



Single Line Voice Isolation Card
With CID, CW & MWI

Floated 48VDC Input
P30120

Floated 130VDC or 120VAC Input
P30121

Description & Installation

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Figure 1: P30120

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

1.0 SCOPE

This document describes the technical specifications, technical requirements and installation instructions for the P30120 and P30121 SNC Lyte Lynx® Dual Line POTS Isolation Cards. It provides an understanding of the basic functions and features available with these POTS isolation cards.

2.0 PRODUCT OVERVIEW

2.1 System requirements

These POTS isolation cards are designed for use in an SNC Lyte Lynx® 3, 6 or 12-slot Card Shelf or in a Teleline Isolator* Card Shelf. A 120VAC, 130VDC, 48VDC or 24VDC voltage source is required to power the station side electronic circuitry.

2.2 Intended Uses

The POTS isolation cards are designed for regular POTS, POTS with caller ID, Call Waiting on Caller ID and Message Waiting Indicator, Analog or Digital Centrex, fax lines, 2-wire loop start trunks, dial-up modem lines or remote meter reading. The primary function of the cards 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.

3.0 PRODUCT FEATURES

3.1 Dielectric Separation

The POTS Card's high voltage isolation is the result of both a 5.25 inches fiber optic separation between the Station side and the CO/Remote side circuitry and the 1 to 1 ratio transformer with high electrical resistance potting material. Since the isolation depends only on these physical separations, protection remains intact even if system components fail.

3.3 Ring capability

Ring signals ranging from 40 to 150Vrms and 15 to 68 Hz can be detected on the remote interface. The ring circuit is capable of ringing up to twelve phones instantaneously (12 REN). Ring signal ranging from 45 to 86Vrms and 16.7 to 50Hz are available at the output of the Station side. The ring signal is set to 20Hz, 5 REN and 75Vrms as default. At the default setting, these cards can ring five old 500-type telephones instantaneously without any voltage depletion.

3.4 Powering

The electronic circuit on the remote (telco) side of the POTS isolation card is powered by battery feed from the central office (loop current). The station side electronic circuit can be powered by any available input Voltage. However, an appropriate model should be selected.

P30120

The P30120 POTS card can be powered either by a grounded -24VDC or floated 48VDC voltage source. For power backup purpose, both grounded -24VDC and floated 48VDC may be used.

P30121

The P30123 POTS card can be powered either by grounded -24VDC, floated 130VDC or 120VAC source. For power backup purpose, both grounded -24VDC and 120VAC or floated 130VDC may be used.

4.0 INSTALLATION

4.1 Powering Connections



WARNING: Only one of these voltage sources may be used in a card shelf at a time: floated 48VDC, floated 130VDC or 120VAC.



WARNING: Do not attempt to power the card with a grounded -48VDC.



WARNING: If an internal power supply is used, ensure internal power supply and POTS card are made to accept the same floating input voltage source.

-24VDC (Grounded)

- If the POTS Isolation Card P30120 or P30121 is used in a 3-slot card shelf (P30075) and an external -24VDC source is used to power the Lyte Lynx® system, connect the positive (+) terminal to pin 3 of J4 and connect negative (-) terminal to pin 1 of J4.
- If it is used in a 6-slot card shelf (P30112), connect the positive (+) terminal to pin 2 of connector ST1 and negative (-) terminal to pin 1 of connector ST1.
- If it is used in a 12-slot card shelf (P30069), connect the positive (+) terminal to pin 17 of connector ST1 and negative (-) terminal to pin 18 of connector ST1.

48VDC (Floated)

- If the POTS Isolation card P30120 is used in a 3-slot card shelf (P30075) and a 48VDC is used to power the Lyte Lynx® system, connect the positive (+) terminal to pin 2 of J4 and connect negative (-) terminal to pin 4 of J4.
- If it is used in a 6-slot card shelf (P30112), connect the positive and negative terminals of the 48V battery or external power supply to the (+) and (-) screw terminals marked "BAT" on the card shelf. Ensure correct polarity, then set the J26 jumper on the left side station backplane to SECONDARY POWER position.
- If it is used in a 12-slot card shelf (P30069), connect the positive and negative terminals of the battery or external power supply to the (+) and (-) screw terminals marked "BAT" on the card shelf. Then set the S3 switch on the left side of the station backplane to SECONDARY POWER position. (Assume all internal wiring of the card cage is at its default setting)

130VDC (Floated)

- If the POTS Isolation card P30121 is used in a 3-slot card shelf (P30075) and a 130VDC is used to power the Lyte Lynx® system, connect the positive (+) terminal to pin 2 of J4 and connect negative (-) terminal to pin 4 of J4.
- If it is used in a 6-slot card shelf (P30112), connect the positive and negative terminals of the 130V external battery or power supply to the (+) and (-) screw terminals marked "BAT" on the card shelf. Ensure correct polarity, then set the S5 switch on the right side of the station backplane to SECONDARY POWER position.
- If it is used in a 12-slot card shelf (P30069), connect the positive and negative terminals of the external battery or power supply to the (+) and (-) screw terminals marked "BAT" on the card shelf. Ensure correct polarity, then set the S3 switch on the left side of the station backplane to SECONDARY POWER position.

