

BR1/10 Span Power U-BR1TE ISDN 2B1Q Interface Installation and Maintenance

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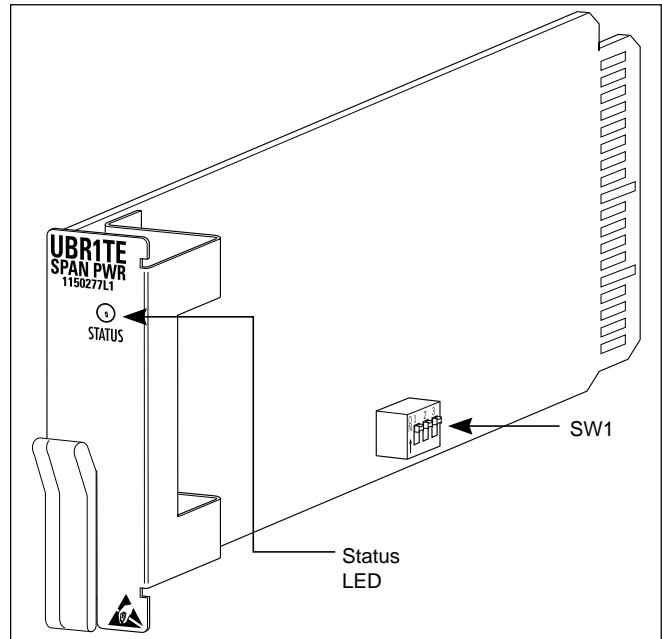


Figure 1. BR1/10 Span Power U-BR1TE

1. GENERAL

This practice provides installation and maintenance procedures for the ADTRAN® BR1/10 Span Power U-BR1TE, illustrated in **Figure 1**.

Revision History

This is the initial release of this document. Future revisions will be described in this subsection.

Features

BR1/10 Span Power U-BR1TE (BR1/10), P/N 1150277L1, features include the following:

- Supports a preferred set of options that minimizes provisioning errors and expedites installation.
- Features an Integrated Services Digital Network (ISDN) 2B1Q interface that meets all Layer 1 requirements as specified in ANSI T1.601-1992.
- Provides 18 kft nominal range on mixed gauge wire.
- Operates in 3 DS0 format according to TR-NWT-000397.

- Features performance monitoring of the Layer 1 facilities as specified in TR-NWT-000397 and TR-TSY-000829.
- Responds to B1, B2, and 2B+D loopbacks through the embedded operations channel (*eoc*).
- Operates with BR1/10 Line Interface Unit (LIU) and Bank Controller Unit (BCU) to provide local access to test each channel unit.

General Description

The BR1/10 is a line card that plugs into a single channel slot of an ADTRAN BR1/10 channel bank, and provides the interface between the Digital Sub-subscriber Line (DSL) and the E1 carrier facility.

The BR1/10 operates in the TR-NWT-000397 3-DS0 mode allowing up to ten individual BR1TE cards for each E1 carrier facility.

Options for the BR1/10 are selected with the 3-position DIP switch (SW1) on the U-BR1TE circuit board. The STATUS LED provides synchronization information for local craft personnel. See Figure 1 and **Table 1**.

Table 1. SW1 Functions

Switch	Status	Description
SW1-1	ON	LULT mode - Periodic wake-up tones disabled.
	OFF	LUNT mode - Periodic wake-up tones enabled. Periodic wake-up tones should be enabled when the BR1/10 is located Adjacent to Switch, in a Tandem Office Sink configuration, or when adjacent to a device that requires wake-up tones such as a Newbridge switch.
SW1-2	ON	Span power enabled.
	OFF	Span power disabled.
SW1-3	ON	ISDN mode.
	OFF	Leased line mode.

2. INSTALLATION



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

NOTE

The BR1/10 operates in conjunction with the channel bank's LIU and BCU. The I&M Practices for those units: 61150279L2-5 and 61150280L2-5, should be available for reference.

U-BR1TE Status LED

The front panel status LED provides the following information:

- OFF - No power
- Red - Units not synchronized
- Green - Units synchronized
- Red/Green Flashing - A 3-second flashing indicates selection by the LIU channel selection switch.

The BR1/10 inserts in any of the BR1/10 chassis slots labeled 1 through 10. Insert the unit into the back-plane connector until firmly seated. At this point the STATUS LED on the U-BR1TE should illuminate Red indicating that synchronization has not been achieved for either the ISDN U-Interface or the E1 interface. When both interfaces are synchronized, the STATUS LED will change to Green. If the LED stays Red, check the BCU LEDs to determine the error type.

