DS3 NIU3 12-Slot Housing

CLEI: NCM59Z0D_ _   P/N: 1212078L1

CAUTION!
SUBJECT TO ELECTROSTATIC DAMAGE
OR DECREASE IN RELIABILITY.
HANDLING PRECAUTIONS REQUIRED.
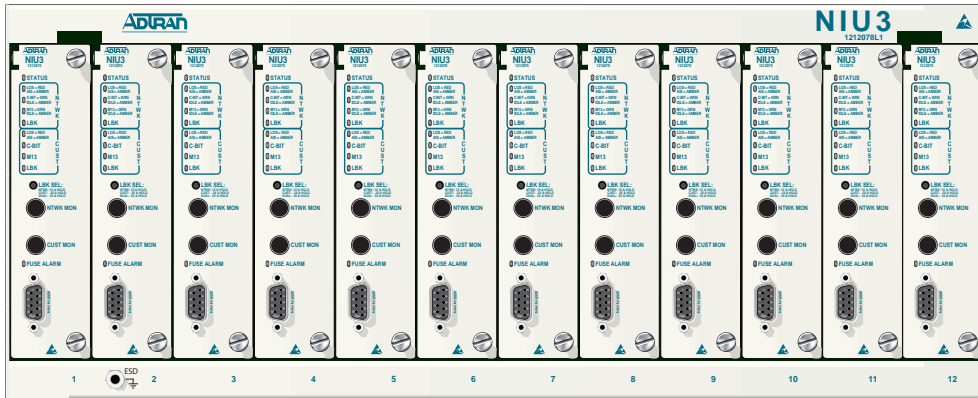
GENERAL

This job aid is used in association with the ADTRAN® DS3 NIU3 module job aid (P/N 61213075L2-22). The NIU3 12-Slot Housing is an all-metal construction unit that has slots for 12 NIU3 modules. Guide grooves direct the card to the backplane edge connector. When properly inserted, recessed screws on the NIU3 front panel align and fasten to threaded holes recessed on the shelf interior. The backplane circuit board is protected by a metal cover that has openings for BNC data jacks, pass-through relays, power terminal connections, and alarm pins. A cable management bar and wire tie-down anchor points complete the backplane assembly. All connections are clearly labeled. The pass-through relays, alarm relay, alarm wire-wrap pins, and power terminals are protected by removable security covers or safety shields.

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 12-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. For more information, refer to the* 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 12-Slot Housing can be rack 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 12-Slot Housing:

1. Determine desired shelf extension from the bay.
2. Position the mounting flanges as necessary, using the appropriate flanges for a 19-inch or 23-inch rack. Install using supplied counter-sink screws.
3. Install cable management bar to the rear cover of the shelf using supplied pan-head screws.
4. Mount the shelf to the rack accordingly.

Wallmount

Two wallmount brackets are available from ADTRAN to allow the chassis to be mounted to a wall:

♦ Swingarm Bracket (P/N 61212078L1WM) - Packaged with six ¼ × ¾-inch hex-head screws and flat washers, provides a swingarm bracket for easy access to front and rear panels. In this configuration, the original flanges are removed, and the wallmount flanges are installed using the countersink screws from the originals. Install the chassis so the front panels of the circuit modules face outward on the front.

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, always do so with care to ensure that all wiring and connections are protected.*

♦ Vertical Mounting Bracket (P/N 61212078L1WMB) - Packaged with two L-Brackets and four ¼ by 1¾-inch hex-head screws, provides a vertical mount with the chassis-top toward the wall and the modules to the side.

CAUTION: *There are 24 removable bypass relays and 1 removable alarm relay located on the rear of the housing. After installation, remove the bypass relay cover and alarm relay cover 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 NIU3 12-Slot Housing backplane has four BNC connectors for each of the twelve NIU3 slots, labeled **NETWORK IN**/**OUT** and **CUSTOMER IN**/**OUT**. A cable management bar provides for tie-wrapping cables. To connect the NIU3 12-Slot Housing to the data network:

1. Connect the cables to the BNC connectors on the backplane for those shelf slots that will be populated.
2. If not already done, connect the opposite ends to their designated terminations.
3. Dress and lace the wire runs to the cable management bars and rack frames as necessary.

