Customer Service

Network Isolator Installation & Service Manual

Part Number: 7100-07612-01

Release Date: December 1985

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CORVUS

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Network Isolator Installation & Service Manual Errata

The following describes changes and additions to the 'Corvus Customer Service Network Isolator Installation and Service Manual', Part Number 7100-07612-01, released December 1985.

Pages 9 - 10, Section 2.3.2: Install jumper E1 and E2 to enable bias on Port 1 (computer side).

Page 15, Section 3.3.1, Step 3: Leave jumper E1 and E2 to enable bias on Port 1 (computer side).

Page 16, Section 3.3.1, Tables: Corrected tables below:

120 VAC	240 VAC
E1A o----o E1B	E1A o----o E1B
E2A o----o E2B	E2A o----o E2B
E3A o----o E3B	E3A o----o E3B
E4A o----o E5A	E4A o----o E5A
E4B o----o E4C	

Page 27, Bill of Materials: Replace 5.6K resistor, Part Number 4720-04907, with 15K, 1/4Watt, 5% resistor Part Number 4720-04905.

Schematics: Replace resistors R4 and R5 with 15K resistor as described above.

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LIST OF FIGURES

SCOPE OF MANUAL

This document is intended to provide a technician with the information required for the installation, configuration, and troubleshooting of the Corvus Systems Network Isolator.

This manual includes a product overview and functional description, configuration and installation instructions, and troubleshooting procedures. Also included are installation diagrams for typical applications, jumper option listings, schematics, assembly drawings and a parts list.

This manual should be used in conjunction with the **Omninet Installation and Troubleshooting** manual available from Corvus Customer Service (Part Number 7100-06942-01).

SPECIFICATIONS

Physical Dimensions - Plastic Cabinet

Height	
Inches	2.5
Centimeters	6.35
Width	
Inches	6.0
Centimeters	15.24
Length	
Inches	6.25
Centimeters	15.88

Electrical Specifications

Power Consumption	5 Watts
Fuse Rating	250 Volts @ .25 Amps

CHAPTER 1
PRODUCT OVERVIEW

1.0 Introduction

The Corvus Network Isolator is a bi-directional, two port device for use in an Omninet/RS-422 network environment. It provides electrical isolation between its two ports and is designed to operate as either a nodal or trunk isolator. It is packaged in a plastic PACTEC box measuring 6.25 inches deep by 6 inches wide by 2.5 inches high.

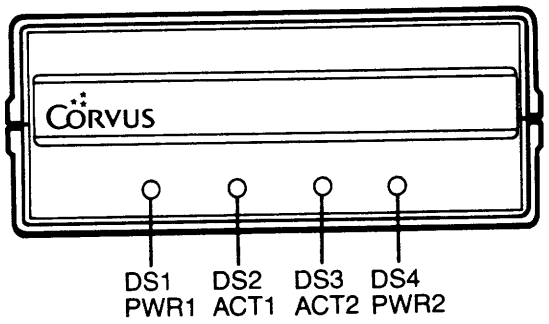


Figure 1-1 Network Isolator

1.1 Purpose

The Network Isolator provides a solution to those network installations effected by ground loops, lightning strikes, severe power spikes, and most power transients. To have a completely isolated network, Network Isolators need to be installed at each Omninet node as 'Nodal Isolators'. Additionally, Network Isolators need to be installed as 'Trunk Isolators' at all points where the trunk cable enters or exits a building. Additionally, trunk isolators should be installed in the place of an Active Junction Box wherever an AJB would be required.

1.1.1 Nodal Isolator

When used as a nodal isolator, the Network Isolator serves to protect individual network devices from potentially damaging voltages which may be present on the network trunk. These voltages may be generated on the network trunk for a variety of reasons, including ground loops and lightning.