BCU Status LEDs

The BR1/10 channel bank selection and status is obtained by using the LIU and BCU common units. See **Figure 2**.

Additional status is displayed by the bottom six BCU LEDs when the subject unit is selected with the LIU's DSL Channel Selection switch. When a BR1/10 is selected by the LIU rotary switch, the BR1/10 Status LED will flash Red/Green indicating that the unit has been selected and is establishing communication with the BCU. After about 3 seconds the LED returns to the current synchronization status.

Following selection, status information for the selected unit is provided by the six BCU LEDs, shown here:

LP-SYNC	○	○	CRC
CR-SYNC	○	○	CRC
DS0-LB	○	○	ACT

A summary of error information is provided in **Table 2**. For more information, see *BCU Installation and Maintenance Practice*, number 61150280L2-5.

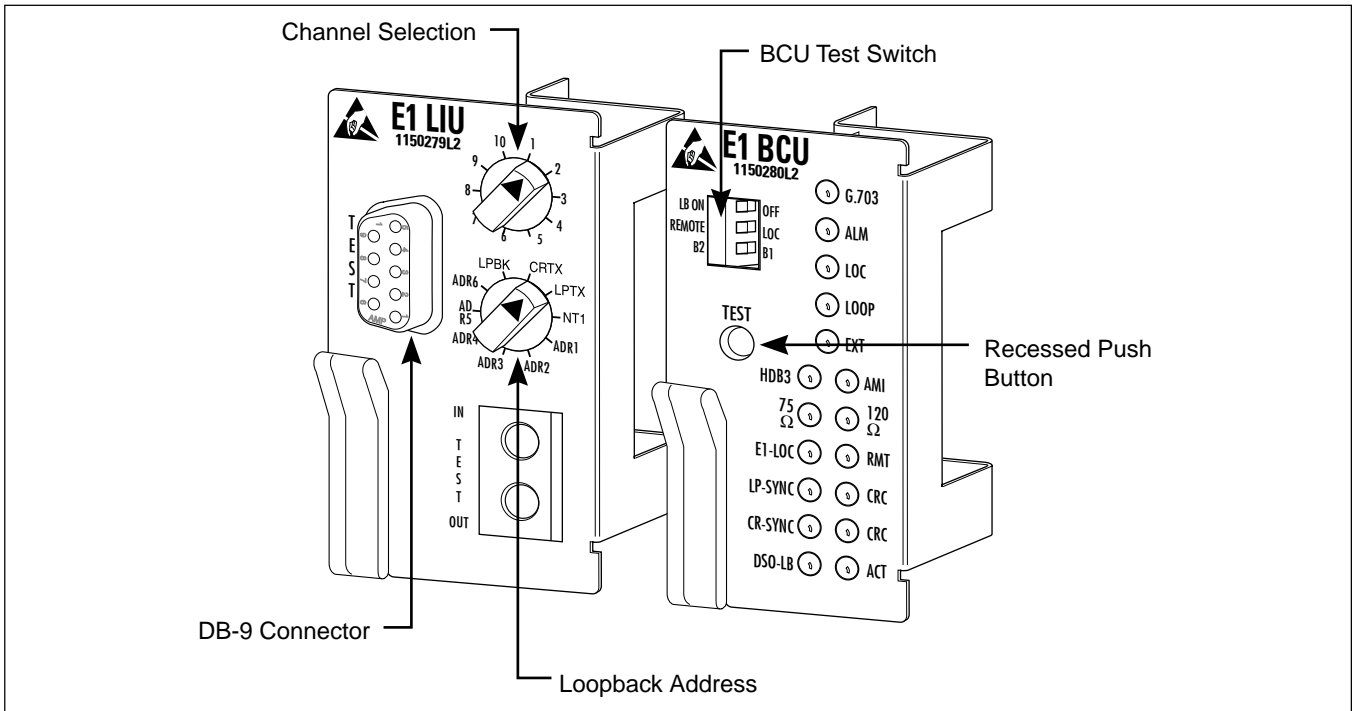


Figure 2. BR1/10 LIU and BCU

Table 2. BR1/10 BCU LED Error Information for U-BR1TE

LED	Function	Status	Description
LP-SYNC (red)	DS-DP interface synchronization	ON OFF	No synchronization on 2-wire U-interface - Appropriate upstream or downstream ISDN unit (NT1, U-repeater, Tandem U-BR1TE, or ISDN switch) not responding/installed. Or, DSL malfunction. Units synchronized.
CR SYNC (red)	Carrier interface synchronization	ON OFF	Framing across E1 carrier to another ISDN network element unsuccessful - Associate channel unit not responding/installed at remote channel bank. Or, E1 carrier facility malfunction. Units synchronized.
LP CRC* (red)	DDS-DP interface CRC errors	ON OFF	Receiving CRC errors from 2-wire U-interface - Noise problem on DSL or other ISDN network element. No errors from loop.
CR CRC* (red)	Carrier interface CRC errors	ON OFF	Receiving CRC errors from E1 carrier - Mismatch of ZBS option on associated BR1TE unit. Or, timing error on E1 carrier facility. No CRC errors from carrier.
DS0-LB (yellow)	Loopback Status	ON Flashing OFF	Initiating loopback. 1/second for B1 loopback. 2/second for B2 loopback. Loopback inactive.
ACT (green)	Activation Bit	ON Flashing OFF	Exchange of activation bits between local and remote units successful. Activation bit sent in one direction only. Activation bits not sent.

* Refer to *Local Performance Monitoring* subsection for additional LED indication.

Connections

Table 3 shows the wiring interconnects to the backplane amphenol connector for the 2-wire U-Interface. All other input and output to the BR1/10 are made through the backplane.

3. TESTING

The BR1/10 responds to standard *eoc* testing including B1, B2, and 2B+D loopbacks. These *eoc* commands are sent from an upstream device such as the ISDN switch, another U-BR1TE, or an ISDN test set. This loopback capability provides for remote testing.

Table 3. Connector Interface

Channel Position	Pin	Lead
1	27	R
	2	T
2	29	R
	4	T
