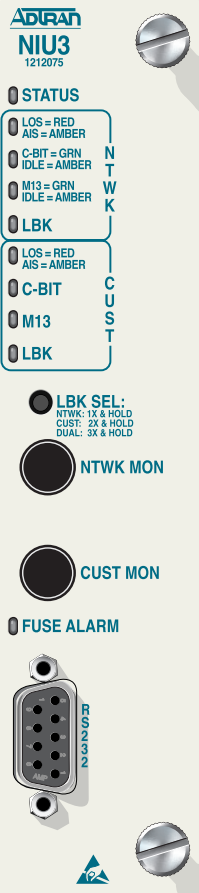


### DS3 NIU3

CLEI: NCD3EGNA\_



### GENERAL

This job aid is used in association with the standalone housing job aid (P/N 61212070L1-22), 12-slot shelf job aid (P/N 61212078L1-22), or 3-slot shelf job aid (P/N 61212073L1-22).

### LED INDICATION

STATUS	Color/State	Description
STATUS	Off	No power.
	Green	Normal operation.
	Red	Card malfunction.
NTWK LOS/AIS	Off	DS3 signal present at network interface.
	Amber	AIS (Alarm Indication Signal) present at network interface.
	Red	DS3 signal not present at network interface.
NTWK C-BIT	Off	C-Bit framing not detected at network interface.
	Green	C-Bit framing present at network interface.
	Amber	C-Bit framing present, Tx idle.
NTWK M13	Off	M13 framing not detected at network interface.
	Green	M13 framing present at network interface.
	Amber	M13 framing present, Tx idle.
NTWK LBK	Off	Loopback toward network disabled, network pattern test disabled.
	Amber	Loopback toward network enabled.
	Flashing	Slow: Network pattern test active. Fast: Loopback arming.
CUST LOS/AIS	Off	DS3 signal present at customer interface.
	Amber	AIS present at customer interface.
	Red	No DS3 signal at customer interface.
CUST C-BIT	Off	C-Bit framing not detected at customer interface.
	Green	C-Bit framing present at customer interface.
CUST M13	Off	M13 framing not detected at customer interface.
	Green	M13 framing present at customer interface.
CUST LBK	Off	Loopback toward customer disabled, customer pattern test disabled.
	Amber	Loopback toward customer enabled.
	Flashing	Slow: Customer pattern test active. Fast: Loopback arming.
FUSE ALARM	Off	Normal.
	Red	Circuit board fuse failed.

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

### INSTALLATION

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

See Note in *Compliance* section. The DS3 Network Interface Unit with Performance Monitoring (NIU3 PM) provides a demarcation and loopback point for DS3 circuits. The NIU3 PM can deploy as a single unit, a 3-unit horizontal shelf, or a 12-unit vertical shelf.

### 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 DS3 NIU3 is not intended for use as a repeater. See the Operation Diagram to the right 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 power is 125mA @ -48 VDC or 250 mA @ -24 VDC. Power is fused on each NIU3 PM card.

### TURNUP

When inserted into a host with power, the STATUS LED turns On red while the NIU3 PM performs a self-test. If the self-test passes, the STATUS LED turns On 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 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 NTWK MON jack; the signal being transmitted to the customer is monitored via the CUST MON jack.

### Loss of Signal

During a loss of signal defect, 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 turns On red, and the NIU3 PM transmits an unframed all-ones signal toward the customer.
- If there is no signal from the customer, the CUST LOS/AIS LED turns On 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.

### TESTING

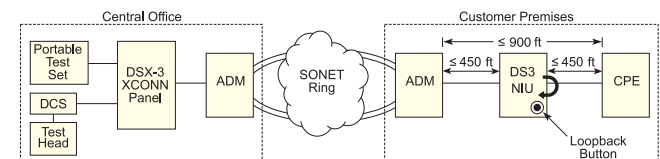
The NIU3 PM is compatible with standard test equipment. Digital testing is accomplished with a T-Berd 310 or equivalent. The test device at the CO inserts a DS3 NIU FEAC loop up code (C-Bit parity framing only) toward the NIU3 PM. The NIU3 PM then performs a network loopback. The loopback is terminated 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:

- 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 11010110. 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 SW1 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 turns On solid, 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 turns On solid, 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 turn On solid, and SW1 can be released.

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 min, 60 min, 120 min, or 24 hrs. 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.

**NOTE:** When conducting a terminal session, always select VT100 mode in the Settings menu prior to making the craft connection.

