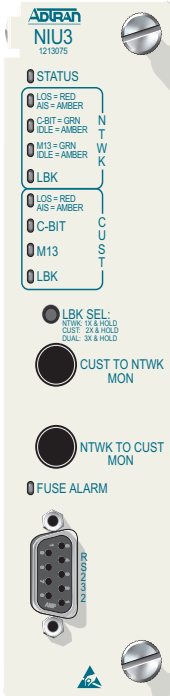


DS3 NIU

P/N: 1213075L2
CLEI: NCD3EG6A_



LED INDICATION

STATUS	<input type="radio"/> Off	No power
	<input checked="" type="radio"/> Green	Normal operation
	<input checked="" type="radio"/> Red	Card malfunction (bypass operation enabled)
NTWK LOS/AIS	<input type="radio"/> Off	DS3 signal present at network interface
	<input checked="" type="radio"/> Red	DS3 signal not present at network interface
	<input checked="" type="radio"/> Amber	AIS present at network interface
NTWK C-BIT	<input type="radio"/> Off	C-Bit framing not detected at network interface
	<input checked="" type="radio"/> Green	C-Bit framing detected at network interface
	<input checked="" type="radio"/> Amber	C-Bit framing detected, Tx idle
NTWK M13	<input type="radio"/> Off	M13 framing not detected at network interface
	<input checked="" type="radio"/> Green	M13 framing detected at network interface
	<input checked="" type="radio"/> Amber	M13 framing detected, Tx idle
NTWK LBK	<input type="radio"/> Off	Loopback toward network disabled, network pattern test disabled
	<input checked="" type="radio"/> Amber	Loopback toward network enabled
	<input checked="" type="radio"/> Flashing	Slow: Network pattern test active Fast: Loopback arming
CUST LOS/AIS	<input type="radio"/> Off	DS3 signal present at customer interface
	<input checked="" type="radio"/> Red	DS3 signal not present at customer interface
	<input checked="" type="radio"/> Amber	AIS present at customer interface
CUST C-BIT	<input type="radio"/> Off	C-Bit framing not detected at customer interface
	<input checked="" type="radio"/> Green	C-Bit framing detected at customer interface
CUST M13	<input type="radio"/> Off	M13 framing not detected at customer interface
	<input checked="" type="radio"/> Green	M13 framing detected at customer interface
CUST LBK	<input type="radio"/> Off	Loopback toward customer disabled, customer pattern test disabled
	<input checked="" type="radio"/> Amber	Loopback toward customer enabled
	<input checked="" type="radio"/> Flashing	Slow: Customer pattern test active Fast: Loopback arming
FUSE ALARM	<input type="radio"/> Off	Normal
	<input checked="" type="radio"/> Red	Circuit board fuse failed

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

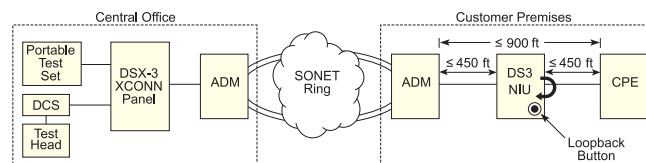
INSTALLATION

The ADTRAN® DS3 Network Interface Unit with Performance Monitoring (NIU3 PM) provides a demarcation and loopback point for DS3 circuits. The NIU3 PM can be deployed in a single slot housing, a 3-slot horizontal shelf, or a 12-slot vertical shelf.

After unpacking the unit, inspect it for damage. If damage is noted, file a claim with the carrier then contact ADTRAN Customer Service. See Warranty information at the bottom of the reverse page.

Transmission Distance

The NIU3 PM can pass both network and customer signals up to 900 feet. During NIU3 bypass operations, if total transmission distance exceeds 900 feet, DS3 data may cease. The NIU3 PM is not intended for use as a repeater. See the operation diagram below for maximum recommended transmission distance.



Network and Customer Connections, Power & Fuse

Each housing has four rear panel BNC connectors for each NIU3 PM: two (IN/OUT) for customer receive/transmit, and two (IN/OUT) for network receive/transmit. The NIU3 PM operates on local -48 VDC or ±24 VDC. During normal operation, maximum current is 125 mA from nominal -48 VDC or 250 mA from nominal ±24 VDC. Power is fused on each NIU3 PM card.

