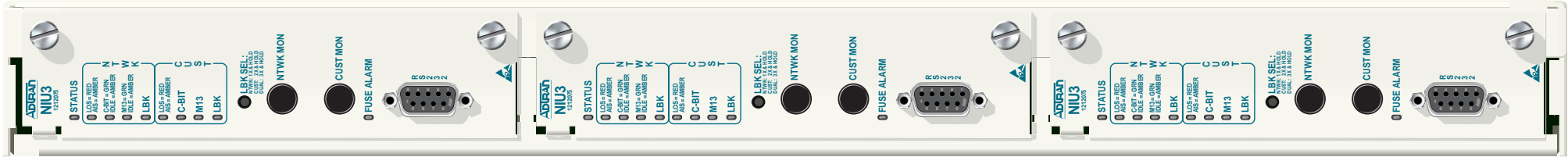


NIU3 3-Slot Housing

P/N: 1212073L1
CLEI: NCM5K4ZD_



GENERAL

This job aid is used in association with the ADTRAN® DS3 NIU3 module job aid, (P/N 61213075L2-22). The NIU3 3-Slot Housing is an all-metal construction unit that has slots for 3 NIU3 horizontally-mounted modules. Guide grooves direct the card to the backplane edge connector. When properly inserted, thumbscrews on the NIU3 front panel align and fasten to threaded holes on the housing. Shelf slots are numbered 1-3, left to right.

The backplane circuitry is protected by a metal cover that has openings for BNC data jacks, pass-through relays, power terminal connections, and alarm pins. All connections are clearly labeled. The pass-through relays, alarm relay, alarm wire-wrap pins, and power terminals are protected by removable security covers.

INSTALLATION AND LOCATION

After unpacking the unit, inspect it for damage. If damage is noted, file a claim with the carrier, then notify ADTRAN. For more information, refer to [Warranty](#) on the reverse page.

The NIU3 3-Slot Housing installs at any location convenient to the customer as a demarcation and loopback point for DS3 circuits.

NOTE: *The NIU3 can pass both network and customer signals up to 900 feet. During NIU3 bypass operations, if total transmission distance exceeds 900 feet, signal quality may degrade. See Circuit Diagram on reverse side.*

Rackmount

NOTE: *Install the unit per NEC NFPA 70 requirements. For more information refer to the Compliance section.*

The NIU3 3-Slot Housing can be bay mounted at any convenient location. Reversible mounting flanges adjust to desired position in the 19-inch rack (23-inch mounting flanges also included). To rackmount the NIU3 3-Slot Housing:

1. Determine intended shelf extension from the bay.
2. Position and install the mounting flanges as necessary using the appropriate flanges for a 19-inch or 23-inch bay and install using the supplied counter-sink screws.
3. Mount the shelf to the bay accordingly.

Wallmount

Additional brackets available from ADTRAN allow the chassis to be mounted to a wall. Wallmount bracket P/N 1212073L1WM accommodates one NIU3 3-Slot Housing. Wallmount bracket P/N 1212078L1WM accommodates a stack of two NIU3 3-Slot Housings. Six 1/4 by 3/4-inch bladed hex-head screws and flat washers are provided with the 1212078L1WM wallmount bracket for attaching to the wall. In this configuration, the original flanges are removed, and the wallmount flanges are installed using the countersink screws from the originals. If using P/N 1212073L1WM, install the chassis so the module front panels face up.

If using P/N 1212078L1WM, install the chassis so the module front panels face out. A 2-foot 16 AWG ground wire is also provided to be installed between the ground termination on the bracket and the ground termination on the housing. This allows the chassis to rotate without disturbing the main ground wire leaving the bracket.

CAUTION: *When rotating the chassis in the 1212078L1WM brackets, always do so with care to ensure that all wiring and connections are protected.*

CAUTION: *There are six removable bypass relays and 1 removable alarm relay located on the rear of the shelf. After installation, remove the relay covers and ensure that the relays are properly and firmly seated in their sockets. Replace the relay covers.*

Wiring

Wiring consists of three elements: data, power, and alarms.

NOTE: *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. To connect the NIU3 3-Slot Housing to the data network:

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

Power

Fully populated, the NIU3 3-Slot Housing operates on local -48 VDC at 0.375 amps maximum or ±24 VDC at 0.750 amps max. The housing backplane has spade lug terminal connections (**TB1**) for both an “A-side” and “B-side” independent DC source, plus a common frame ground. See NOTE in the [Compliance](#) section for requirements. To connect power to the NIU3 3-Slot Housing:

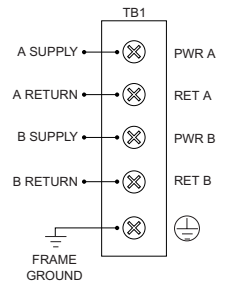
WARNING: *Ensure power is off before making wiring connections.*

1. Connect -48 V or ±24 V supply to **PWR A**.
2. Connect -48 V or ±24 V return to **RET A**.
3. If redundant power is intended, make similar connections to **PWR B** and **RET B**.

