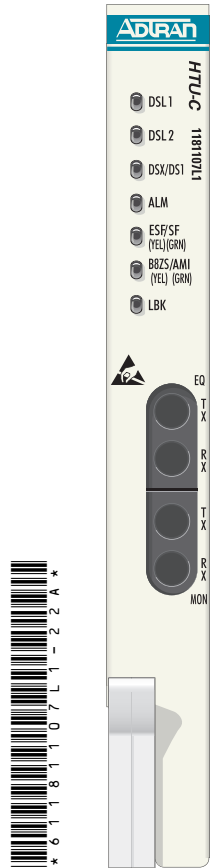


## Total Access 3000/3010 HTU-C

P/N: 1181107L1  
CLEI: T113AAEA\_ \_



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### DESCRIPTION

The Total Access 3000/3010 High-bit rate Digital Subscriber Line (HDSL) Transceiver Unit for Central Office (HTU-C, P/N 1181107L1) is used to deploy an HDSL T1 circuit using 4-wire metallic facilities. The HTU-C works with multiple list versions of the HDSL Unit Remote end (HTU-R) and HDSL Range Extenders (HRE).

### MENU ITEMS ACCESSIBLE VIA THE SCU

Local or remote craft port access to the Total Access 3000 HTU-C can be provisioned and tested through the System Controller Unit (SCU). When deployed with SCU 1181015L1 or 1181017L1, the HTU-C can be provisioned via the SCU's faceplate Four Character Display. Refer to the *Total Access 3000 System Controller Unit (SCU) Installation and Maintenance Practice* (P/N 61181017L1-5) for additional information.

Connect a terminal emulator via the RS-232 (DB-9) connector on the faceplate of the SCU. The terminal must be VT100 or compatible and defaulted to 9600 bps, 8 bit, no parity, 1 stop bit. At the LOGON screen, enter the system User Name and Password. Refer to the appropriate SCU Job Aid for the default PASSWORD. Access the desired HRTU-C by selecting the ACCESS MODULES from the Total Access Menu, and then select the corresponding slot number.

**NOTE:** When using a PC with terminal software, disable any power saving programs.

### BANTAM JACKS

#### EQ

This jack provides an intrusive test access point to the data stream as follows:

- ◆ Equipment Jack = To Customer
  - ◆ TX: Replaces the data stream being transmitted to the customer (HDSL Loops)
  - ◆ RX: Accesses the data stream being received from the customer (HDSL Loops)
- ◆ Equipment jack = To Network
  - ◆ TX: Replaces the data being transmitted to the Central Office
  - ◆ RX: Access the data being received from the Central Office

When the HTU-C is in MUX mode, the EQ jack can be configured for "To Network" or "To Customer" (default setting) direction via the Test screen. In DSX mode, this option is not available, and the EQ jack configuration will be "Fixed to Customer."

#### MON

This jack provides nonintrusive tap to monitor characteristics of the DSX signal as follows:

- ◆ TX: Monitors signal being transmitted to the customer (HDSL Loops)
- ◆ RX: Accesses the data being received from the customer (HDSL Loops)

### INSTALLATION AND TURN-UP

After unpacking the unit, inspect it for damage. If damage is noted, file a claim with the carrier and then contact ADTRAN. For more information, refer to the warranty.

**NOTE:** This unit can be provisioned via the RS-232 port or remotely via inband codes.

To avoid confusion with the access module and common module slots, the access module slots start with the fourth slot from the left on the shelf and are numbered "1" through "28" for the Total Access 3000, and "1" through "22" for the Total Access 3010 on the underlying silk-screen. Attempting to install the HTU-C in any other slots other than those listed can damage the module, backplane or both.

To install the HTU-C, perform the following steps:

1. If present, remove the blank panel from the access module slot on the rear of the Total Access 3000/3010 chassis that is intended for the HTU-C.
2. Pull the ejector latch, located on the bottom of the HTU-C front panel, from the closed positions.

3. Hold the HTU-C by the front panel while supporting the bottom edge of the module with the ejector latches opened to engage the chassis edges.
4. Align the module edges to fit in the lower and upper guide grooves for the module.
5. Slide the HTU-C into the access module slot. Apply simultaneous thumb pressure at the top and bottom of the module (to the right of the ejector latches) to ensure that the module is firmly seated against the chassis backplane connector. Secure the HTU-C in place by rotating the ejector latch into the locked position.