TURNUP

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

OPERATION

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

Monitoring

Front panel monitoring jacks provide nonintrusive access through a high-impedance bridging circuit. The monitor level is nominally 21.5 dB below the signal power. The signal being transmitted to the network is monitored via the CUST TO NTWK MON jack; the signal being transmitted to the customer is monitored via the NTWK TO CUST MON jack.

Loss of Signal

During a loss of signal condition, the NIU3 PM provides both a “keep alive” signal and LED notification.

- ◆ If there is no signal from the network, the **NTWK LOS/AIS** LED illuminates red, and the NIU3 PM transmits an unframed all-ones signal toward the customer, while simultaneously transmitting RAI towards the network.
- ◆ If there is no signal from the customer, the **CUST LOS/AIS** LED illuminates red, and the NIU3 PM transmits the keep-alive signal selected on the Provisioning terminal screen. This signal is transmitted toward the network.

Loss of Framing

- ◆ If either **NTWK** or **CUST C-BIT** and **M13** LEDs are both off, the associated network or customer signal is unframed.
- ◆ If the NIU3 PM cannot detect framing in the signal from the network, the NIU3 PM transparently passes unframed data towards the customer and RAI back toward the network.
- ◆ If the NIU3 PM cannot detect framing in the signal from the customer, the NIU3 PM transmits AIS-CI toward the network.
- ◆ In the event that data transmitted through the circuit is intended to be unframed, the AIS/RAI response to loss of framing can be disabled via the Provisioning terminal screen. If the AIS/RAI response is disabled, the NIU3 PM will transparently pass unframed data from the network to the customer and vice-versa.

TESTING

The NIU3 PM is compatible with standard test equipment. Digital testing is accomplished with a T-Berd 310 or equivalent. The test device at the CO inserts a DS3 NIU FEAC loop up code (C-Bit parity framing only) toward the NIU3 PM. The NIU3 PM then performs a network loopback. The loopback is terminated by a DS3 NIU FEAC loop down code. Network and customer loopbacks can also be enabled or terminated with the front panel **LBK SEL** pushbutton or via the craft interface.

In-band Test Codes

Remote testing can also be conducted using in-band test codes. The CO test device inserts the arming code 1011100 for 5 seconds. After 5 seconds, the test device has 20 seconds to transmit one of the following test identifier codes:





DS3 NIU with Performance Monitoring

PRICING AND AVAILABILITY 800.827.0807
 TECH SUPPORT 800.726.8663
 RETURN FOR REPAIR 256.963.8722
 www.adtran.com
 61213075L2-22E

Identifier Code	Hex	Test ID	Identifier Code	Hex	Test ID		
11010011	11010011	D3D3h	Loopback	11010111	01000001	D741h	Blue
00101110	00100011	2E23h	2^23-1	00101110	00100000	2E20h	QRSS
11010111	01000010	D742h	Idle	11010111	01000011	D743h	User Defined

The first code initiates a loopback at the customer interface in the network direction. The remaining codes send the associated test pattern in both network and customer directions simultaneously. To deactivate a loopback or test pattern, send 110110. NIU test patterns are framed according to framing of the incoming signal at the NIU NTWK interface at the moment an NIU in-band test pattern is activated. The user defined test pattern is set to the last test pattern programmed on the NIU Loopbacks and Test screen.

PUSHBUTTON LOOPBACK

Front panel **LBK SEL** pushbutton (SW1) controls loopback mode as described here:

- ◆ To initiate a network loopback, press **LBK SEL** once and hold for 5 seconds. The **NTWK LBK** LED flashes rapidly, indicating the network loopback is “arming.” After 5 seconds, the network loopback enables, the **NTWK LBK** LED illuminates solid amber, and SW1 can be released.
- ◆ To initiate a customer loopback, press SW1 twice and hold for 5 seconds. The **CUST LBK** LED flashes rapidly, indicating the customer loopback is “arming.” After 5 seconds, the customer loopback enables, the **CUST LBK** LED illuminates solid amber, and SW1 can be released.
- ◆ To initiate a dual (bidirectional) loopback, press SW1 three times and hold for 5 seconds. During this time, the **NTWK LBK** and **CUST LBK** LEDs flash rapidly, indicating the dual loopback is “arming.” After 5 seconds, the dual loopback enables, the **NTWK LBK** and **CUST LBK** LEDs illuminate solid amber, and SW1 can be released.