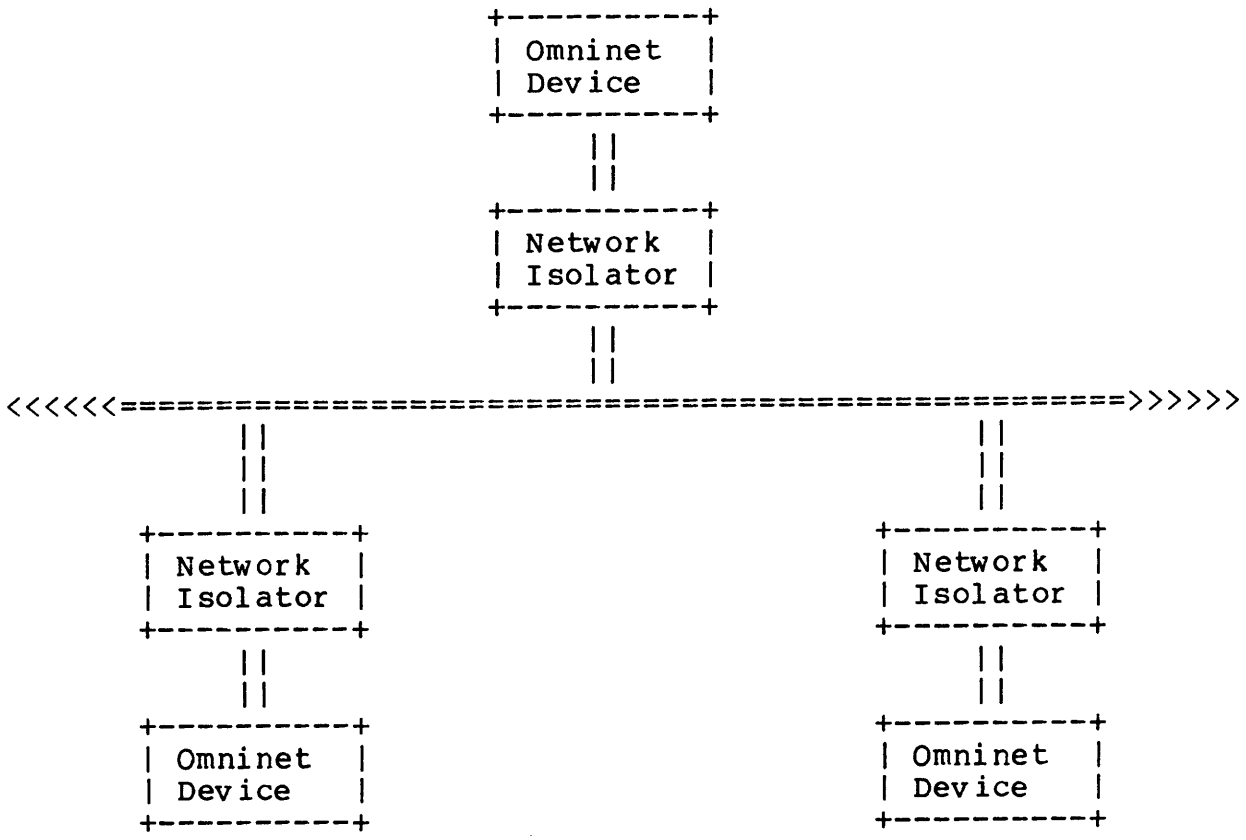


Figure 1-2 Network Isolator as a Nodal Isolator

1.1.2 Trunk Isolator

The Network Isolator can also be used as a trunk isolator. In this configuration, the device serves to isolate individual segments of the network trunk. This can helpful in installations where the trunk cable is run outside or between buildings. Also, installations using multiple AC power transformers can benefit from the use of the trunk isolator.