After installation is complete, the HTU-C performs a series of initialization and self-tests. Once the series of self-tests are completed, the front panel LEDs reflect the true state of the hardware.

### FRONT PANEL LEDs

Label	Status	Description
DSL1/ DSL2	○ Off	No synchronization of HTU-C and HTU-R on either loop
	● Green	Good signal quality (4 to 9) on Loops 1 and 2
	● Yellow	Signal quality marginal (1 to 3) on Loops 1 and 2
	● Red	Signal quality poor (0) on Loops 1 and 2
	⊛ Flashing	Error detected at HTU-C or HTU-R. The color of the LED, when flashing, indicates loop signal quality.
DSX/DS1	○ Off	Network-side DSX-1 signal not detected or of a format that does not match provisioning of HDSL circuit
	● Green	Network-side DSX-1 signal is present and synchronized with the HTU-C's interface
	★ Green Flashing	Bipolar Violation (BVPV), frame bit error (SF mode), or CRC error (ESF mode) detected at DSX-1 signal
ALM	○ Off	No alarm condition detected
	● Yellow	Remote alarm condition (HTU-C) detected
	● Red	Alarm condition detected either locally (HTU-C), or locally and remotely (HTU-C and HTU-R)
ESF/SF	○ Off	Unit is receiving Unframed data
	● Green	Unit is receiving SF data
	● Yellow	Unit is receiving ESF data
BBZS/AMI	● Green	Unit is receiving AMI coding
	● Yellow	Unit is receiving BZS coding
LBK	○ Off	Unit is not in loopback or armed state
	● Yellow	Local (HTU-C) loopback is active to the network
	★ Yellow Flashing	Loopback arming sequence has been detected; unit is armed (ready for loopback) but not in loopback

### HDSL DEPLOYMENT GUIDE

The HDSL system is designed to provide DS1-based service over loops as follows:

- ◆ Cable pairs must be non-loaded
- ◆ No single bridged tap > 2 kft (0.61 meters)
- ◆ Impulse noises < 50 dB as measured using a 50 kB filter
- ◆ Wideband noise ≤ 31 dBm as measured using a 50 kB filter
- ◆ Pulse attenuation (LOSS on HDSL current system status screen) ≤ 30 dB
- ◆ Total bridged tap < 2.5 kft (0.76 meters)
- ◆ 196 kHz insertion loss < 35 dB
- ◆ Maximum loop resistance is 800 ohms

### OPTION SETTINGS

The table on the following page lists options that are available when configuring the HTU-C. However, some options are pre-set and dependent upon the System Controller Unit (SCU) being used. Refer the appropriate *SCU Installation and Maintenance Practice* when setting options.

Description	Settings	Default
DSX-1 Line Buildout (in feet)	0-133; 133-266; 266-399; 399- 533; 533-655	0-133
Line Code	AMI; B8ZS	B8ZS
Framing	Unframed; SF; ESF; Auto; Forced Conversion	Auto
NIU Loopback	Enabled; Disabled	Enabled
New England 1:6 Loopback	Enabled; Disabled	Disabled
Loopback Timeout	None; 60 Min; 120 Min	None
Customer Loss Response	Loopback; AIS; CDI	AIS
PRM Mode	None; NPRM; SPRM	None
DS1 Tx Level	0; -15 dB	0 dB
Span Power	Enabled; Disabled	Enabled
Network Source	DSX; MUX A; MUX B; Auto MUX	DSX
Card Service State	In Service; Out of Service-Unassigned; Out of Service-Maintenance	Out of Service-Unassigned
DSX1/DS1 External Alarm	Enabled; Disabled	Disabled

Note: The above provisioning options are based on 7<sup>th</sup> Generation HTU-R, 1247024L1 or 1247026L1. Option settings for previous HTU-Rs, 1246026L4 and/or 1246026L6, that are either not supported by the HTU-R, or are hardware options and cannot be provisioned from the HTU-C menu, will display a asterisk (\*), and options that follow will be renumbered sequentially.

### FRONT PANEL BANTAM JACK TEST ACCESS

The BERT tester should be in Monitor mode for nonintrusive tests and Terminate mode for intrusive tests. Use the Provisioning screen to configure the HTU-C for DSX or MUX-fed network source. Use the Test screen to configure EQ jacks for Customer or Network direction. (The Network direction is only available when the HTU-C is MUX-fed.) The BERT TX is only used in intrusive tests. Refer to the *Total Access 3000/3010 HTU-C Installation and Maintenance Practice* (P/N 61181107L1-5) for more detailed information.