### Terminal Session

The NIU3 PM synchronizes upon insertion in a powered-up shelf or housing. After synchronization, 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 adjacent menu tree identifies the menu screens (not all are depicted).

**NOTE:** If using a personal computer with terminal emulation capability, disable all power saving programs. Otherwise, communication between the PC and the NIU3 PM may be disrupted, resulting in misplaced characters or screen time outs.

### COMPLIANCE

This product is compliant with: ■ NEBS-Level 3 ■ ANSI-T1.404 ■ UL 60950

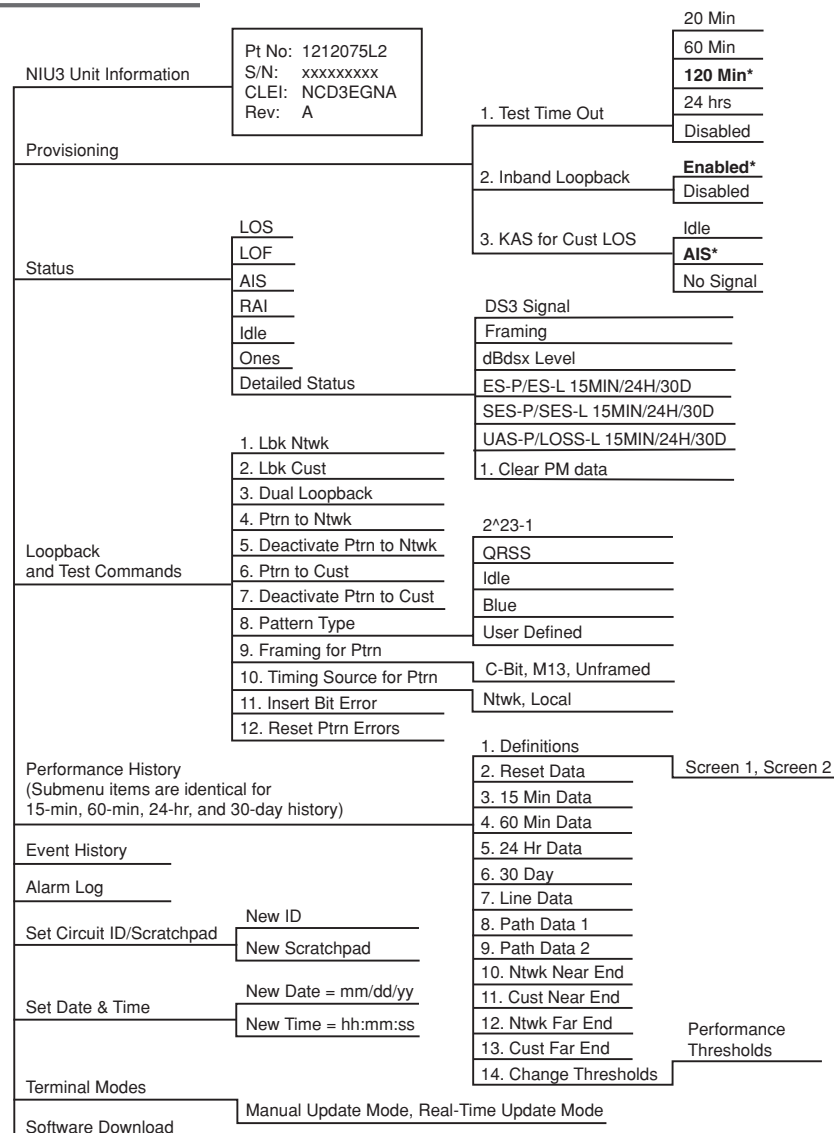
Code	Input	Output
Power Code (PC)	F	C
Telecommunication Code (TC)	-	-
Installation Code (IC)	A	-

**NOTE:** This product is intended for use in a restricted access area in a Type “B” or “E” enclosure only.

### PART NUMBERS AND CLEI CODES

Description	Part Number	CLEI
■ 12-slot, 19-in. shelf:	1212078L1	NCM5RZ0D
■ 3-slot, 19-in. shelf:	1212073L1	NCM5K4ZD
■ Standalone Housing:	1212070L1	NCM5KWVD
■ NIU3 PM:	1212075L2	NCD3EGNA
■ AC/DC Transformer:	1212074L1 (separate purchase)	

### 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 at [www.adtran.com/warranty](http://www.adtran.com/warranty). U.S. and Canada customer Faxback: 877-457-5007, Document 414.