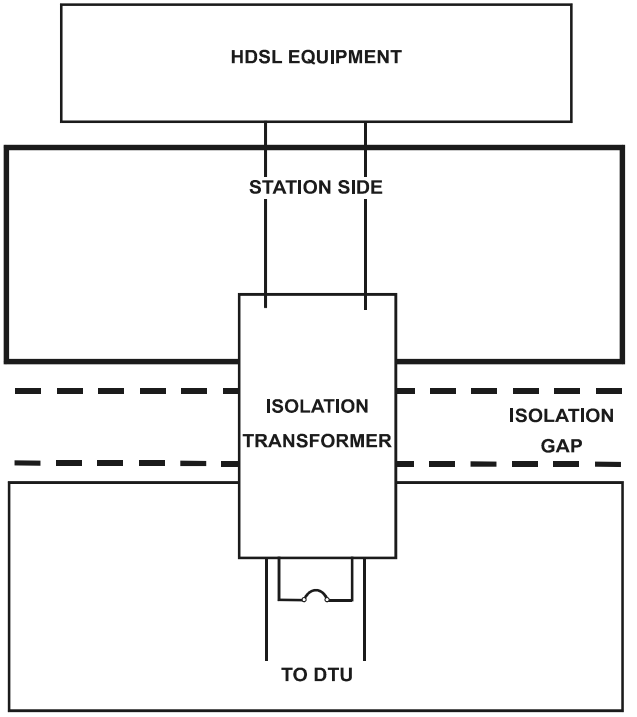
Figure 3 High Voltage Interface Application



3. Hardware Description

Both cards (models 751340 & 751340R2) comprise of two sides. 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 isolation transformer, which creates a 5¼ inch isolation gap. For the card's block diagram, see Figure 4.

Figure 4 Block Diagram



NOTE

The Isolation Transformer provides the 5¼ inch isolation gap for the card, while providing wide bandwidth, low-loss transmission.

4. Technical Specifications

For electrical specifications for model 751340, see Table 1. For electrical specifications for model 751340R2, see Table 2 on page 8. For physical specifications, see Table 3 on page 9.

Table 1 Electrical Specifications for 751340 (measured at 77°F or 25°C, 50% R.H.)

Parameter	Specifications
ISOLATION DATA:	
Isolation resistance	100,000 M Ω
Metallic surge	3 kV maximum
Insulation voltage	50 kVrms (70 kV peak)
INPUT VOLTAGE REQUIREMENT	None
TRANSMISSION DATA:	
Longitudinal balance (CO side)	>80 dB at 60 Hz; >60 dB at 300 to 40 KHz
Return loss at either side with opposite side terminated at 135 Ω	>25 dB, 1 kHz to 750 KHz
NOISE:	
2 to 100 Hz	-60 dBm
Voice band (C weighted message)	< 2 dBrnc
Impulse noise	Less than 1 count above 48 dBrnc in 30 minutes
SIGNAL:	
Insertion loss (at 350 KHz, 0 dBm)	< 0.5 dB
Frequency response (2 KHz to 750 KHz)	± 3 dB relative to 350 KHz

Table 2 Electrical Specifications for 751340R2 (measured at 77°F or 25°C, 50% R.H.)

Parameter	Specifications
ISOLATION DATA:	
Isolation resistance	100,000 M Ω
Metallic surge	3 kV maximum
Insulation voltage	50 kVrms (70 kV peak)
INPUT VOLTAGE REQUIREMENT	None
TRANSMISSION DATA:	
Longitudinal balance (CO side)	> 80 dB at 60 Hz
Return loss at either side with opposite side terminated at 135 Ω	> 25 dB, 2.5 KHz to 350 KHz
SIGNAL:	
Insertion loss @ 100 KHz	< 0.5 dB
Frequency response	-1 dB at 2.5 KHz, 300 KHz -3 dB at 1.5 KHz, 650 KHz
Total harmonic distortion at 22 dBm, 10 KHz	< -70 dB
HEAT DISSIPATION:	
HDSL CLASSIC (2B1Q)	1 W
HDSL 2	2 W
HDSL 4	2 W

Table 3 Physical Specifications for 751340 & 751340R2

Parameter	Specifications
Operating temperature range	-4°F to +149°F (-20°C to + 65°C)
Height	12” (30.5 cm)
Width	2” (5.08 cm)
Depth	7-7/16” (18.9 cm)
Weight	1.7 lbs (0.7 kg)

5. Installation

Both cards (model 751340 & 751340R2) plug into any slot of the Teleline Three, Five, or Eight-card Shelf. However, cards must be installed in the slot that has been pre-wired according to the installation diagram for the specified shelf.