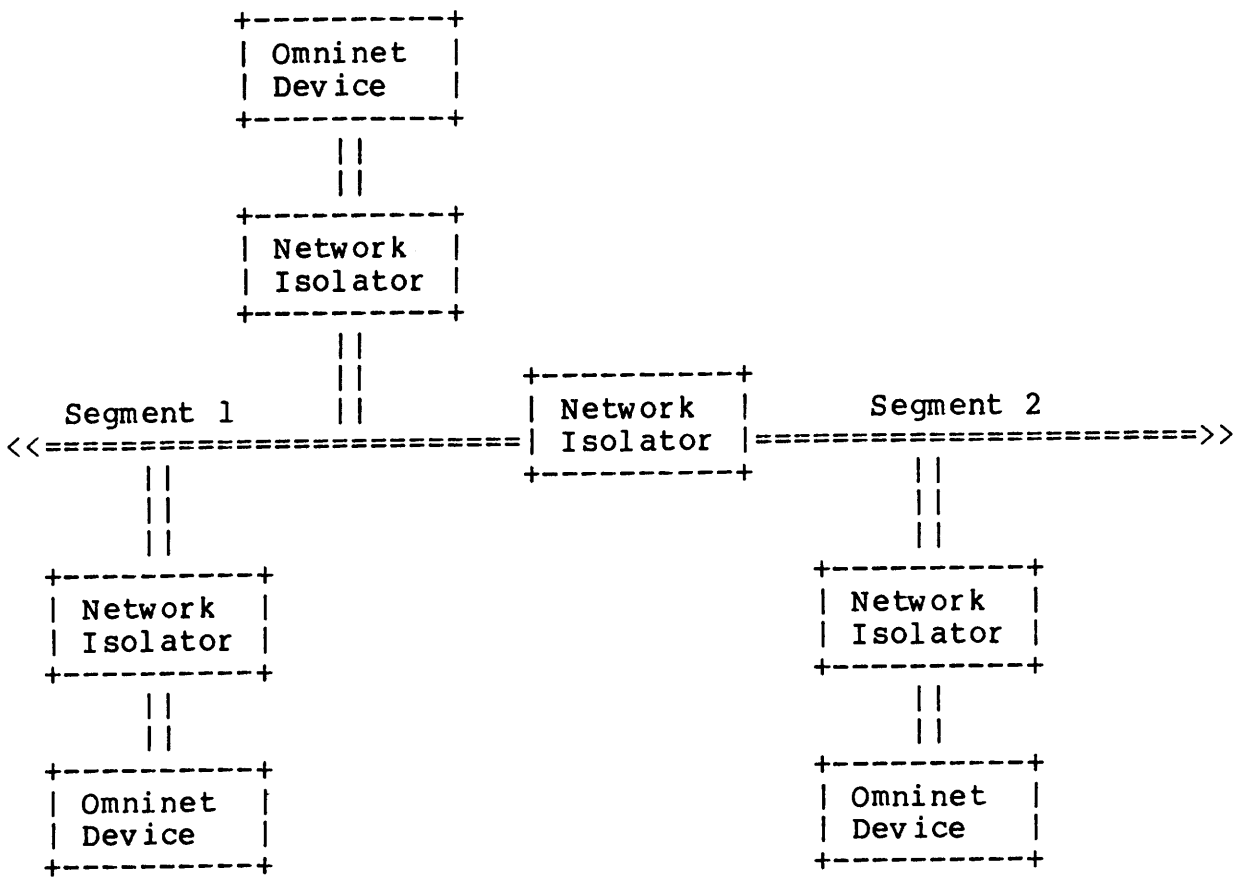


Figure 1-3 Network Isolator as a Trunk Isolator

1.2 Major Assemblies

The Network Isolator is comprised of two major assemblies, the electronics PCA and the rear panel.

1.2.1 Electronics PCA

The electronics PCA contains all the circuitry used by the Network Isolator. The power supply, isolation circuitry, and status LEDs are all contained on this PCA.

1.2.2 Rear Panel

The rear panel of the Network Isolator contains an IEC-type AC power receptacle, power switch, and an AC convenience outlet.

