

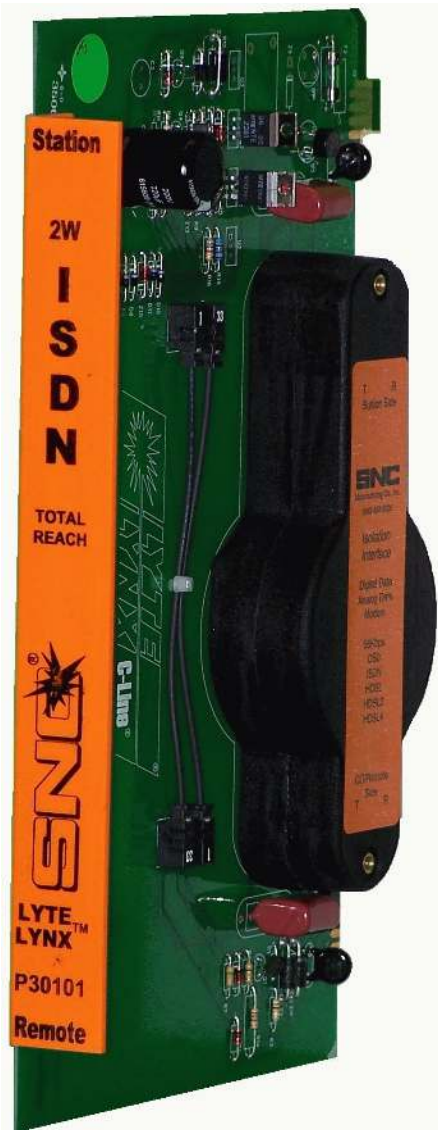


Total Reach ISDN/ DDS Isolation Card  
P30101

Description & Installation

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**Figure 1:** Photo of P30101 Total Reach ISDN Isolation Card

## 1.0 SCOPE

This document describes the technical specifications, technical requirements and installation instructions for the P30101 SNC Lyte Lynx® isolation card. It provides an understanding of the basic functions and features available with this card.

## 2.0 PRODUCT OVERVIEW

### 2.1 System Requirements

The P30101 is the Total Reach ISDN/ DDS Isolation Card (TR Isolation Card) and is designed for use in an SNC Lyte Lynx® 3-slot, 6-slot or 12-slot Card Shelf or in a \*Teleline Isolator® card shelf.

### 2.2 Intended Uses

This isolation card is used to link Basic Rate ISDN, Total Reach ISDN, DDS (56 kbps), Total Reach DDS, HDSL2 and any other 2-wire data communication where span powering of 130VDC is required. The primary function of the card is to provide isolation from voltages while being “transparent” in the circuit. All signaling information within the specified frequency bandwidth will be unaffected. SNC Lyte Lynx® systems are intended for use at power substations and similar locations where high voltage isolation is required on the incoming copper phone pairs to protect the network from harm and to provide a personnel safety barrier against voltages. This specifically includes protection from longitudinal voltage surges and Ground Potential Rise (GPR) surges that may occur during power system faults.

\* Teleline Isolator is a trademark of Positron Industries, Inc.

## **3.0 PRODUCT FEATURES**

### **3.1 Physical Separation**

The P30101 Isolation Card's high voltage isolation is the result of a high dielectric molding material which provides the separation between the Station side and the CO/ Remote side circuitry. Because the isolation depends only on this physical separation, protection remains intact even if components of the system fail.

### **3.2 Powering**

The electronic circuitry on the Remote (CO) side of the isolation card is powered by the span powering voltage provided from the central office Total Reach unit. The circuitry on the Station side of the card is powered by a -24VDC or -48VDC source. This card reproduces span powering to power the remote Total Reach terminal unit. However, if 130 volts is not detected at the remote side, the battery feed circuit on the station side will not feed 130V to the tip and ring terminals on the station side either. This feature allows it to operate in an application where no span powering is required.

