

DS3 Network Interface Unit NIU3 3-Slot Shelf Installation and Maintenance

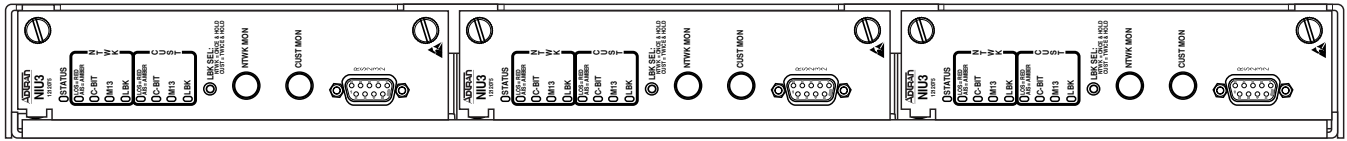


Figure 1. NIU3 3-Slot Shelf

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1. GENERAL

This practice is used in association with the NIU3 circuit card practice, P/N 61212075Lx-5.

The NIU3 3-Slot Shelf installs in a standard 19-inch bay (23-inch mounting flanges also included) at a designated location convenient to the customer.

Revision History

This is the first issue of this document. Future changes to this document will be summarized in this paragraph.

Features

The NIU3 3-Slot Shelf provides the following features and functions:

- Pass through relays ensure virtually uninterrupted transmission during card replacement, failure, or power loss.
- BNC transmit/receive jacks for each NIU3 card.
- Shelf alarm relay terminals provide alarm indication.
- Dual -48 VDC power feeds.
- Load-share diode arrangement for redundant power capability.
- Sturdy metal construction.
- Durable powder-coated enamel finish.
- Mounting and accessory hardware included.

Description

The NIU3 3-Slot Shelf is an all-metal construction housing that has slots for 3 NIU3 horizontally mounted circuit cards. Card guides direct the card to the backplane edge connector and when properly inserted, thumbscrews on the NIU3 front panel align and fasten to threaded holes on the shelf. Shelf slots are numbered 1 through 3 left to right looking at the front of the shelf. The backplane circuitry is protected by a metal cover that has openings for BNC data jacks, power terminal connections, and alarm pins. Removable covers provide security for power and alarm connections. All connections are clearly labeled.

2. INSTALLATION



After unpacking the unit inspect it for damage. If damage is noted, file a claim with the carrier, then contact ADTRAN. Refer to *Warranty and Customer Service*.

Install per requirements of NEC NFPA 70. After installation, ensure equipment rack stability is not upset.

Location

The NIU3 3-Slot Shelf installs at any location convenient to the customer as a demarcation and loopback point for DS3 circuits. The NIU3 can pass both network and customer signals up to 900 feet. However, if either signal exceeds 450 feet, the respective front panel monitoring signal begins to degrade. Also, during NIU3 bypass operations, if total transmission distance exceeds 900 feet, signal quality may degrade. See **Figure 2** for maximum recommended transmission distances.

The NIU3 3-Slot Shelf mounts in a standard 19-inch or 23-inch bay. Reversible mounting flanges adjust to desired position in the appropriate bay.

- Determine desired shelf extension from the bay frame.
- Position the mounting flanges as necessary using the appropriate flanges for a 19-inch or 23-inch bay. Install using the supplied counter-sink screws.
- Mount the shelf to the bay accordingly.

Wiring

Wiring consists of three elements: data, power, and alarms. Use suitably sized copper conductors only.

Data

Externally, the shelf backplane has four BNC connectors for each of the three NIU3 slots: two upper (IN/OUT) for network receive/transmit, and two lower (IN/OUT) for customer receive/transmit (see **Figure 3**).

- Connect the cables to the BNCs on the backplane for those shelf slots that will be populated.
- If not already accomplished, connect the opposite ends to their designated terminations.
- Dress and lace the wire runs to the bay frames as necessary.

