DS3 NETWORK INTERFACE UNIT (NIU3)
CIRCUIT BOARD

JOBAID
61212075L1-22A
0104

DS3 NIU3
CLEI: NCD3EEDA_ _

GENERAL

This job aid is used in association with the standalone housing job aid (P/N 61212070L1-22A), 12-Slot shelf job aid (P/N 61212078L1-22A), or 3-Slot shelf job aid (P/N 61212073L1-22A). The 3-Slot horizontal mount shelf is a future availability.

STATUS LEDs

PWR	● Green	ON	Normal Operation.
	● Red	ON	Card Malfunction.
	○	OFF	No Power.
NTWK	● Red	ON	No DS3 signal at network interface.
	○	OFF	DS3 signal present at network interface.
CUST	● Red	ON	No DS3 signal at customer interface.
	○	OFF	DS3 signal present at customer interface.
LBK	✶ Yellow	Flashing	Loopback arming.
	●	ON	Loopback towards network enabled.
	○	OFF	Loopback towards network disabled.

NOTE: All LEDs OFF indicates no power or other system malfunction.

INSTALLATION & LOCATION

After unpacking the unit, inspect it for damage. If damage is noted, file a claim with the carrier, then notify ADTRAN. See *WARRANTY*.

See NOTE in *COMPLIANCE* section. The NIU3 resides at the remote location convenient to the customer as a demarcation and loopback point for DS3 circuits. The NIU3 inserts into the host backplane connector of either the standalone or shelf housings. Secure the NIU3 with the two front panel thumbscrews.

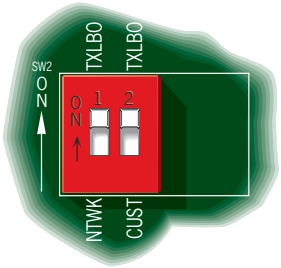
NOTE: The NIU3 can pass both network and customer signals up to 900 feet. However, if either distance exceeds 450 feet, the respective front panel monitoring signal begins to degrade. Also, during NIU3 bypass operations, if total transmission distance exceeds 900 feet, signal quality may degrade. Refer to operation circuit diagram on reverse for maximum recommended transmission distance.

Network & Customer Connection

Both the standalone and shelf housings have four BNC connectors on the rear panel for each NIU3: two (IN/OUT) for customer receive/transmit, and two (IN/OUT) for network receive/transmit.

OPTIONS

A 2-position circuit board DIP switch (SW2) on the NIU3 selects Line Build Out options. Select options prior to inserting the NIU3 into its host circuit board.



If the network equipment is within 225 line feet of the NIU3, enable LBO.

- SW2-1 ON LBO towards network enabled.
- SW2-1 OFF LBO towards network disabled.

If customer equipment is within 225 line feet of the NIU3, enable LBO.

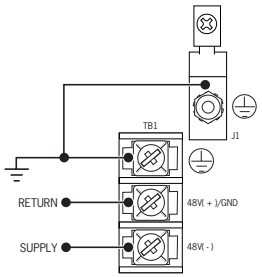
- SW2-2 ON LBO towards customer enabled.
- SW2-2 OFF LBO towards customer disabled.

POWER

During normal NIU3 operation maximum power is 125 mA @ -48 Vdc.

Standalone Power

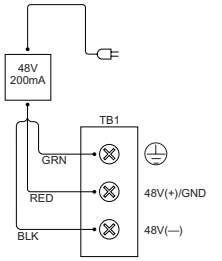
Standalone power is fed through the power portal on the rear panel terminating at TB1, which has spade-lug terminals for local 48V(-), 48V(+)/GND, and Frame Ground.



Optional standalone power is from a standard 120 Vac grounded wall outlet via a separately purchased AC/DC transformer rated at 48 Vdc @ 200 mA.

Shelf Power

The shelf housing operates on local -48 Vdc @ 1.5 amps max. The shelf backplane has spade lug terminals (TB1) for both an "A-side" and "B-side" DC source for reliability, plus Frame Ground. A diode arrangement allows both A-side and B-side DC supplies to load-share with one side picking up the entire load should the other side fail.

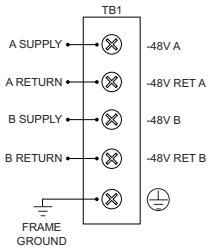


Ground

Standard ground is through the ground wire spade lug terminal on the standalone motherboard TB1, or shelf backplane TB1.

An additional standalone ground is via the ground portal on the rear panel terminating at the motherboard ground lug (J1). J1 and TB1 are electrically connected on the standalone motherboard.