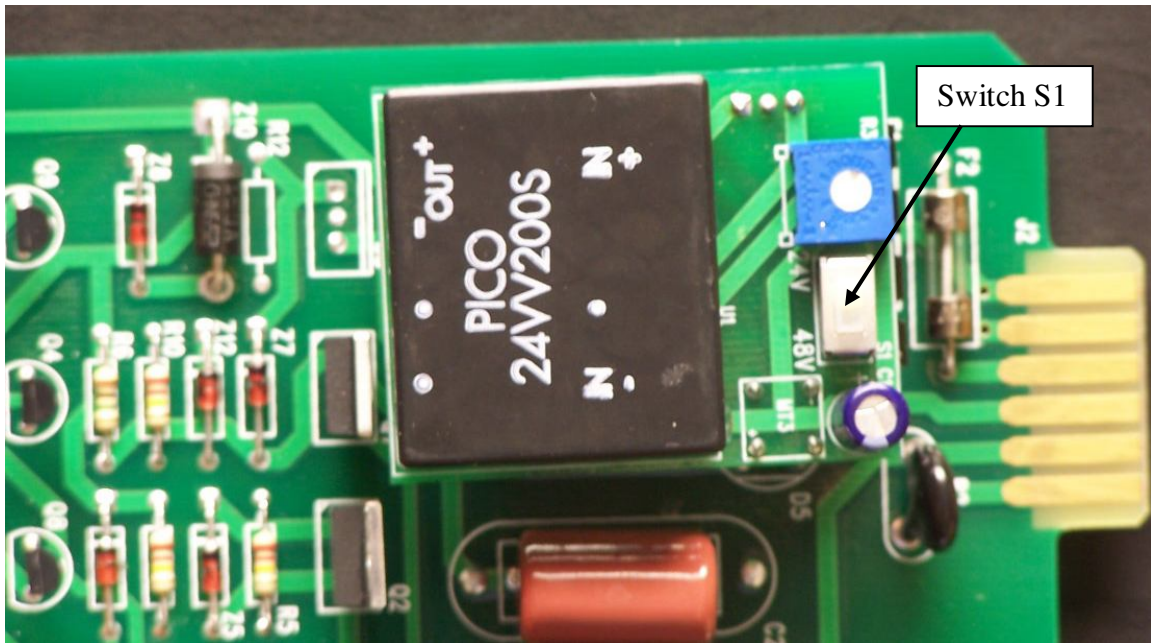
## **4.0 INSTALLATION**

### **4.1 Powering Connections**

In some applications where span powering is turned off, the card can be operated without any power input. However, in most cases, span powering is required. The P30101 Total Reach isolation card is designed to provide 130VDC span power. If a different level span powering is needed, consult SNC personnel for different model. In the case where span power is required, a low input voltage of -24VDC or -48VDC is also required to power the card. Unfortunately, 24VDC and 48VDC are rarely available at a substation while 120VAC and 130VDC are readily available in most substations, meaning a power converter is required to convert these high input voltages into 24 or 48VDC.

SNC offers various models of power supplies depending on the needs. The power supplies include internal full size and half size power supply cards and external power supplies. With the input voltage properly connected to the card shelf and a power supply firmly inserted into one of the appropriate card shelf slots, the backplane will feed the input voltage to the proper input pins. Power connection is slightly different from one card shelf to another. See the installation instructions that come with the card shelves and the power supply cards for details.

The P30101 cards may be powered by either -24VDC or -48VDC with reference to ground. If a -24VDC power supply is used to power the cards, set the switch S1 on the card to 24V. If a -48V is used to power the cards, set the switch S1 on the Total Reach Isolation card to 48V. See Figure 2 to locate switch S1.



**Figure 2:** Station Side Circuitry- Showing Switch S1

#### **4.2 Installation of P30101 Card**

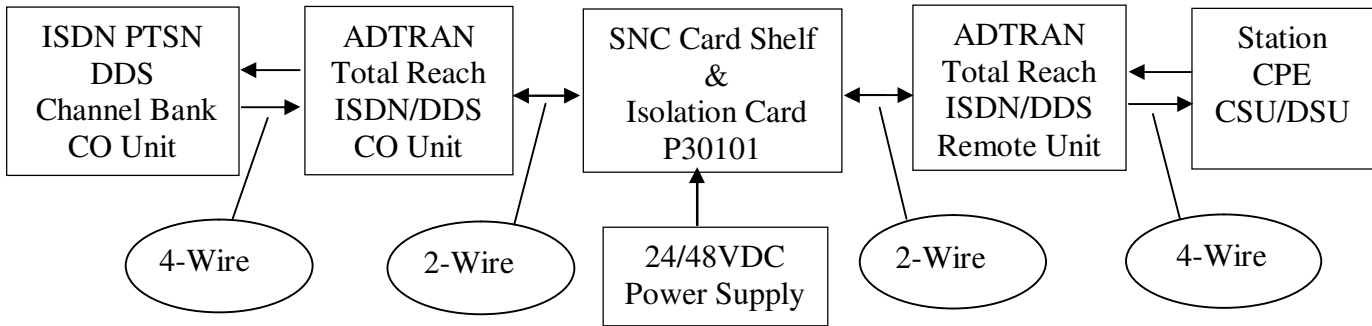
With the card shelf properly installed and properly configured, slide the Isolation Card into any available card shelf slot and firmly plug it into the card shelf back-plane receptacles. This may be done with or without power applied to the card shelf. However, inserting the card with power off is recommended.

