

BR1/10 TR TAU BR1/10 TOTAL REACH TEST ACCESS UNIT INSTALLATION AND MAINTENANCE

CONTENTS

1. GENERAL	1
2. INSTALLATION	2
3. TESTING	3
4. SPECIFICATIONS	5
5. MAINTENANCE	5
6. WARRANTY AND CUSTOMER SERVICE ...	5

FIGURES

Figure 1. BR1/10 TR TAU	1
Figure 2. BR1/10 TR TAU and BCU	3
Figure 3. DB-9 Connector	3

TABLES

Table 1. Rotary Test Switch Options	3
Table 2. BR1/10 TR TAU Specifications	6

Features

The BR1/10 TR TAU, part number 1150096L1, includes the following features:

- DS0 Test Access control
- Faceplate Bantam jack for DS0 logic tester access
- Faceplate DB-9 for DS0 logic tester clock input
- Optional office clock timing source distributed to the BR1/10 TRI-C

General Description

The BR 1/10 TR TAU is a common module plug-in unit used in the ADTRAN BR1/10 ISDN Channel Banks. It plugs into the common card position labeled LIU and is used ONLY with the deployment of the ADTRAN BR1/10 Total Reach ISDN Central Office unit (TRI-C), P/N 1152082L1. The BR1/10 TR TAU works in conjunction with the ADTRAN BR1/10 Bank Controller Unit (BCU), P/N 1150080L1, to provide local DS0 test access, status information through the BCU LEDs, and the ability to use an office clock timing source to provide distributed timing to 10 BR1/10 TRI-Cs.

1. GENERAL

This practice provides installation and maintenance procedures for the ADTRAN BR1/10 Total Reach Test Access Unit (TR TAU). Figure 1 is an illustration of the BR1/10 TR TAU.

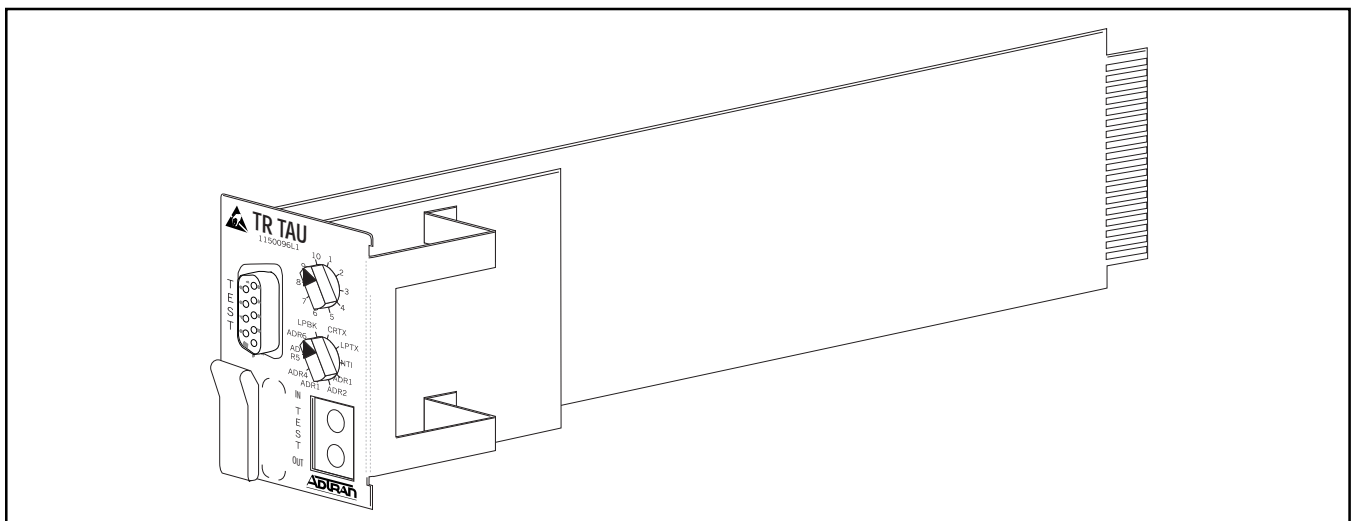


Figure 1. BR1/10 TR TAU

The BR1/10 is an ISDN channel bank providing a compact, modular, and cost effective solution for the extension of Basic Rate ISDN (BRI). When used with the TRI-C and TR TAU, the channel bank is configured as a wiring chassis not requiring the T1 capabilities of the bank.