NOTE: J1 is a screw compression terminal requiring a solid copper wire.



After all wiring runs are made, dress and lace wire runs to workmanship standards.

Fuse

The -48 Vdc is fused on each NIU3 card.

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

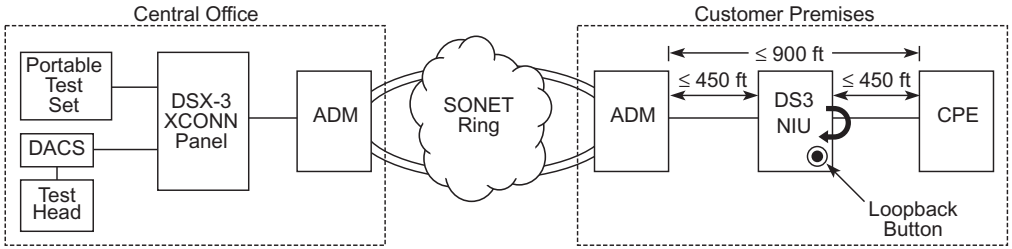
■ For a complete Installation and Maintenance Practice: (877) 457-5007, Document #341. Please have your fax number available. ■

TURN UP

When power is applied to the NIU3 the PWR LED turns ON red while the unit performs a self test during which the other LEDs go through an ON/OFF sequence. If the test passes, the PWR LED turns ON green indicating the NIU3 is online. If the test fails, the PWR LED remains red and the bypass relays maintain data flow around the NIU3.

OPERATION

During data operation the NIU3 is transparent to data flow. If the NIU3 malfunctions, is removed, or loses power, bypass relays on the host circuit board engage and maintain data flow around the NIU3.



Monitoring

Front panel mid-size monitoring jacks provide non-intrusive monitoring access through a high impedance bridging circuit. The monitor level is nominally 21.5 dB below the signal power. The signal from the network is monitored via the NTWK MON jack; the customer signal is monitored via the CUST MON jack.

Loss Of Signal

In the event of loss of signal, the NIU3 provides both a "keep alive" signal and LED notification.

- If there is no signal from the network, the NTWK LED turns ON red and the NIU3 transmits an unframed all ones signal towards the customer.
- If there is no signal from the customer, the CUST LED turns ON red and the NIU3 transmits a framed DS3 idle signal towards the network.

TESTING

Digital testing is accomplished with the T-BERD 310 or equivalent test set. The test device at the CO inserts a DS3 NIU FEAC loop-up code (C-bit parity framing only) towards the NIU3. The NIU3 then performs a network loopback. The loopback is terminated by a DS3 NIU FEAC loop-down code. The loopback command can also be enabled or terminated with the front panel LBK SEL pushbutton.

Pushbutton Loopback

Front panel pushbutton SW1 controls loopback mode as described here:

- To initiate a loopback, depress SW1 for 5 seconds. During this time the LBK LED flashes indicating the loopback is "arming." After 5 seconds the loopback enables, the LED turns ON solid, and SW1 can be released.

If SW1 is released before the arming period expires, the loopback does not initiate. This process decreases the chance of an inadvertent loopback.

- If a loopback is in effect, depressing SW1 will terminate the loopback regardless of the initiation point.

Loopback priority is in response to the most recent local or remote input. The LBK LED shows status.

Timeout

After a loopback is initiated, unless terminated manually, a timeout returns the loop to normal operation after 120 minutes. The timer is reset at any point by sending the FEAC loop-up code.

COMPLIANCE REQUIREMENTS

NEBS	Level 3
ANSI	T1.404
UL	1950

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

NOTE: This product is intended for use in a Restricted Access area in a Type "B" or "E" enclosure only.

PART NUMBERS & CLEI CODES

12-Slot, 19-inch Shelf:	1212078L1
3-Slot, 19-inch Shelf:	1212073L1 (future availability)
Standalone housing:	1212070L1
NIU3:	1212075L1
AC/DC Transformer:	3360DSK48V03 (separate purchase)
CLEI, NIU3:	NCD3EEDA _ _
CLEI, S/A Housing:	NCM5KWVD _ _
CLEI, 12-Slot Shelf:	NCM5RZ0D _ _

WARRANTY

Warranty for Carrier Networks products manufactured by ADTRAN and supplied under Buyer's order for use in the U.S. is ten (10) years. For a complete copy of ADTRAN's U.S. Carrier Networks Equipment Warranty: (877) 457-5007, Document #414.