3	31	R
	6	T
4	33	R
	8	T
5	35	R
	10	T
6	37	R
	12	T
7	39	R
	14	T
8	41	R
	16	T
9	43	R
	18	T
10	45	R
	20	T

DS0 TESTING

DS0 local test access allows local craft personnel to assist in circuit turn-up, or sectionalization of trouble or equipment malfunction when remote testing is not available or convenient.

The BR1/10 BCU and LIU provide the required network access for testing downstream ISDN devices, inserting a test pattern to either the carrier or loop interface, performing a local bilateral loopback, and performing local performance monitoring of the ISDN circuit.

When DS0 is selected on the BR1/10 BCU, local test access is afforded to each of the installed BR1/10 BR1TE channel units in both the downstream and upstream directions. Bantam jacks for DS0 logic access, 8 and 64 kHz clock reference, selection of the desired channel unit (1-10), and the desired test are provided by the BR1/10 LIU. When the 10-position rotary switch is used to select a BR1TE channel unit, the Status LED on the BR1TE channel unit will flash Red and Green for approximately 3 seconds before returning to the current status display.

Loopback Test (ADR1-ADR6, NT1)

Loopbacks in the network-to-customer direction can be initiated from either the ISDN switch or the BR1/10 LIU. The downstream direction is automatically selected based on the card position in the network. To initiate a loopback, perform the following steps:

1. Insert the TX and RX bantam plugs of the DS0 digital test set into the bantam jack of the LIU. Connect the clock input to the DS0 digital test set DB-9 connector on the LIU. Configure the test set for Near Logic and 64 kbps.
2. Select the desired BR1TE channel unit using the DSL rotary switch on the LIU. The selected BR1TE channel card status LED will flash Green and Red for approximately 3 seconds when selected.
3. Select the desired loopback address on the LIU (ADR1-ADR6, or NT1).
4. Select the desired bearer channel using the B1/B2 DIP switch on the BCU.
5. Depress the BCU's recessed TEST pushbutton to initiate the loopback test. The DS0-LB status LED will light Yellow when the loopback is established to the selected address. If the selected address does not respond, the DS0-LB LED will remain out. Observe the DS0 digital set for bit errors.

6. Test the other B channel or additional network ISDN devices by changing to another test (steps 3 and 4). It is not necessary to exit the test mode to select a new test. If a new BR1TE channel unit is selected, all DS0 tests will be terminated.
7. To terminate the loopback, depress the TEST pushbutton, or remove the transmit bantam plug. Upon deactivation of the test, the DS0-LB LED will go out.

Point-to-Point Test (CRTX, LPTX)

A point-to-point (straightaway) test can be performed on either the U-interface (LPTX) or the E1 carrier interface (CRTX).