2. INSTALLATION

CAUTION

This equipment contains static sensitive components. Be sure proper electrostatic discharge procedures are followed before handling/installing the equipment.

After unpacking the unit, immediately inspect it for possible shipping damage. If damage is discovered, file a claim immediately with the carrier, then contact ADTRAN Customer Service (see *Warranty and Customer Service*).

The BR1/10 TR TAU plugs directly into the common card area of a BR1/10 chassis in the position labeled LIU. To install the TR TAU, grasp the unit by the faceplate and insert it into the backplane connector until the unit is firmly seated.

NOTE

For proper operation of the TR TAU, the CLEI of the BR1/10 BCU must be D4CIS7Z2AA or D4CIK7Z2AA.

Optioning

The BR1/10 TR TAU has no options or adjustments. The Dual In-line Package (DIP) on the BR1/10 BCU provides the necessary option settings for the BR1/10 ISDN Channel Bank modes of operation.

For proper operation, the following options must be configured via the BCU.

- Timing Mode (S2-4,5)
- 8 DSL/10 DSL (S2-6)

For normal operation, Timing Mode should be Loop Clock (S2-4=ON and S2-5=OFF). In this mode, each individual TRI-C receives synchronization from its U-interface. During local DS0 testing, the TRI-C provides bit and byte clock derived from the U-interface to the TR TAU DB9 connector. If an external clock source is available, Timing Mode

should be set to External Clock (S2-4 and 5=OFF). For this mode, each TRI-C will use the office clock for synchronization. The external mode will allow for testing of downstream devices independent of the U-interface. For normal operation of 10 DSL mode, S2-6 will be set to OFF allowing the maximum deployment of 10 TRI-Cs.

The following options on the BCU are not used with the TRIC and do not have an effect on the operation of the unit.

- DS-X Line Build-out (S1-1,2,3)
- Line Code (S2-1)
- Framing Format (S2-2)
- Remote Loopback Location Selection (S3)
- Terminal Mode (S2-7,8,9)
- Spare (S2-10)

NOTE

CAU and Internal timing modes are not valid.

Connections

All input and output to the BR1/10 TR TAU are made through the backplane. No additional backplane wiring is necessary for normal operation.

Faceplate Features

The BR1/10 TR TAU faceplate is used with the BR1/10 BCU to initiate DS0 level testing. Two 10-position rotary switches provide for selection of the desired test and channel unit. The Bantam jacks accept standard mini Bantam plugs while the DB-9 provides the necessary clock output required by standard DS0 Logic Test equipment. Figure 2 is an illustration of the BR1/10 TR TAU and BCU.

The 10-position DSL rotary switch is used to monitor the status of individual channel units or perform DS0 testing. Labeled 1 through 10, the DSL rotary switch selects the corresponding channel unit; the BR1/10 BCU then displays the status of the selected channel unit. When selected, the individual channel unit's STATUS LED will *Flash* GREEN and RED for 3 seconds.