NOTE: If SW1 is released before the arming period expires, the loopback does not initiate, preventing an inadvertent loopback.

- ◆ If a loopback is in effect, pressing SW1 disables the loopback, regardless of initiation point.

Time Out

After a loopback or pattern test is initiated, unless terminated manually, a time out returns the loop to normal operation after a selected time of 20 minutes, 60 minutes, 120 minutes, or 24 hours. The timer is reset at any point by sending the FEAC loop up code. The test time out can be set or disabled through the craft interface. Pressing the **LBK SEL** button during a test releases the loopback and returns the unit to normal operation.

CONTROL PORT OPERATION

The NIU3 PM front panel DB-9 provides an RS-232 interface for connection to a controlling terminal. To initiate a terminal session, insert a DB-9 jack into the RS-232. The terminal interface operates at data rates from 1.2 kbps to 19.2 kbps. The asynchronous data format is fixed at 8 data bits, no parity, and 1 stop bit. The supported terminal type is VT100 or compatible.

Terminal Session

After the NIU3 PM initializes and self tests are completed, terminal sessions provide access to screen menus for provisioning, monitoring, testing, or obtaining performance or event history. Terminal screens are password protected with “ADTRAN” as the password. The **DS3 NIU3 MENU TREE** identifies the upper level menu screens that are available (not all are depicted).

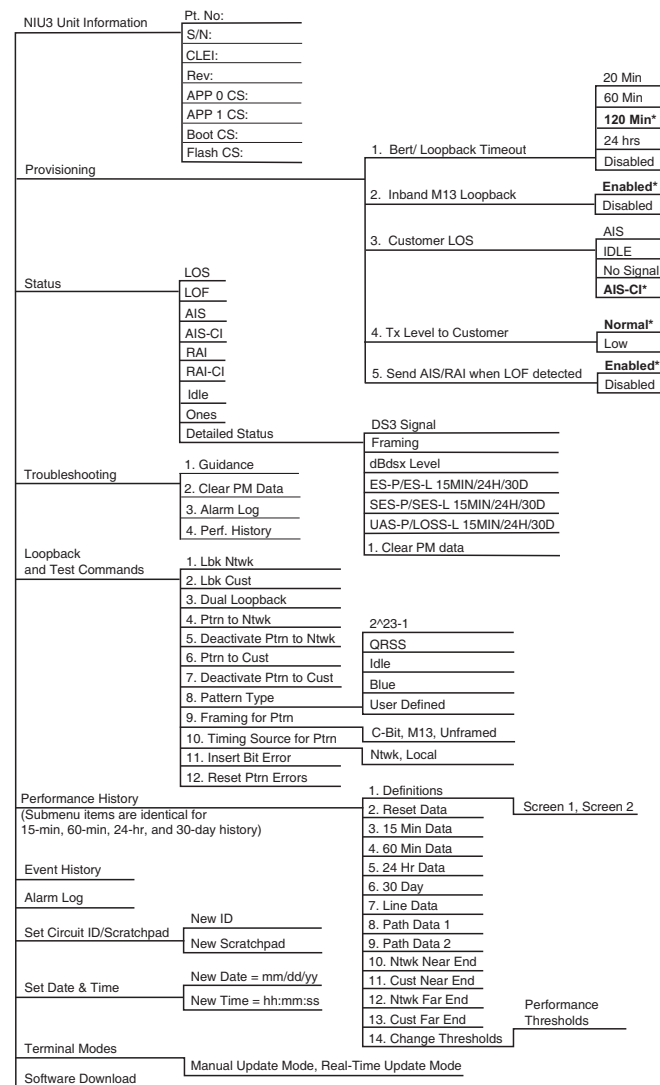
COMPLIANCE

This product is compliant with: NEBS-Level 3, ANSI-T1.404, and UL 60950. 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. This product is intended for use in a restricted access area in a Type “B” or “E” enclosure only.

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

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by ADTRAN could void the user’s authority to operate this equipment.

DS3 NIU3 MENU TREE



*Factory Default Settings in Bold text

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.