



6540 Front Panel



6540 Rear Panel

## DESCRIPTION

The AC Powered 6540 SHDSL 2-Wire/4-Wire NTU (P/N 1230001E1) functions as an interface between the SHDSL network and the Data Terminal Equipment (DTE).

The 6540 supports applications such as LAN-to-LAN bridging, Frame Relay circuit, and PABX termination.

The 6540 is designed to be used either as a remote unit to the ADTRAN Total Access® 3000 multiservice platform, or as a pair of units in a point-to-point limited distance campus configuration, with one 6540 configured to "LT" mode.

## FEATURES

The 6540 supports the following features:

- Housed in a standalone plastic case
- Provides four front panel recessed pushbuttons, and eight front panel LED indicators
- Provides rear panel SHDSL, G.703, and/or Nx64K ports, and a local management port
- Provides a rear panel connection for local AC power
- Provides bad splice protection using the ADTRAN proprietary Runtime TScan™ 2.0 splice protection feature (for more information on this feature and how to locally manage TScan, refer to the *SHDSL NTU, 2-Wire/4-Wire Product Series Installation and Maintenance Guide*, P/N 61230001E1-5).

## LED INDICATORS

Label	Status	Description
SHDSL	○ Off	Unit is powered off
	● Green	Port is trained; no active alarms
	● Yellow	Port is trained with a minor active alarm <sup>(1)</sup>
	● Red	Port is attempting to or is trained with a major alarm <sup>(2)</sup>

Label	Status	Description
G.703	○ Off	Port is not active
	● Green	Active Port with no active alarm
	● Yellow	Active Port with a minor alarm <sup>(3)</sup>
	● Red	Active Port with a major alarm <sup>(4)</sup>
Nx64K	○ Off	Port is not active
	● Green	Active Port with no active alarm
	● Red	Active Port with an active alarm condition <sup>(5)</sup>
RTS/C	○ Off	Nx64K port is not active or when active, V.35/V.36 "Request To Send" or X.21 "Control" line from the DTE is off
	● Green	V.35/V.36 "Request To Send" or X.21 "Control" line from the DTE is on
RLSD/I	○ Off	Nx64K port is inactive or when active, V.35/V.36 "Receive Line Signal Detector" and X.21 "Indication" control line from the NTU is off.
	● Green	V.35/V.36 "Receive Line Signal Detector" or X.21 "Indication" control line from the NTU (DCE) is on
LLOOP	○ Off	Local Loop is not active
	● Yellow	Active Local Loopback on the selected port
	● Red	Active Local Loop on one or more ports or services (when no port is selected)
RLOOP	○ Off	Remote Loop is not active
	● Yellow	Active Remote Loopback on the selected port (when determined via established EOC)
	● Red	Active Remote Loop on one or more ports or services (when no port is selected)
BERT	○ Off	BERT is not active
	● Green	Active BERT and the test pattern detector is synchronized with no received bit errors
	● Yellow	Active BERT and one or more test pattern bit errors have been received
	● Red	Active BERT but the test pattern detector is not synchronized

1. Minor SHDSL port alarms: CRC errors, Loop Attenuation Threshold Alarm, SNR Margin Threshold Alarm, Segment Anomaly, and any ES, SES, UAS, CVC, and LOSWS 15-Minute Threshold Alarm
2. Major SHDSL port alarms: LOS, LOSW, or Segment Defect
3. Minor G.703 port alarms: Rx RAI, Frame Slip, CRC-4 errors, LBER, and any ES, SES, UAS, and CVC 15-Minute Threshold Alarm
4. Major G.703 port alarms: LOS, LOF, LOMF, Rx AIS, or HBER
5. Nx64K port alarms: Clock Slip, Loss of External Clock, FIFO Underflow/Overflow, and Inactivity Alarm

## PUSH BUTTONS

Push Button	Description
<b>PORT SELECT</b>	Press the <b>PORT SELECT</b> button to select the active port. Selection choices cycle through the following order: No Port, Nx64k, G.703, SHDSL.
<b>LOCAL LOOP/ ERR INJ</b>	If a port is selected, and a Bit Error Rate Test (BERT) is not in progress, press the <b>LOCAL LOOP/ERR INJ</b> button to initiate or terminate a local loop on the selected port. If a BERT is in progress, press the button to inject a single bit error.
<b>REMOTE LOOP</b>	If the SHDSL port is selected, press the <b>REMOTE LOOP</b> button to place or remove a remote loop on the port by sending a EOC request message to the LTU (or NTU in campus mode). If the Nx64K port or G.703 port (with only one service defined) is selected, press this button to place or remove a remote loop on the selected port's single data service by sending respective inband loop up or loop down patterns to the far end (in the associated data service timeslots).
<b>BERT</b>	If a port is selected and there are no local loops, press the <b>BERT</b> button to start or stop a BERT on the selected port.

## MAINTENANCE

The 6540 does not require routine hardware maintenance for normal operation. Do not attempt repairs in the field. Repair services may be obtained by returning the defective unit to ADTRAN. Refer to the warranty for further information. Field support for software is provided through upgrade facilities.