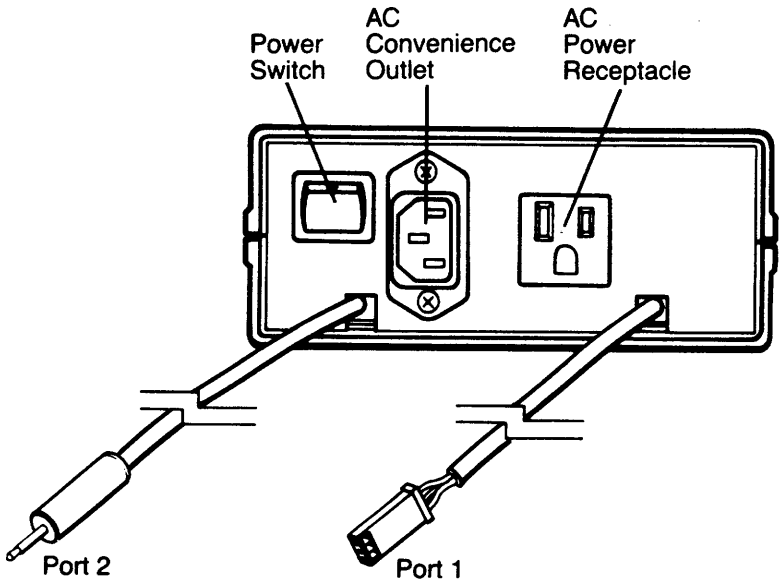


Figure 1-4 Rear Panel

CHAPTER 2
FUNCTIONAL DESCRIPTION

2.0 Introduction

The Network Isolator is a bi-directional signal repeater with electrical isolation between its two ports. The unit protects devices connected to an Omninet Local Area Network from potentially damaging voltages which may be present on the network trunk cable.

The two ports of the Network Isolator are defined as Port 1 and Port 2. When used as a nodal isolator, Port 1 connects to the network device and Port 2 connects to a tap box on the network trunk. When used as a trunk isolator, there is no differentiation between Port 1 and Port 2.

2.1 Circuit Descriptions

The Network Isolator circuitry can be viewed as having three major divisions. The first provides DC power for the unit. The second provides port isolation. The final circuit provides carrier sense and direction switching logic.

2.1.1 DC Power

The Network Isolator receives power from a small, PCA mounted, dual-isolated linear power supply (T1) and several discrete components. This power supply provides +5 VDC at a maximum of 300 mA per output. Electrical isolation between the two outputs is rated at a maximum of 3000 VDC.

2.1.2 Isolation Circuit

Electrical isolation between the two ports is provided by three MCL2601 optocouplers (U4, U5, and U6). These optocouplers provide a maximum of 3000 VDC isolation between the two ports.

2.1.3 Carrier Sense and Direction Switching Logic

A 9602 dual, retriggerable, flip-flop (U7) is employed to provide carrier sense and direction switching logic. Double edge triggering is obtained via a 74LS86 exclusive-OR (U8) and several discrete components. The circuit design is identical to that presently used on the Active Juction Box.

2.2 Status Indicators

Four status LEDs are provided on the front panel and are labeled as PORT 1 and PORT 2.

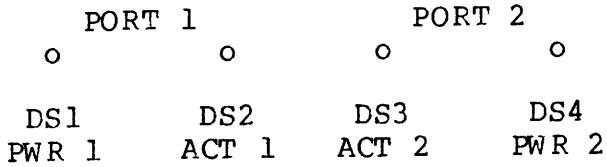


Figure 2-1 Status Indicators

LEDs DS1 (PWR 1) and DS4 (PWR 2) are power-on indicators for ports 1 and 2, respectively, and should be "on" whenever power is applied to the Network Isolator. LEDs DS2 (ACT 1) and DS3 (ACT 2) are traffic indicators for ports 1 and 2, respectively. The LEDs should be flashing whenever data is present on the network.

2.3 Configuration Options

The Network Isolator is a versatile device which can be configured for use in various network environments. There are eight jumpers contained on the printed circuit assembly (PCA) that are used to configure AC power, network bias, and termination options.