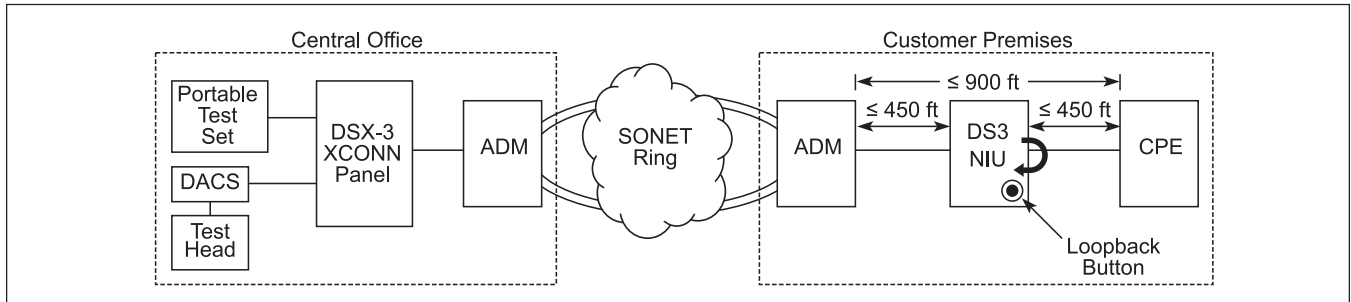


Figure 2. NIU3 Circuit Diagram

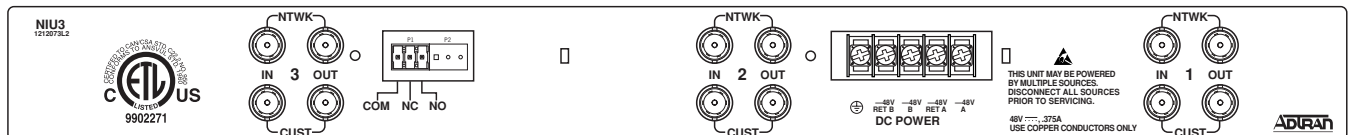


Figure 3. NIU3 3-Slot Shelf Rear Panel

Power

Fully populated, the NIU3 3-Slot Shelf operates on local -48 VDC @ 0.375 amps maximum. The shelf backplane has spade lug terminal connections (TB1) for both an “A-side” and “B-side” independent DC source, plus Frame Ground (see **Figure 4**). A diode arrangement adds reliability by allowing both DC supplies to load-share with one side picking up the entire load should the other side fail. See requirements in *Compliance* subsection.

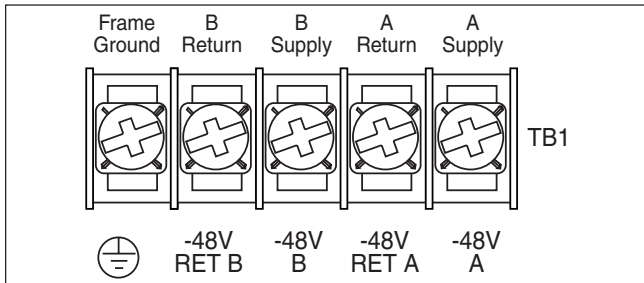


Figure 4. Local DC Power Connection

WARNING

Ensure power is off before making power wiring connections.

- Connect the -48 VDC supply and return wires to the A-side terminals per Figure 4.
- If redundant power is intended, connect an independent power source to the B-side terminals per Figure 4.

CAUTION

Terminate grounds to an approved ground location. Check metal to metal contact on all ground connections, ensure ground circuit continuity.

- Connect the common frame ground terminal to an approved ground location.

CAUTION

Per GR-1089-CORE, October 2002, Section 9, this system is designed and intended for installation in a DC-I (isolated) bonding and grounding system only. It is not intended or designed for installation in a DC-C (common) bonding and grounding system.

Alarms

A 3-post wire-wrap terminal (P1) on the shelf backplane selects either a normally closed (COM/NC) or a normally open (COM/NO) alarm relay. The alarm relay output responds to the card malfunction status on individual NIU3 cards.

- Determine if the desired alarm output is a NO or a NC response.
- Make wire-wrap connections accordingly.
- If not already accomplished, connect alarm output to designated terminations.

CAUTION

After wiring connections are made, replace power and alarm security covers.

Options

Aside from connecting redundant power, and alarm NO/NC selection, there are no options associated with the shelf.