## SPECIFICATIONS

Specifications for the 6540 are as follows:

- Electrical
  - ◆ Operating Voltage: 100 - 240 VAC @ 50/60 Hz
  - ◆ Typical Current and Power Consumption: 95 mA RMS, 5.5 W @ 115 VAC 60Hz, 60 mA RMS, 5.3 W @ 220 - 240 VAC 50Hz
  - ◆ Maximum Current Draw: 110 mA RMS @ 100 - 240 VAC
  - ◆ Maximum Power Consumption: 5.6 watts @ 100 VAC
- Environmental
  - ◆ Operational Temperature Range: -5°C to +55°C
  - ◆ Storage Temperature Range: -40°C to +85°C
  - ◆ Relative Humidity: up to 95%, noncondensing
- Physical
  - ◆ Height: 2.215 inches (5.63 cm)
  - ◆ Width: 9.25 inches (23.5 cm)
  - ◆ Depth: 6.625 inches (16.8 cm)
  - ◆ Weight: Less than 1 pound (0.45 kg)

## INDUSTRY STANDARDS COMPLIANCE

The SHDSL 2-Wire/4-Wire NTU interfaces adhere to these industry standards, either partially or in full:

- SHDSL: ITU-T G.991.2 (12/03 and 2003 amendments) and G.994.1 (05/03)
- G.703: ITU-T G.703 (10/98), G.704 (10/98), G.706 (4/91), G.732 (11/88), G.775 (10/98), G.784 (1/94), G.797 (3/96), G.821 (8/96), G.823 (03/93), and G.826 (2/99)
- Nx64K: ITU-T X.21 (09/92), V.35 (10/84), and V.36 (11/88); and ISO 2593 (1984), 4903 (1991), and 4902 (1980)

## SAFETY AND REGULATORY COMPLIANCE

Refer to the Safety and Regulatory Compliance Notice for this product (P/N 61230001E1-17) for detailed safety and regulatory information.

Consultez l'avis sur la sécurité et la conformité à la réglementation pour ce produit (61230001E1-17) pour obtenir des renseignements détaillés sur la sécurité et la réglementation.

Ausführliche Sicherheits- und regulatorische Informationen sind in der Konformitätserklärung zur Sicherheit und Einhaltung von Normen zu diesem Produkt (61230001E1-17) aufgeführt.

# MENU TREE

1. Unit Information	1. LTU	1. Unit Mode	1. NT
	2. NTU	2. Cross-Connect Map	2. LT
		3. Clock Source	1. Internal Clock
		4. Circuit ID	2. Nx64 ET(Circuit 113)X
		5. Rate and Time	3. G.703 Rx Clock
		6. Remote Firmware Defaults	4. SHDSL Rx Clock
		7. Upgrade Firmware	
		8. Local Management	1. Disabled
		9. Change Password	2. Enabled
2. Provisioning	1. Interface Mode	1. Interface Type Auto Detection	1. Disabled
	2. Payload Rate (kbps) *	2. Interface Type Manual Select	2. Enabled
	3. SNR Margin Alarm Threshold (dB)	3. Inactivity Alarm Delay (Secs)	1. X.21
	4. Loop Attenuation Alarm Threshold (dB)	4. Tx Clock Source	2. V.36
	5. Outage Auto-Retrain	5. Tx Clock Polarity	3. V.36
	6. PM Thresholds	6. X.21 C Mode	0. Disabled
	1. ES 15-Minute Alarm Threshold	7. X.21 I Mode	1. 100 Alarm Threshold
	2. SES 15-Minute Alarm Threshold	8. V.35V/36 RTS (Circuit 105)	1. From DGE TC(Circuit 114)
	3. UAS 15-Minute Alarm Threshold	9. V.35V/36 RTS (Circuit 106)	2. From DTE ET(Circuit 113)
	4. CVC 15-Minute Alarm Threshold	10. V.35V/36 RTS to CTS Delay (ms)	1. Normal
	5. LOSWS 15-Minute Alarm Threshold	11. V.35V/36 DSR (Circuit 107)	2. Inverted
	6. OS 15-Minute Alarm Threshold	12. V.35V/36 DTR (Circuit 108/2)	3. Auto
3. G.703 Options	1. ISDN-PRA V3	13. CVC 15-Minute Alarm Threshold	1. Permanent On
	2. G.704 CRC-4 Multiframe		2. DTE Driven
	3. Timeslot Idle Pattern		1. Permanent On
	4. Spare Bits Insertion to Span		2. Sync Mode
	5. Spare Bits Pattern to Span		1. Permanent On
	6. Spare Bits Insertion		2. DTE Driven
	7. Spare Bits Pattern		1. Permanent Off
	8. RA Generation		2. Permanent On
	9. E-bit Generation		1. Permanent On
	10. ES 15-Minute Alarm Threshold		2. DTE Driven
	11. SES 15-Minute Alarm Threshold		1. Permanent Off
	12. UAS 15-Minute Alarm Threshold		2. Permanent On
	13. CVC 15-Minute Alarm Threshold		1. Permanent On
4. Nx64K Options			2. DTE Driven
			1. Permanent Off
			2. Permanent On
			3. Sync Mode
5. Test Options	1. Loopback Types		
	2. Inband Loopback Options		
	3. Loopback Timeout (Min)		
	4. BERT Pattern		
	5. BERT Pattern Polarity		
	6. Pushbuttons (All)		
	7. SHDSL Port Select Pushbuttons		
	8. V.35V/36 RL (Circuit 140)		
	9. V.35V/36 LL (Circuit 141)		
	10. V.35V/36 TL (Circuit 142)		
3. Status	1. SHDSL Port		
	2. G.703 Port		
	3. G.703 Services		
	4. Nx64K Port		
	5. Reset All Status		
4. Test			
5. Performance History			
6. TSCAN	1. Restart Bad Splice Detector		
	2. 24 Hour Counts		
7. Terminal Mode	Local Management		
	Remote Virtual Terminal Management		

\* 2-wire mode: 192 kbps to 2.304 Mbps (N x 64 kbps, where N=3 to 36)  
 4-wire mode: 384 kbps to 4.608 Mbps (N x 64 kbps, where N=even numbers, 6 to 72)



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For more information, refer to the Installation and Maintenance Guide (P/N 61230001E1-5) available online at [www.adtran.com](http://www.adtran.com).

**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](http://www.adtran.com/warranty).

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