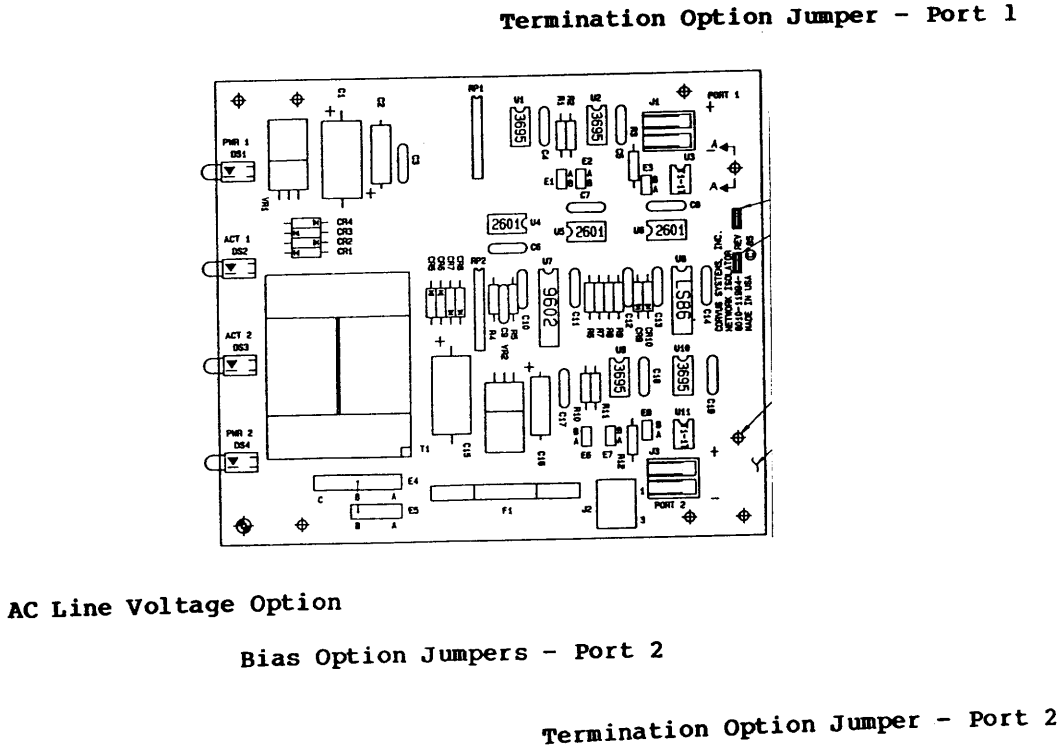


Figure 2-2 PCA Jumper Options

Network Isolators shipped from Corvus are factory-configured in the following fashion:

120 VAC or 240 VAC - Specified when ordered
Nodal Isolator configuration

2.3.1 AC Power

The Network Isolator can operate in either a 120 or 240 VAC environment. Jumpers on the PCA are set to match the available line voltage.

If the Network Isolator's power source is 120 VAC, then jumpers need to be installed between pins E4A and E5A, and pins E4B and E4C. Refer to Figure 2-2 for correct jumper placement.

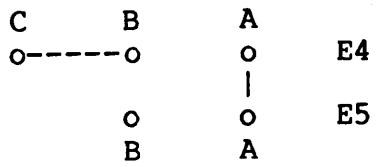


Figure 2-3 AC Power Jumper Option 120 VAC

If the Network Isolator's power source is 240 VAC, then jumpers need to be installed between pins E4B and E5B. Refer to Figure 2-2 for the correct jumper placement.

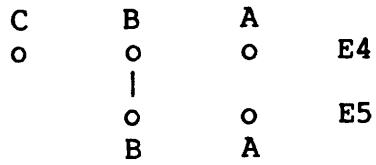


Figure 2-4 AC Power Jumper Option 240 VAC

2.3.2 Network Bias

Each of the two ports on the Network Isolator is capable of providing a bias voltage. This bias voltage should be enabled whenever the Network Isolator is configured as a trunk isolator.

To enable the bias for port 1, install jumpers E1 and E2.
To disable the bias for port 1, remove jumpers E1 and E2.

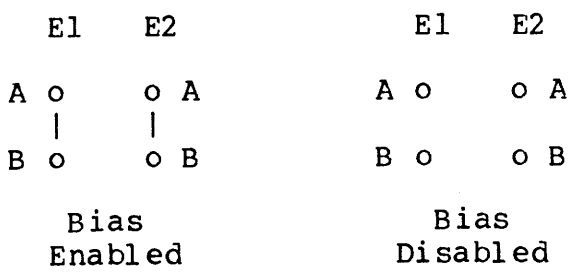


Figure 2-5 Bias Option Jumpers Port 1

To enable the bias for port 2, install jumpers E6 and E7.
To disable the bias for port 2, remove jumpers E6 and E7.