For an illustration of the Layout for a Two-wire and a Four-wire HDSL that uses the Two-wire HDSL card or the Two-wire Universal HDSL card, see Figure 5 on page 11.

For an illustration of a setup with locally powered system for model 751340, see Figure 6 on page 12. For an illustration of a setup with a locally powered system for model 751340R2, see Figure 7 on page 13.

Figure 5 **Layout for Two-wire and Four-wire HDSL that uses the Two-wire HDSL card or the Two-wire Universal HDSL card**

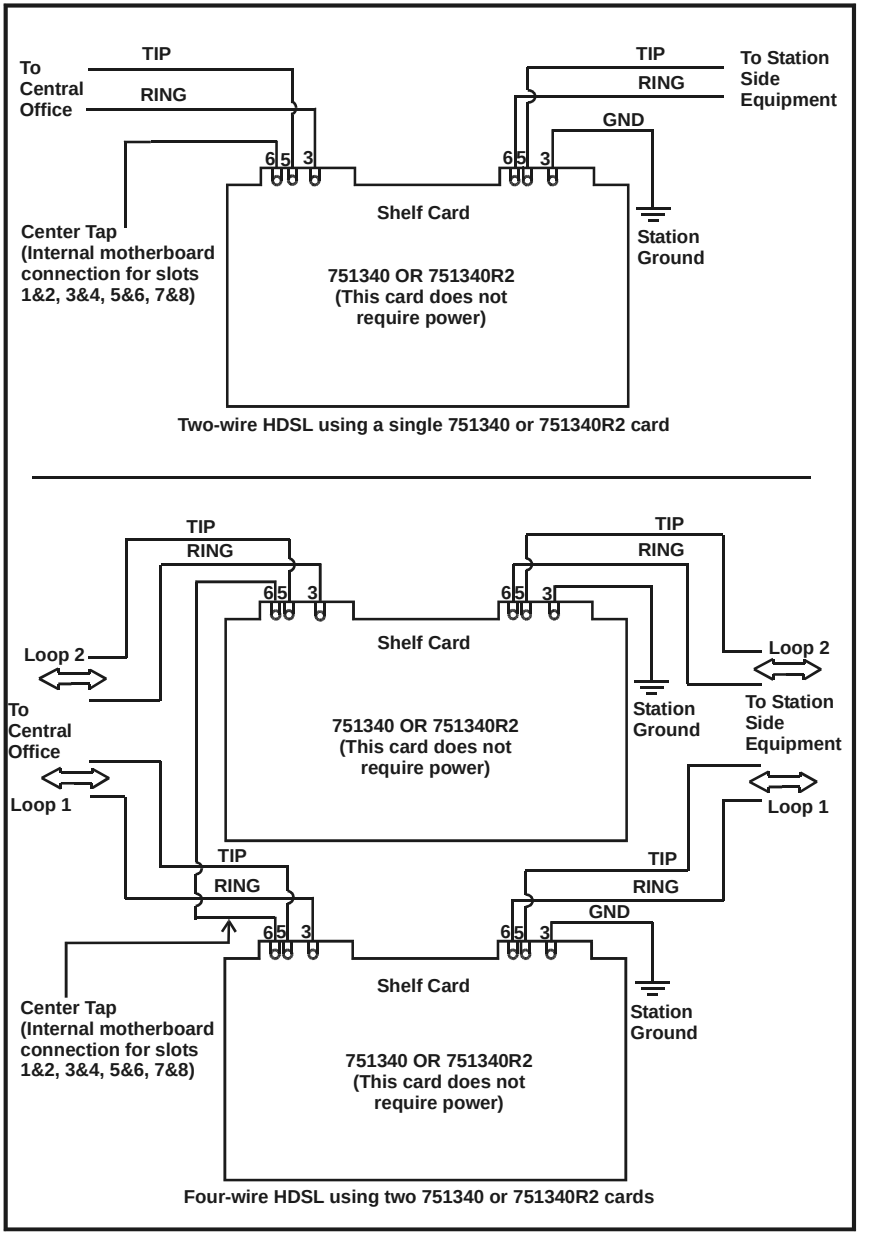


Figure 6 Setup with Locally Powered System, Model 751340

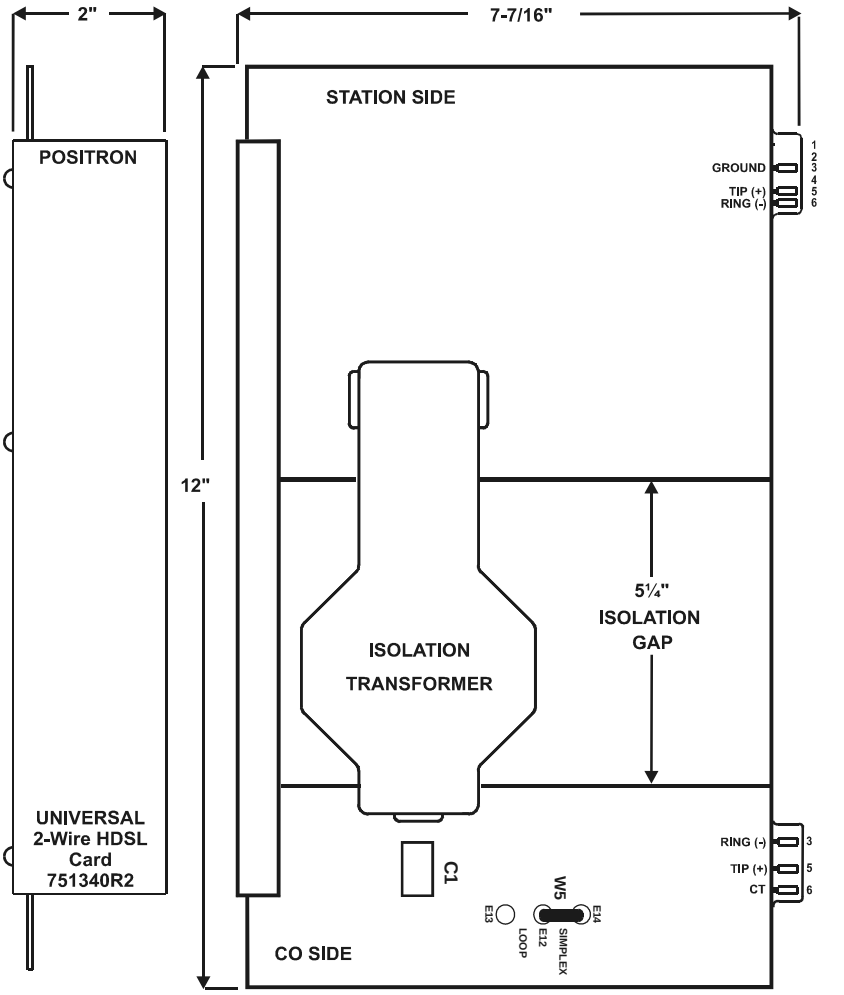
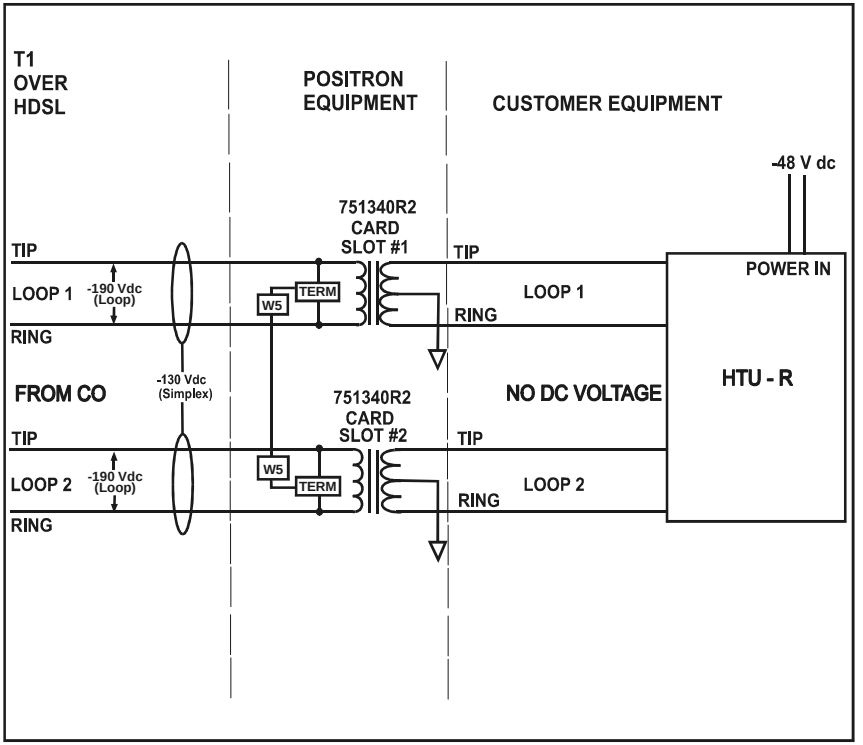