**Note:** The syncing process may take several minutes to complete. If for some reason the circuit does not sync up after 2 minutes, the Total Reach CO unit needs to be rebooted (turn off and on again). If the problem persists, swap the tip and ring connections on Remote side, then restart the syncing process again.

#### **4.3 Line and Equipment Connections**

The Numeric Pair and Alpha Pair (T1, R1, TA, RA ...) sometimes are called Odd Pair and Even Pair (T1, R1, T2, R2 ...). Because the P30101 card's Odd and Even pairs are tied together, the cable from the Central Office may be connected to either Odd or Even pairs of the Remote side card shelf terminals and the cable from the station equipment may be connected to Odd or Even pairs of the Station side card shelf terminals. (See the documents provided with the card shelf for details)

**Note:** SNC terminology is slightly different from Telco Terminology. From SNC standpoint, REMOTE side means the CO side and STATION side means substation equipment side.



**Figure 3 – System Level Block Diagram**

## 5.0 SPECIFICATIONS

**TABLE 1: ISOLATION SPECIFICATIONS**

|   |    |           |
|---|----|-----------|
| LONGITUDINAL SURGE ( $1.2 \times 50\mu s$ ) |    | 65kV peak |
| CONTINUOUS RATING                           | AC | 20kVrms   |
|   | DC | 58kVdc    |

**TABLE 2: EXTERNAL SYSTEM INPUT REQUIREMENTS**

| INPUT SPECIFICATION   |  | REQUIREMENTS                                      |
|---|--|---|
| SIGNAL SOURCE & TERMINATION IMPEDANCES                          |  | 100, 124, 135, 600, or 900 $\Omega$               |
| LOOP ATTENUATION<br>(Sum of remote side and station side loops) |  | 34dB Maximum                                      |
| SIGNAL LEVEL  | 1000 – 1200Hz @ 600 $\Omega$<br>32kHz @ 135 $\Omega$ | +10dBm Maximum<br>+19dBm Maximum                  |
| STATION SIDE  | DC Line Voltage (Battery)                            | 18VDC Minimum<br>24VDC Typical<br>48VDC Maximum   |
|   | Power required per card                              | 6W Minimum  |
| REMOTE SIDE   | Span Powering Voltage                                | 90VDC Minimum<br>130VDC Typical<br>150VDC Maximum |

**TABLE 3: PERFORMANCE SPECIFICATIONS**

| PARAMETER                       |   | SPECIFICATION  |
|---------------------------------|---|--|
| TIP & RING VOLTAGE              | Station Span Powering                                 | 125VDC Minimum<br>130VDC Typical<br>135VDC Maximum   |
| LONGITUDINAL BALANCE            | 1.2 – 300kHz  | >70dB  |
| RETURN LOSS                     | 1200 – 4000Hz @ 600Ω<br>2.4kHz @ 135Ω<br>32kHz @ 135Ω | >18dB<br>>14dB<br>>18dB                              |
| MESSAGE CIRCUIT NOISE           | 1.2k – 4kHz @ 600Ω                                    | <0dBrc   |
| PHASE JITTER                    |   | <0.5°  |
| SIGNAL TO NOISE RATIO           |   | >50dB  |
| INSERTION LOSS                  | Relative to 1.2kHz @ 600Ω<br>Relative to 32kHz @ 135Ω | <0.3dBm<br><0.1dBm                                   |
| FREQUENCY RESPONSE              | Relative to 1.2kHz @ 600Ω<br>Relative to 32kHz @ 135Ω | 200Hz – 200kHz<br>2kHz – 600kHz                      |
| NOISE TO GROUND                 | C-Message<br>3kHz                                     | >45dBrc<br>>55dBrc                                   |
| CROSSTALK (to adjacent channel) |   | <-65dB   |
| SINGLE FREQUENCY DISTORTION     |   | <2%THD   |
| OPERATING TEMPERATURE           |   | -40 to +100°C (-40 to 212°F)                         |
| OPERATING HUMIDITY              |   | 5 to 99%Relative Humidity                            |
| DRAINAGE CAPACITY – Minimum     |   | 0.5 Amps continuous (400 A² S Surge Drainage Rating) |

For further information or for technical support – call 800-558-3325  
or visit [www.sncmfg.com](http://www.sncmfg.com)



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