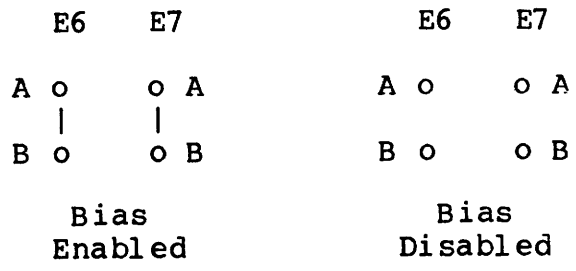


Figure 2-6 Bias Option Jumpers Port 2

2.3.3 Network Termination

A 100-ohm resistor is provided at each port on the Network Isolator to terminate the network when the device is used as a trunk isolator.

To enable termination on port 1, install jumper E3.
To disable termination on port 1, remove jumper E3.

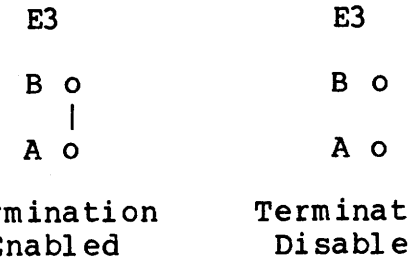


Figure 2-7 Termination Option Jumpers Port 1

To enable termination on port 2, install jumper E8.
To disable termination on port 2, remove jumper E8.

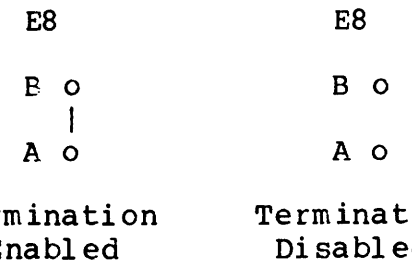
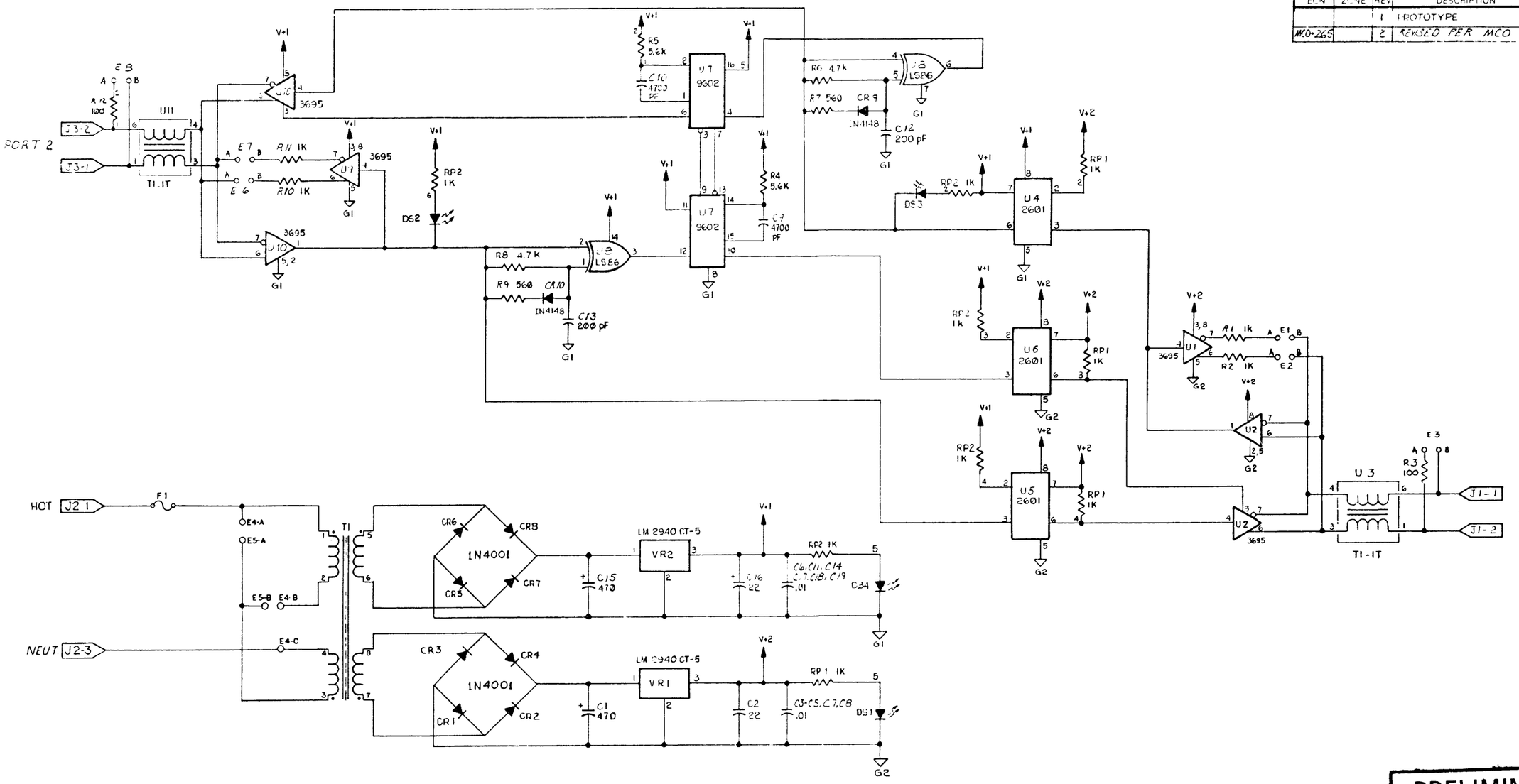