120VAC

- If the POTS Isolation card P30121 is used in a 3-slot card shelf (P30075) and a 120VAC source is used to power the Lyte Lynx® system, connect the line (Black or Brown) wire to pin 2 of J4 and connect neutral (White or Blue) wire to pin 4 of J4.
- If it is used in a 6-slot card shelf (P30112), connect the power cord from a wall outlet to the power receptacle marked "AC" on the card shelf. Then set the S5 switch on the right side station backplane to PRIMARY POWER position.
- If it is used in a 12-slot card shelf (P30069), connect the power cord from a wall outlet to the power receptacle marked "AC" on the card shelf. Then set the S3 switch on the left side of the station backplane to PRIMARY POWER position.

4.2 Installation Of POTS Card

With the card shelf properly installed and properly configured, slide the POTS isolation card into any available card shelf slot and firmly plug it into the card shelf backplane receptacles. This may be done with or without power applied to the card shelf.

4.3 Line and Equipment Connections

The Numeric Pair and Alpha Pair sometimes are called Odd Pair and Even Pair. Because the card's odd and even pairs are used to separate the two circuits, the incoming line must match the outgoing line. For example, if the tip and ring wire of a phone line is connected to Odd pair on the Remote side, the telephone wire from the equipment must also be connected to Odd pair on the Station side.

4.4 Polarity of Tip and Ring

Since the Remote side circuitry is sensitive to polarity, you may need to set the two switches on the Remote side to correct the polarity if they are reversed. The card is factory set to standard (STD). If you experience hard to hear dial tone or high dB loss on any line, simply set the switch of that line to the other position (RSV).

STD Standard Setting



RVS Reversing Polarity



Odd Pair S1

Figure 2: Polarity Switch Setting

5.0 PHYSICAL CHARACTERISTICS

5.1 Mechanical Configuration

Mechanical stability is provided by two separate backplanes in the card shelf - one on the Substation side and one on the Remote side. The Isolation Card is a two-sided printed circuit board manufactured in accordance with the appropriate PCB standards.

5.2 Environmental Requirements

The SNC Lyte Lynx® system may be installed in an indoor or moderate outdoor environment and is guaranteed operable in temperatures ranging from 0°C - 70°C (32°F-158°F) under humidity conditions from 0-100%, non-condensing.

6.0 SPECIFICATIONS

TABLE 1: ISOLATION SPECIFICATIONS

LONGITUDINAL SURGE	65kVrms
CONTINUOUS RATING	20kVrms

TABLE 2: EXTERNAL SYSTEM INPUT REQUIREMENTS

INPUT SPECIFICATIONS	REQUIREMENT			Unit	
	Min	Typical	Max		
STATION SIDE INPUT VOLTAGE	P30121	20	24	30	VDC
		90	130	135	VDC
		85	120	132	VAC
	P30120	20	24	30	VDC
		18	48	72	VDC
REMOTE SIDE INPUT:	Voltage	11.5	48	250	VDC
	Current	20	-	-	mAmp
INPUT POWER:	Station Side	3	-	-	Watt
	Remote Side	2.3	-	-	Watt
TERMINATION IMPEDENCE	75	600	660	Ω	
LOOP ATTENUATION	-	-	34	dB	
INPUT SIGNAL AMPLITUDE	-	-	3.0	dBm	
INPUT RINGING VOLTAGE	40	-	150	Vrms	
INPUT RINGING FREQUENCY	15	-	68	Hz	

TABLE 3: ENVIRONMENTAL SPECIFICATIONS

CONDITIONS	SPECIFICATION			Unit
	Min	Typical	Max	
TEMPERATURE	-25	-	70	°C
	-13	-	158	°F
HUMIDITY (Non-Condensing)	0	-	100	%

TABLE 4: PERFORMANCE SPECIFICATIONS

PARAMETER	SPECIFICATIONS			
	Min	Typical	Max	Unit
LONGITUDINAL BALANCE: 300-3000Hz	70	-	-	dB
RETURN LOSS (600Ω & 2.16 μF Termination)				
Echo Return Loss	18	-	-	dB
Singing Return Loss Low	10	-	dB	
Singing Return Loss High	10	-	-	dB
MESSAGE CIRCUIT NOISE (idle Channel Noise)	-	-	12	dBmC
PHASE JITTER	-	-	1	degree
SIGNAL TO NOISE RATIO	-	-	52	dB
INSERTION LOSS				
(135 Ohm)	-0.5	0.0	0.5	dBm
(@1004Hz)	-0.5	0.0	0.5	dBm
FREQUENCY RESPONSE (±3.0dB)	100	-	400k	Hz
OUTPUT RING FREQUENCY	16.7	20	50	Hz
OUTPUT RING VOLTAGE (Sinusoidal wave)	45	75	86	Vrms
RING CAPACITY (1 REN = 9630Ω + 8μF)	-	5	12	REN
POWER CONSUMPTION	-	-	3	Watt
DYNAMIC RANGE (400-3400 Hz)	-35	-	3	dBm
INPUT ON-HOOK RESISTANCE	5	-	-	MΩ
CROSS TALK (to adjacent channel)	-	-	-60	dB
SINGLE FREQ. DISTORTION				
1000 Hz	-	-	-40	dBm
2000 - 4000 Hz	-	-	-30	dBm

For further information or for technical support - call 800-558-3325
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