Table 1 shows the 10-position Loop Address rotary test switch options. The 10-position Address rotary switch selects the local test to be performed for the selected channel unit. Tests include loopback for the NT-1 and up to six ISDN devices in the network-to-

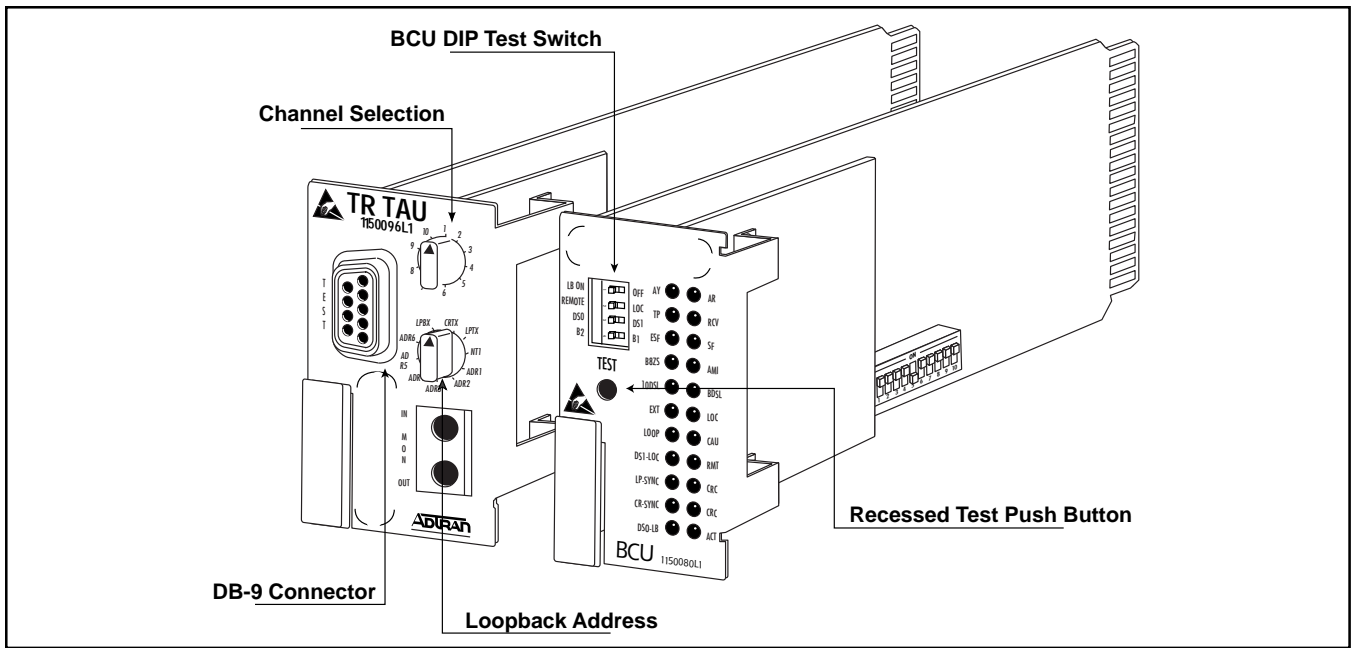


Figure 2. BR1/10 TR TAU and BCU

Table 1. Rotary Test Switch Options

Display	Interpretation
ADR1	Address # 1, address of this unit
ADR2	Address # 2, address of next unit downstream
ADR3	Address # 3, address of second unit downstream
ADR4	Address # 4, address of third unit downstream
ADR5	Address # 5, address of fourth unit downstream
ADR6	Address # 6, address of fifth unit downstream
LPBK	Loopback forces this unit to loopback either B1 or B2 from the front panel. Loopbacks occur in both the customer and network directions.
CRTX	Transmit to the U-interface
LPTX	Loop transmit to the TRI-interface
NT1	NT1, address of the NT1

customer direction, transmitting a test pattern to either the U-interface or TRI-interface, a local bilateral loopback, and local performance monitoring.

The DB-9 female connector provides access to the 8 kHz and 64 kHz clock reference for DS0 logic test equipment. Figure 3 illustrates the DB-9 connector.