Figure 2-8 Termination Option Jumpers Port 2

REVISIONS						
ECN	ZONE	REV	DESCRIPTION	DRFTG	DATE	APPROVED
		1	PROTOTYPE	[illegible]	[illegible]	[illegible]
MCO-265		2	REVISED PER MCO	[illegible]	[illegible]	[illegible]



PRELIMINARY

6. 220V OPERATION JUMPER E4B & E5B.
5. 120V OPERATION; JUMPER E4A & E5A, JUMPER E4B & E4C.
4. TO TERMINATE PORT 2 INSTALL JUMPER E8; TO ENABLE ACTIVE BIAS ON PART 2 INSTALL JUMPERS E6 & E7.
3. TO TERMINATE PORT 1 INSTALL JUMPER TO E3; TO ENABLE ACTIVE BIAS ON PORT 1 INSTALL JUMPERS E1 & 2.
2. ALL CAPACITOR VALUES ARE IN MICRO FARADS.
1. ALL RESISTANCE VALUES ARE IN OHM, 1/4 W, 5%.

NOTES: (UNLESS OTHERWISE SPECIFIED)

REFERENCE DESIGNATIONS

[illegible]	PART USED
R15	
C21	
C24	
T3	
962	
CR10	
U11	

NEXT ASSY	USED ON
APPLICATION	

QTY	ITEM NO	PART NO	DESCRIPTION

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
ANGLES ± DECIMALS XX ± XXX ±
MATERIAL
FINISH

