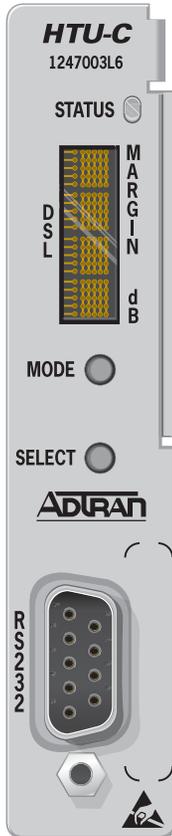


HDSL DDM+ HTU-C

P/N: 1247003L6
CLEI: T113AANA_



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

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FRONT PANEL LED

Label	Status	Description
STATUS	● Green	Normal operation
	* Green Flashing	ES, SES, or BPV detected
	● Yellow	Loopbacks active
	* Yellow Flashing	In-band loopbacks armed
	● Red	Alarm on any HTU-C loops, HRE loops, DSX or DS1 interface
	* Red Flashing	Signal margin of 0 or No Sync on the HDSL loops

FOUR CHARACTER DISPLAY (FCD) OPERATION

Pushbuttons

MODE: Press to cycle through FCD modes listed in table below.

SELECT: Press to select desired option.

FCD Modes

Mode	Display	Function
Status	STAT	HDSL loop margin, displays 1=xx or 2=xx, where xx=loop margin
Display Off	BLANK	Result after five minutes of no activity
View	VIEW	View current option settings without changing
Default	DFLT	Sets all factory defaults
Loopback	LPBK	Select and execute HDSL circuit loopbacks

Status/Alarm Display (STAT)

Message	Condition
HER1	CRC error detected on HDSL Loop 1
HER2	CRC error detected on HDSL Loop 2
LERR	Frame bit error (SF Mode), or CRC error (ESF Mode) detected locally at DSX-1 of the HTU-C
RERR	Frame bit error (SF Mode), or CRC error (ESF Mode) detected remotely at DS-1 of the HTU-R
LBPV	Bipolar Violation (BPV) detected locally at DSX-1 of the HTU-C
RBPV	BPV detected remotely at DS1 of the HTU-R
LOS1/LOS2	No synchronization of HTU-C and HTU-R on Loop 1 / Loop 2
LLOS	DSX signal is absent from the network interface or is of a format which does not match the provisioning of the HDSL circuit
RLOS	DS1 signal is absent from the network interface or is of a format which does not match the provisioning of the HDSL circuit
ARM	The loopback arming sequence has been detected

Option Settings Display (VIEW)

Message	Description	Settings	Default
LBO	DSX Line Build Out	0, 133, 266, 399, 533	0
CODE	Line Code	AMI, B8ZS	B8ZS
FRMG	DSX Framing	AUTO, UNF	UNF
NLBK	NIU Loopback	EN, DIS	EN
LBTO	Loopback Timeout	0, 1HR, 2HR, 8HR, 24HR	1HR
CLOS	Customer Loss Response	AIS, LPBK	AIS
TXLV	DS1 Transmit Level	0 dB, -15 dB	0 dB
PRM	Performance Reporting Messages	NPRM, SPRM, NONE, AUTO	AUTO
SPWR	Span Power	EN, DIS	EN

NOTE: The DDM+ HTU-C can only be provisioned via the RS-232 port or remotely via inband codes. The front panel can not be used to provision the DDM+ HTU-C.

Loopback Options Display (LPBK)

Mode	Select	Loopback State	Loopback Description
LPBK	HTUC	NET	Network loopback at HTU-C
		CST	Customer loopback at HTU-C
		NONE	No active loopback
	HTUR	BLB	Bidirectional loopback at HTU-R
		NET	Network loopback at HTU-R
		CST	Customer loopback at HTU-R
	HRE1	NET	Network loopback at HRE1
		CST	Customer loopback at HRE1
		NONE	No active loopback
	HRE2	NET	Network loopback at HRE2
		CST	Customer loopback at HRE2
		NONE	No active loopback

RS-232 DB-9 Connector

Used to access performance monitoring data, perform loopbacks, and provision units via VT100 emulation applications, such as Hyperterminal-Private Edition. There are two terminal emulation modes: Manual Update and Real-Time Update. CTRL+T toggles between modes.

Manual Update Mode: Press the spacebar three times to manually update the screen. Print screen and log file commands are available in this mode.

Real-Time Mode: The default mode. Print screen and log file commands not available. Cursor placement and screen highlighting are enabled.

Provision terminal port for VT100: Data Rate = 19.2 kbps; Asynchronous Data Format=eight data bits; no parity (none); one stop bit. When using a PC with terminal emulation software, be sure to disable any power saving programs.

COMPLIANCE

For detailed compliance information, refer to the *HDSL DDM+ Transceiver Unit for Central Offices Compliance Notice* (P/N 61247003L6-17).

INSTALLATION

After unpacking the unit, inspect it for damage. If damage is noted, file a claim with the carrier and then contact ADTRAN. Refer to Warranty.