CAUTION: *Terminate grounds to an approved ground location. Check metal-to-metal contact on all ground connections to ensure ground circuit continuity.*

4. Connect the common frame ground terminal or ground lug (6 AWG maximum) 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-C (common) bonding and grounding system only. It is not intended or designed for installation in a DC-I (isolated) bonding and grounding system.*



Alarms

A 3-post wire-wrap terminal (P7) on the housing backplane selects either a normally closed (COM/NC) or a normally open (COM/NO) alarm relay. The alarm relay provides a common output and responds to the card malfunction status on individual NIU3 modules. To connect the alarm relay:

1. Determine if the intended alarm output provides a **NO** or **NC** response.
2. Make wire-wrap connections to the **COM** and **NO/NC** terminals as required.
3. Connect alarm output to designated remote terminations if not already done.

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

TURNUP

When an NIU3 module is inserted into a housing with power applied, the **STATUS** LED illuminates red while the NIU3 module performs a self-test. If the test passes, the **STATUS** LED illuminates green, indicating the NIU3 is online, and the other LEDs go through an on/off sequence. If the test fails, the LED remains red, and the bypass relays (ADTRAN patent pending) on the housing maintain data flow around the NIU3 module.

OPERATION

During operation, the NIU3 modules are transparent to data flow. If any of the NIU3 modules fail or are removed from the circuit, the relays on the housing backplane provide passthrough transmission, so data flow is maintained. In the event of a malfunction, 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 module troubleshooting tests are intrusive to data transmission.

LED Indication

There are no LEDs on the NIU3 3-Slot Housing. LEDs on the individual NIU3 modules provide configuration and status information.

COMPLIANCE

The NIU3 3-Slot Housing complies with the following:

- ◆ NEBS Level 3
- ◆ ANSI T1.404
- ◆ UL 60950
- ◆ FCC Part 15, Class A

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

NOTE: 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 A. 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.

After installation, ensure stability of the rack is not upset.

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

MAINTENANCE

Except for signal and alarm relay replacement, the NIU3 3-Slot Housing does not require maintenance for normal operation.

Signal Relays

Each slot has a cut-through signal relay accessible on the backplane. The relay ensures data transfer in the event any NIU3 module fails, is removed, or loses power. Failure of the relay is determined by process of elimination. If a loss of signal occurs, and all other parameters are satisfactory, then a failed relay is indicated. A Relay Replacement Kit (P/N 1212072L1) is available from ADTRAN.

Follow this procedure to replace a failed signal relay:

1. Insert a jumper strap on the posts immediately adjacent to the suspect relay. This provides a signal path, bypassing the relay.
2. Using an appropriately-sized IC extractor tool, remove the relay.

CAUTION: Observe prong configuration on the removed relay. Relays are polarity sensitive and replacement relays must be oriented correctly.

3. Align and insert the replacement relay in the correct orientation, taking care not to bend prongs.
4. Remove the jumper strap.
5. Monitor for normal operation.

Alarm Relay

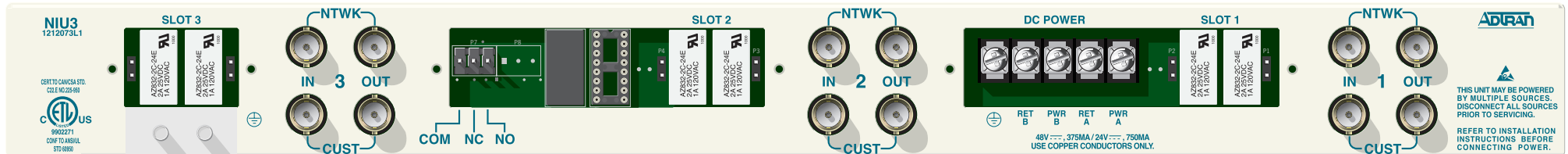
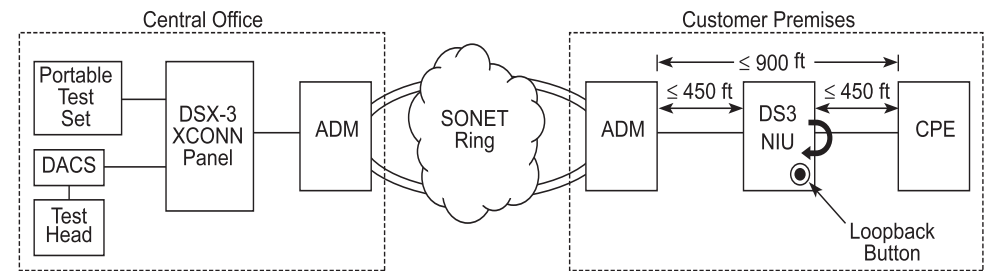
The alarm relay is located adjacent to the alarm wire-wrap pins (P7) on the backplane. The alarm relay output responds to the module malfunction status on individual NIU3 modules. If an alarm condition occurs, but an alarm signal is not present, then a failed alarm relay is indicated. Follow this procedure to replace a failed alarm relay:

1. Using an appropriately-sized IC extractor tool, remove the relay.

CAUTION: Observe prong configuration on the removed relay. Relays are polarity sensitive and replacement relays must be oriented correctly.

2. Align and insert the replacement relay in the correct orientation, taking care not to bend prongs.

CIRCUIT DIAGRAM



NOTE: Power and Alarm security covers are removed for clarity.

Warranty: 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 online at www.adtran.com/warranty.