Figure 7 Setup with Locally Powered System, Model 751340R2



Note

The following points apply to a two-wire configuration of model 751340 or 751340R2:

1. HDSL Remote Terminal Unit CANNOT be powered remotely from the CO line using this type of card. If required, refer to the *Teleline Holding Coil Unit Description and Installation document, model 7501-40* (part number 924-010057-001).
2. An internal connection on the motherboard has the capability of looping or simplexing back the CO side CT of Loop 1 and Loop 2.
3. Loop 1 and Loop 2 can be interchanged.

The following points apply to a four-wire configuration of model 751340 or 751340R2:

1. Cards must be used in paired slots 1&2, 3&4, 5&6, 7&8 if a simplex sealing current is required.
2. Loop 1 and Loop 2 can be interchanged.
3. Two-wire loop current or four-wire simplex options are available with these cards.

To install Plug-in Two-wire HDSL card, Model 751340

Caution

Stand on a thick rubber mat and wear rubber gloves during the installation. You should perform these procedures on a clear, dry day when a Ground Potential Rise (GPR) or transients are less likely to occur.

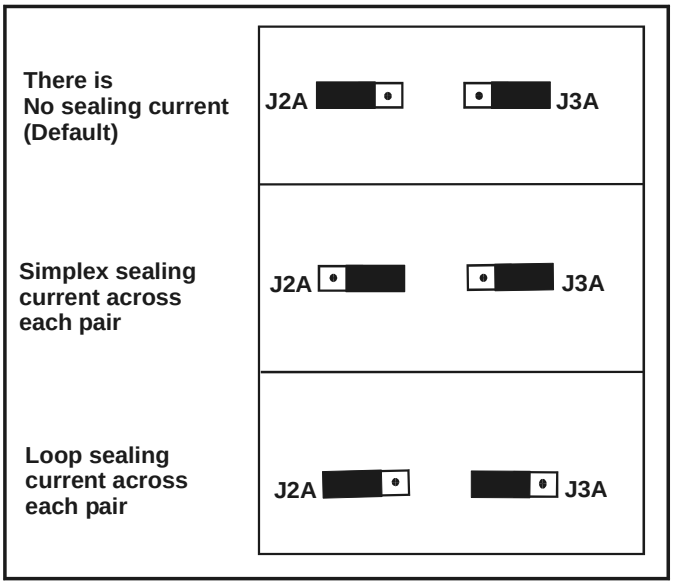
1. Unpack the Plug-in Two-wire HDSL Card from its box. No special precautions need to be taken since the card does not have static-sensitive components.
2. Confirm that the isolation unit is an HDSL card by checking the name and model number on the faceplate of the card.
3. Set J2A and J3A according to your application. The default setting does not provide for loop sealing current. If your circuit requires a loop sealing current, change the jumper setting accordingly. For jumper settings, see Figure 8 on page 16.
4. The card must be inserted right-side up and can 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 in the Teleline shelf, and the retaining clip snaps into place.
5. Verify the installation by applying a data signal across the isolator, then check that it has been received correctly.