To initiate a point-to-point test using a DS0 digital test set, perform the following steps:

1. Insert the TX and RX bantam plugs of the DS0 digital test set into the bantam jack on the LIU. Connect the clock input to the DS0 digital test set DB-9 connector on the LIU. Configure the test set for Near Logic and 64 kbps.
2. Select the desired BR1TE channel unit using the DSL rotary switch on the LIU. The selected BR1TE channel card status LED will flash Green and Red for approximately 3 seconds when selected.
3. Select the desired test direction, LPTX or CRTX, on the LIU.
4. Select the desired bearer channel using B1/B2 DIP switch on the BCU.
5. Depress the recessed TEST pushbutton on the BCU to initiate the test.
6. If the far end unit is a BR1/10 BR1TE channel unit, perform steps 1 through 4 choosing the same front panel switch setting. Ensure both test sets are configured for the same test pattern (511, 2047).
7. Observe the DS0 digital test set for bit errors.
8. To deactivate the loopback, depress the TEST pushbutton or remove the transmit bantam plug. Upon deactivation of the test the DS0-LB LED will go out.

Local Loopback (LPBK)

A bilateral loopback can be initiated for any of the BR1/10 BR1TE channel units for either bearer channel. Since a local test pattern source is not required for this test, it can be performed without additional test equipment. To initiate a local loopback, perform the following steps:

1. Select the desired BR1TE channel unit using the DSL rotary switch on the LIU. The selected BR1TE channel card status LED will flash Green and Red for approximately 3 seconds when selected.
2. Select the LPBK using the 10-position rotary switch.
3. Select the desired bearer channel using the B1/B2 DIP switch on the BCU.
4. Depress the recessed TEST pushbutton to initiate the test. The DS0-LB LED will flash once per second for a B1 loopback, twice per second for a B2 loopback.
5. To deactivate the loopback, depress the TEST pushbutton. Upon deactivation of the test, the DS0-LB LED will go out.

Local Performance Monitoring

Performance monitoring of the local E1 carrier system and the 2-wire U-interface of the ISDN data can be performed from the front panel without interruption of service to the customer. For this test, bearer channel selection is not applicable and a test pattern source is not required. To initiate local performance monitoring, perform the following steps:

NOTE

LED indication in response to the TEST pushbutton as explained here is in addition to that explained in Table 2.

1. Ensure a bantam plug is NOT installed in the front panel TX bantam jack on the BR1/10 LIU.
2. Select the desired BR1TE channel unit using the DSL rotary switch on the LIU. The selected BR1TE channel card status LED will flash Green and Red for approximately 3 seconds when selected.
3. Select ADR1 on the LIU.
4. Depress the recessed TEST pushbutton to initiate the test.

5. The total number of *crc* errors is simultaneously displayed by the LP and CR CRC status LEDs. The LEDs will flash when 6 to 19 *crc* errors have been received and will illuminate solid when 20 or more *crc* errors have been received.

6. To exit local performance monitoring, depress the TEST pushbutton.

4. MAINTENANCE

The BR1/10 Span Power U-BRITE does not require maintenance for normal operation.

ADTRAN does not recommend that repairs be performed in the field. Repair services are obtained by returning the defective unit to ADTRAN.

5. WARRANTY AND CUSTOMER SERVICE

ADTRAN will replace or repair this product within 5 years from the date of shipment if it does not meet its published specifications or fails while in service (see *ADTRAN Carrier Networks Equipment Warranty, Repair, and Return Policy and Procedure*, document 60000087-10A).

Contact Customer And Product Service (CAPS) prior to returning equipment to ADTRAN.

For service, CAPS requests, or further information, contact one of the following numbers:

ADTRAN, Inc.

Attention: International Department
901 Explorer Boulevard
Huntsville, Alabama 35806
USA
www.adtran.com

Asia Pacific - Hong Kong

852 2824-8283 voice
852 2824-8928 fax
sales.asia@adtran.com

Canada - Ontario

1 416 290-0585 voice
1 416 296-1259 fax
sales.ontario@adtran.com

Canada - Quebec

1 877 923-8726 toll free
1 514 940-2888 voice
1 514 940-2890 fax
sales.quebec@adtran.com

Canada - Other Provinces

1 877 923-8726 toll free
sales.canada@adtran.com

Europe - Zurich, Switzerland

41 1 880 27 77 voice
41 1 880 27 78 fax
sales.europe@adtran.com

Latin America

1 954 746-5355 voice
1 954 746-7540 fax
sales.latin@adtran.com

Mexico/Caribbean

1 954 577-0357 voice
1 954 577-0358 fax
sales.mexico@adtran.com

U. S. Headquarters

1 256 963-2500 voice
1 256 963-6300 fax
1 256 963-8200 fax back
international@adtran.com