TURN-UP GUIDE

1. Install HTU-C and HTU-R.
2. The **STATUS** LED should be green, no alarm indications on the FCD and synchronization has occurred.
 - a. HTU-C will display LLOS if not connected to network (no DSX present; LED will be solid red).
 - b. HTU-R will have red **ALM** LED if customer not connected. LP1, LP2, line coding (B8ZS or AMI) and framing (ESF or SF) (if not UNFR) LEDs should be illuminated.
3. If **STATUS** LED is green:
 - a. Verify that the signal quality is the same on each loop. Ensure signal quality indicators do not fluctuate.
 - b. Verify that the loop loss is within design limits. If there is a difference of more than 1 dB between the two loops, a problem exists with the cable pairs.
 - c. If errors occur, use the Current System Status and Performance History screens to determine where they are occurring. See Troubleshooting Guide.
4. If everything checks out, proceed with BERT testing

TROUBLESHOOTING GUIDE

The HTU-C Status LED is Flashing Green and the FCD Indicates “LERR”, “HER1”, “HER2” or “LBPV” but no Errors are Indicated by the HTU-R

- ◆ A BPV, Frame error (SF) or CRC error (ESF) has been detected at the DSX-1 interface. Possible network or wiring problem between the HTU-C and the DSX. This is not an indications of problems on the HDSL loops.

The HTU-R DS1 LED is Flashing, but no Errors are Indicated by the HTU-C

- ◆ A BPV, Frame Error (SF) or CRC Error (ESF) has been detected at the DS1 interface. This indicates a wiring problem or a B8ZS/AMI mismatch between the HTU-R and the customer equipment. This is not an indication of problems on the HDSL loops.

The HTU-R has Power, but LP1 and LP2 LEDs are Dark. The Unit cannot Sync with the HTU-C

- ◆ Simplex power for powering the HTU-R can be passed over cable pairs that contain load coils or that are too long for HDSL synchronization. Using a TIMS, verify the circuit is within design limits.
- ◆ The HTU-R will power up as long as there is at least one good conductor on each loop. To test, remove the protector plug at the MDF and measure t-r resistance to the HTU-R on both loops. The HTU-R will place a 6 ohm short between t-r on both loops. An extremely high impedance indicates an open conductor. An extremely low reading on one loop may indicate a t-r short in the field. In the field, measure t-t and t-r voltage with the HTU-C installed and compare to the chart above. If these voltages are not present, open pairs or mis-wiring is indicated. As with other circuits, standard resistance measurements between each conductor and ground should also be used to test for a grounded conductor.
- ◆ A high resistance open which degrades to the point that it causes the circuit to lose sync can be “resealed” by reseating the HTU-C. Test the cable pairs before reseating the HTU-C.

Running Excessive Errors on the Loop

- ◆ Measure t-r resistance as described above. If the pairs are unbalanced by more than 4 ohms, or a measurement varies a great deal, this could indicate a high resistance open or an intermittent fault on the loop with the higher measurement. A TDR is typically required to locate this splice for repair.
- ◆ Excessively long bridged taps can also cause errors. Check the records and/or use a TDR to verify the location and length of bridged taps.
- ◆ Using ADTRAN’s “Performance History” screen, it is often possible to see that many more errors are being received on a particular loop or at a particular unit. The fault will typically be very close to the unit receiving the most errors.

No Power at the HTU-R

- ◆ This could be caused by a loop with two open conductors. Measure t-r resistance from the MDF to the HTU-R or use the voltage chart to see which pair is open.

INSERTION LOSS MEASUREMENTS

Frequency (Hz)	Maximum Loss Data (dB)
3000	12.00
10000	15.00
50000	25.50
100000	30.00
150000	32.75
196000	35.00
200000	35.25
250000	37.50
325000	42.00

NOTE: If the TIMS is unable to transmit 200 Hz tone, set the TIMS to one of the frequencies shown above and compare the received signal to the maximum loss at that frequency.

	A	B	C	D	E	F
	t-t Voltage					
Circuit with 2 HREs (open at frame)	183-187	N/A	N/A	N/A	N/A	N/A
Circuit with 0 or 1 HRE (open at frame)	183-187	N/A	N/A	N/A	N/A	N/A
HTU-C / HTU-R	183-187	N/A	N/A	N/A	N/A	170-175
HTU-C / HRE1 / HTU-R	185-190	160-170	160-170	N/A	N/A	150-160
HTU-C / HRE1 / HRE2 / HTU-R	183-187	145-155	145-155	125-135	125-135	110-120

NOTE: All measurements taken with HTU-C installed. With the HTU-C unseated or with protector removed at the VMDF, t-r resistance will be the cable resistance plus 3 ohms (for either HRE or HTU-R). Required voltages are automatically supplied by the HTU-C.

NOTE: Voltage measurements were made with 9 kft of 26 awg simulated line in each segment.

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.