- ◆ Nonintrusive DSX to Customer
  - ◆ Connect HTU-C TX MON to BERT RX
  - ◆ Allows access to DSX signal going to Customer
- ◆ Nonintrusive DSX from Customer
  - ◆ Connect HTU-C RX MON to BERT RX
  - ◆ Allows access to DSX signal coming from the Customer
- ◆ Intrusive DSX to Customer
  - ◆ Connect HTU-C TX EX to BERT TX and HTU-C RX EQ to BERT RX
  - ◆ Allows access to signal going to Customer
- ◆ Nonintrusive MUX to Customer
  - ◆ Connect HTU-C TX MON to BERT RX
  - ◆ Allows access to signal going to Customer
- ◆ Intrusive MUX to Network
  - ◆ From the Test screen (Option 5 from the HDSL Main Menu), verify Equipment Jack = Network
  - ◆ Connect HTU-C TX to BERT TX and HTU-C RX EQ to BERT RX
  - ◆ Allows direct access to signal going to and from the Network
- ◆ Intrusive MUX to Customer
  - ◆ Verify Equipment Jack = To Customer
  - ◆ HTU-C TX EQ to BERT TX and HTU-C RX EQ to BERT RX
  - ◆ Allows direct access to signal going to and from the Customer

### TROUBLESHOOTING

Use the Status Screen to view the current condition of the HTU-C and signal.

Shelf: 1 Slot: 3 Total Access System				MM/DD/YY hh:mm:ss	
Unacknowledged Alarms: None				Unit Number: 1	
Circuit ID:					
Loop #1 <Network>	Loop #2	Network Source ->	DSX	Loop #1 <Customer>	Loop #2
HTU-C			HTU-R		
01(01) dB	00(00) dB	<- LOSS CUR(MAX) ->		00(01) dB	01(01) dB
Yes	Yes	<- Sync ->		Yes	Yes
000/00000	000/00000	<- ES 15M/24H ->		000/00000	000/00000
000/00000	000/00000	<- SES 15M/24H ->		000/00000	000/00000
000/00000	000/00000	<- UAS 15M/24H ->		000/00000	000/00000
Loopbacks Inactive			Loopbacks Inactive		
HTU-C MARGIN (dB)	DSX-1		DS1	HTU-R MARGIN (dB)	
CUR/MIN/MAX			CUR/MIN/MAX		
LP1 20/20/20	ESF <- Frame ->		ESF	LP1 20/20/20	
LP2 20/20/20	B8ZS <- Code ->		B8ZS	LP2 20/20/20	
	0-133 <- LBO ->		0 dB		
	N/A <- NIU ->		YES		
	00000 <- BPV ->		00000		
	00000 <- ES ->		00000		
	00000 <- SES ->		00000		
	00000 <- UAS ->		00000		
	None <- Alarms ->		None		

Enter Command : \_ "Z"- zero regs, "X"- restart MIN/MAX, "?" - Help Screen

The following are indications that a problem can exist with HTU-C or signal quality:

- ◆ Is LOSS (pulse attenuation) >30 dB?
- ◆ Are there any errors counting on the ES, SES or UAS registers?
- ◆ Is the signal quality fluctuating (graphical meter indicators bouncing up and down)? This would occur when real time mode is active.
- ◆ If the signal quality is **not** fluctuating, is it unequal between the loops?
- ◆ Is the current signal quality indication (uppermost "X" on the meter) more than 1 dB below the maximum?

If these conditions are not present, the circuit should provide quality service. If any of these conditions exist, a cable problem or excessive signal loss is probable, and more testing should be done. These conditions can also reflect intermittent cable faults or excessive noise impairments. If intermittent faults or noise impairment are suspected, select the Performance Monitoring option from the HDSL Main Menu and review the historical performance data on the Performance Monitoring Screen.

### Circuit Parameters

Under normal operations, the following conditions apply:

- ◆ LOSS < 30 dB
- ◆ Signal margin of 3 dB or higher, no fluctuation and equal on both loops
- ◆ All HDSL Deployment Guidelines are met

### OPERATIONAL SPECIFICATIONS

For a complete list of these specifications, refer to the *Total Access 3000/3010 HTU-C Installation and Maintenance Practice* (P/N 61181107L1-5) for more information.

### COMPLIANCE

Refer to the *Total Access 3000/3010 HTU-C Compliance Notice* (P/N 61181107L1-17).

**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).