Note

In cases where DC simplex sealing current originates from within the substation, it can be routed through the Teleline shelf to the CO line. Consult Positron for more information; see Table 4 on page 19.

If power loopback is used to supply a repeater on the CO side, refer to the *Teleline Holding Coil Unit Description and Installation document, Model 7501-40* (part number 924-010057-001), for more information.

Figure 8 Jumper Settings



To install the Plug-in Universal Two-wire HDSL card, Model 751340R2

1. Unpack the Plug-in Universal Two-wire HDSL card from its box.
2. Confirm that the isolation unit is an Universal HDSL card by identifying the name and model number on the faceplate of the card.
3. Insert pin W5 according to your application. The default setting provides for simplex and loop sealing current. If your circuit does not require simplex current, change the jumper setting accordingly. For an illustration of the jumper setting for a 1-card application, see Figure 9 on page 18. For a 2-card application, see Figure 10 on page 18.
4. The card must be inserted right-side up and can be plugged in 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 in the Teleline shelf and the retaining clip snaps into place.
5. Verify the installation by applying a data signal across the isolator, then check that it has been received correctly.

Note

In cases where DC simplex sealing current originates from within the substation, it can be routed through the Teleline shelf to the CO line. Consult Positron for more information.

If power loopback is used to supply a repeater on the CO side, refer to the *Teleline Holding Coil Unit Description and Installation document, Model 7501-40* (part number 924-010057-001), for more information.

Figure 9 Jumper Settings (W5) for 751340R2 Using 1 Card

	MODE OF OPERATION	W5 LOCATION
½ HDSL Classic (2B1Q)	Loop	Insert pin in W5 Loop
HDSL 2	Loop	Insert pin in W5 Loop
½ HDSL 4	Loop	Insert pin in W5 Loop

Figure 10 Jumper Settings (W5) for 751340R2 Using 2 Cards

	MODE OF OPERATION	W5 LOCATION
HDSL Classic (2B1Q)	Simplex	Insert pin in W5 Simplex
HDSL 4	Simplex	Insert pin in W5 Simplex

6. Service and Support

Table 4 Positron Contact Information

Address	Positron Inc. 5101 Buchan Street Montreal, Québec, Canada H4P 2R9
Customer service	Fax: 514-345-2271 Technical e-mail: scarbonaro@positron.qc.ca Sales e-mail: customerservicepower@positron.qc.ca General e-mail: powerdivision@positron.qc.ca
General information	US and Canada: 888-577-5254 International: 514-345-2200 Fax: 514-345-2271 E-mail: info@positronpower.com Website: www.positronpower.com
Repairs	International: 514-345-2228 US and Canada: 800-661-4911

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. Any one of our Technical Customer Support (TCS) staff can 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. TCS can also be contacted by fax at 514-345-2271, or by e-mail at powerdivision@positron.qc.ca.

Assistance in the planning, configuration, and implementation of the installation will be provided on request. For field assistance arrangements and pricing information, contact TCS. Please contact Positron for scheduling at least four weeks prior to the actual requested visit date.

Customer Training

Full customer training courses, and seminars on High Voltage Interface (HVI) are also available. For more information, contact Applied Professional Training by dialing 800-431-8488 or by e-mail at aptc@aptc.com.

Repair Service

Positron Inc. offers timely and high-quality repairs, regardless of your location.

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 at 1-800-661-4911or 514-345-2228 (United States and Canada). Due to the varied nature of repairs, no specific turnaround can be guaranteed, but average turnaround time is two weeks 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 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. Bulk repairs (more than five items) will require additional processing time, so please take this into consideration when requesting an RMA (Return Material Authorization).

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, 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 they are properly packed to avoid further damage. Teleline Isolator cards should never be shipped while installed in a shelf; this will cause damage that can extend the repair period.