		DATE
DRAWN	HUY BUI	10-25
CHECKED BY		DATE
DESIGN ENGINEER		DATE
MFG ENG		DATE
APPROVED		DATE

CORVUS 2100 Corvus Drive / San Jose, California 95124 / (408) 559-7000

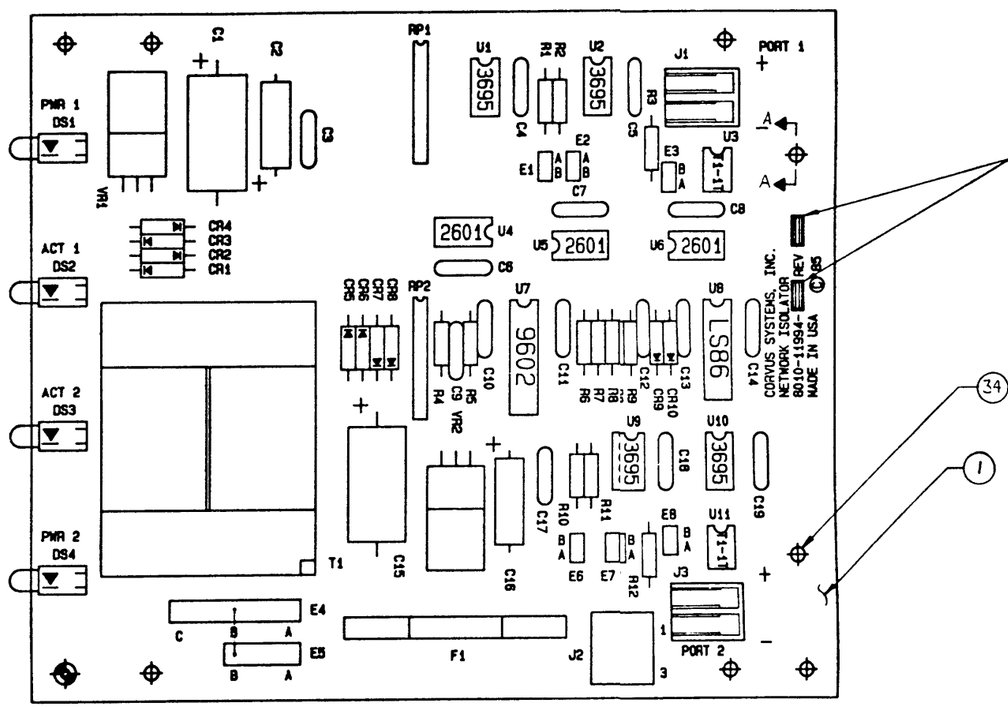
SCHEMATIC DIAGRAM
NETWORK ISOLATOR

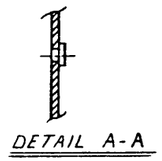
SIZE	DWG NO	REV
D	1720-11994	2

SCALE NONE | DO NOT SCALE DWG | SHEET 1 OF 1

1720-11994

REVISIONS						
ECN	ZONE	REV	DESCRIPTION	DRFTG	DATE	APPROVED
		2	REDRAW PER ER-01	T.M.	12/9/85	





PRELIMINARY

4 INSERT FASTENERS ITEM #34 INTO THE CIRCUIT SIDE OF THE BOARD AS SHOWN IN DETAIL "A-A".

3. JUMPER WIRE INSTALLED E4-B TO E5-B, 220V VERSION.

2. SQUARE PAD DENOTES PIN 1 OF IC, AND CONNECTOR. ALSO DENOTES THE POSITIVE END OF A CAPACITOR, CATHODE END OF LED OR DIODE, OR EMITTER OF TRANSISTOR.

1 PERMANENTLY MARK VERSION NUMBER, CURRENT ASSEMBLY REVISION LEVEL AND MANUFACTERS IDENTIFICATION WHERE SHOWN, METHOD OPTIONAL.

NOTES:

QTY	ITEM NO	PART NO	DESCRIPTION

PARTS LIST

NEXT ASSY	USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
ANGLES ± DECIMALS .XX ± .XXX ±

MATERIAL

FINISH

DRAWN BY	T. McNeill	DATE 12-9-85
CHECKED BY		DATE
DESIGN ENGINEER	S. LUNA	DATE
MFG ENG	J. MIBELL	DATE
APPROVED		DATE

CORVUS 2100 Corvus Drive / San Jose, California 95124 / (408) 559-7000

PRINTED CIRCUIT ASSEMBLY
NETWORK ISOLATOR, 220V

SIZE	DWG NO	REV
D	8010-11994-02	2

SCALE NONE | DO NOT SCALE DWG | SHEET 1 OF 1

REV 2 DWG NO 8010-11994-02