Power

Fully populated, the NIU3 12-Slot Housing operates on local –48 VDC at 1.5 amps maximum or ±24 VDC at 3 amps maximum. 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. 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. Refer to the *Compliance* section note for requirements. To connect power to the NIU3 12-Slot Housing:
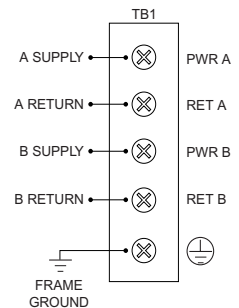
WARNING: *Ensure power is off at the source before making wiring connections.*

1. Connect –48 VDC or ±24 VDC supply to **PWR A**.
2. Connect –48 VDC or ±24 VDC 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.*

TB1

A SUPPLY — PWR A
A RETURN — RET A
B SUPPLY — PWR B
B RETURN — RET B
FRAME GROUND

For more information, refer to the Installation and Maintenance Practice (P/N 61212078L1-5) available online at www.adtran.com.

DS3 NIU3 12-Slot Housing

ADTRAN®

PRICING AND AVAILABILITY 800.827.0807
TECH SUPPORT 800.726.8663
RETURN FOR REPAIR 256.963.8722
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61212078L1-22F

Alarms

A 3-post, wire-wrap terminal (**P1**) on the housing 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 modules. To connect the alarm relay:

1. Determine if the desired alarm output is an NO or NC response.
2. Make wire-wrap connections accordingly.
3. If not already done, connect alarm output to designated terminations.
4. After wiring connections are made, replace security covers.
5. Following installation, ensure stability of the assembly has not been upset.

OPTIONS

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

TURNUP

When an NIU3 module is inserted into a housing with power applied, the **STATUS** LED illuminates red while the NIU3 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 shelf maintain data flow around the NIU3.

OPERATION

The NIU3 12-Slot Housing exchanges data to and from the network loop and customer loop via the back panel BNC connectors. During operation, the NIU3 is transparent to data flow. If the NIU3 fails or is removed from the circuit, the relays on the housing backplane provide pass through transmission so data flow is maintained.

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 NIU3 12-Slot Housing. LEDs on the individual NIU3 modules provide configuration and status information.

COMPLIANCE

NEBS   Level 3
ANSI   T1.404
UL   60950

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 3 amps. Provide an approved and rated easily accessed disconnect device in the field wiring.*
2. *Connect to an approved Class 2 Type (LPS) power supply rated at 48 VDC, maximum 240 VA.*

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 12-Slot Housing does not require maintenance for normal operation.

Signal Relays

Each loop has a cut-through signal relay accessible on the backplane. The relay ensures data transfer in the event the 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 beneath the suspect relay to provide a signal path relay bypass.

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

2. Using an appropriately-sized IC extractor tool, remove the relay.
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 on the backplane. The alarm relay output responds to the card 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
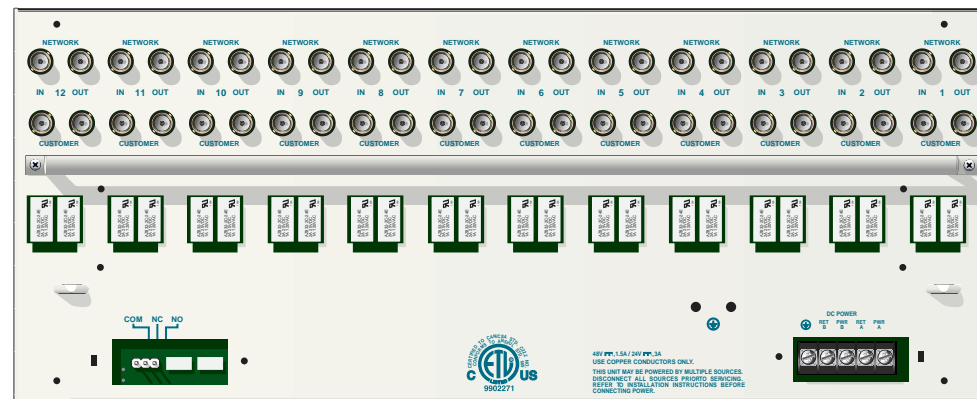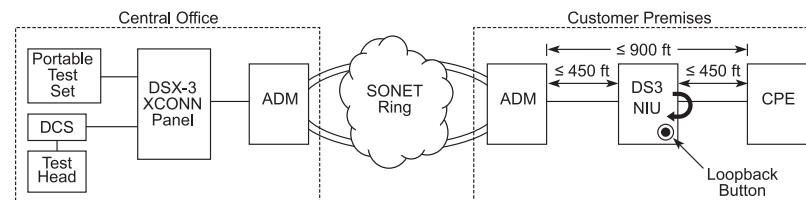
NOTE: Power and Alarm Security covers are removed for clarity