3. TURNUP

When an NIU3 is inserted into a shelf with power on the backplane, the PWR or STATUS LED turns ON red while the NIU3 performs a self-test. If the test passes, the PWR or STATUS LED turns ON green and the other LEDs go through an ON/OFF sequence indicating the NIU3 is online. If the test fails, the PWR or STATUS LED remains red and the bypass relays will maintain data flow around the NIU3.

4. OPERATION

The NIU3 3-Slot Shelf exchanges data to and from the network loop and customer loop via the BNC connectors. If the NIU3 fails or is removed from the circuit, the affected card relays on the backplane provide pass-through transmission so data flow is maintained.

During normal operation the NIU3 is transparent to the network. In the event of circuit trouble, test equipment at the central office can monitor the loop. When a loopback is initiated, the transmit/receive paths can be tested to the customer interface. NIU3 troubleshooting tests are intrusive to data transmission.

LED Indication

There are no LEDs on the 3-slot shelf. However, NIU3 LEDs provide information for NIU3 and shelf configuration and status.

5. MAINTENANCE

The NIU3 3-Slot Shelf does not require maintenance for normal operation. ADTRAN does not recommend field repair. For repair services refer to *Warranty and Customer Service*.

6. SPECIFICATIONS

See **Table 1** for compliance codes and **Table 2** for shelf specifications.

Table 1. Compliance Codes

Code	Input	Output
Power Code (PC)	F	C
Telecommunication Code (TC)	–	–
Installation Code (IC)	E	–

Compliance

The NIU3 3-Slot Shelf is intended for installation in a restricted access location only.

Use one of the following requirements for powering the unit locally:

1. Connect to a grounded -48 VDC source, electrically isolated from the AC source. Provide branch circuit overcurrent protection with a fuse or circuit breaker, minimum 48 VDC, maximum 15 amps. Provide an easily accessed approved and rated disconnect device in the field wiring.
2. Connect to an approved Class 2 Type (LPS) power supply rated 48 VDC, maximum 240 VA.

For those slots not populated with an NIU3 circuit card, blank covers (P/N 1212076L1) must be installed.

Standards:

- NEBS: Level 3
- ANSI: T1.404
- UL: 1950
- FCC: Part 15, Class A

Table 2. Shelf Specifications

Environmental	
Operating Temperature	-40°C to 70°C (-40°F to 158° F)
Storage Temperature	-40°C to 85°C (-40°F to 185° F)
Max Humidity	Per GR 63
Physical	
Dimensions	17.5 in. W, 7.0 in. D, 1.75 in. H, T400 density
Weight	12 Pounds w/3 NIU3 Cards installed
Power	
Volts	-48 VDC nominal
Max input current	0.375 A (fully loaded)
Compliance	
NEBS	Level 3
UL	1950
FCC	Part 15, Class A
ANSI	T1.404
Part Numbers	
3-Slot Shelf	1212073L2, CLEI: NCM524ZD_ _
Blank Cover	1212076L1

7. WARRANTY AND CUSTOMER SERVICE

ADTRAN will replace or repair this product within the warranty period if it does not meet its published specifications or fails while in service. Warranty information can be found at www.adtran.com/warranty.

U.S. and Canada customers can also receive a copy of the warranty via ADTRAN's toll-free faxback server at 877-457-5007.

- Request Document 414 for the *U.S. and Canada Carrier Networks Equipment Warranty*.
- Request Document 901 for the *U.S. and Canada Enterprise Networks Equipment Warranty*.

Refer to the following subsections for sales, support, CAPS requests, or further information.

ADTRAN Sales

Pricing/Availability:
800-827-0807

ADTRAN Technical Support

Pre-Sales Applications/Post-Sales Technical Assistance:
800-726-8663

Standard hours: Monday - Friday, 7 a.m. - 7 p.m. CST

Emergency hours: 7 days/week, 24 hours/day

ADTRAN Repair/CAPS

Return for Repair/Upgrade:
(256) 963-8722

Repair and Return Address

Contact Customer and Product Service (CAPS) prior to returning equipment to ADTRAN.

ADTRAN, Inc.
CAPS Department
901 Explorer Boulevard
Huntsville, Alabama 35806-2807