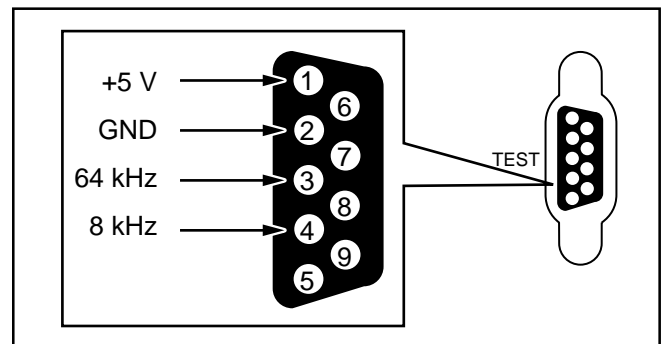


Figure 3. DB-9 Connector

3. TESTING

The BR1/10 TR TAU facilitates local access DS0 testing allowing craftpersons to assist in circuit turn up and in determining a point of trouble/equipment malfunction when remote testing capabilities are not available or convenient. When configured for external clock source, downstream testing can be performed on the TRI-interface without the synchronization of the U-interface to the ISDN switch.

The TR TAU provides locally initiated test selection for each individual TRI-C channel unit. While ISDN is designed to be tested from the ISDN switch, it may be necessary to perform local testing. Each TRI-C channel unit will respond to embedded operation channel (*eoc*) loopbacks, including B1, B2, and 2B+D. These commands may be initiated from an upstream device, including the ISDN switch, another BR1TE channel unit, or ISDN test equipment developed for this purpose.

DS0 testing provides local test access for the individual BR1/10 TRI-C channel units. The TR TAU Bantam jacks accommodate standard DS0 logic testers such as the TPI-108/109 RT II or the FIREBERD 4000/6000. Selection for B1 or B2 is also made on the BCU faceplate DIP switch. The recessed TEST push-button on the BCU will initiate the test and channel selected on the TR TAU's two 10-position rotary switches.

DS0 TESTING

Local test access is provided to each of the installed BR1/10 TRI-C channel units in the downstream and the upstream directions. Bantam jacks for DS0 logic access, the 8 kHz and 64 kHz clock reference, the selection of the desired channel unit (1-10), and of the desired test are provided by the BR1/10 TR TAU. When the 10-position rotary switch is used to select a TRI-C channel unit, the Status LED on the TRI-C channel unit will alternate *Flashing* RED and GREEN for approximately 3 seconds before returning to the current status display. See the TRI-C channel unit document for additional status LED operation.

Loopback Test (ADR1-ADR6, NT1)

Loopbacks in the network-to-customer direction can be initiated from either the ISDN switch or the BR1/10 TR TAU. 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 TR TAU. Connect the clock input to the DS0 digital test set DB-9 connector on the TR TAU. Configure the test set for Near Logic and 64 kbps.
2. Select the desired TRI-C channel unit using the DSL rotary switch on the TR TAU. The selected TRI-C channel card STATUS LED will *Flash* GREEN and RED for approximately 3 seconds when selected.

3. Select the desired loopback address on the TR TAU (ADR1-ADR6, or NT1).
4. Select the desired bearer channel using B1/B2 DIP switch on the BCU.
5. Press the BCU's recessed TEST push-button to initiate the loopback test. The DS0 LB status LED will *illuminate* 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. Tests to additional network addresses may be performed by changing to another address (step 3 and 4). It is not necessary to exit the test mode to select a new address. If a new TRI-C channel unit is selected, all DS0 tests will be terminated. To continue testing on another channel, return to step 2.
7. To terminate the loopback, press the TEST push-button, or remove the transmit Bantam plug. Upon deactivation of the test, the Yellow DS0 LB LED will go out.

Point-to-Point Test, (CRTX, LPTX)

A point-to-point (straightaway) test can be performed to either the TRI-interface (LPTX) or the U-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 TR TAU. Connect the clock input to the DS0 digital test set DB-9 connector on the TR TAU. Configure the test set for Near Logic and 64 kbps.
2. Select the desired TRI-C channel unit using the DSL rotary switch on the TR TAU. The selected TRI-C 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 TR TAU.
4. Select the desired bearer channel using B1/B2 DIP switch on the BCU.
5. Press the recessed TEST push-button on the BCU to initiate the test.
6. 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, press the TEST push-button, 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 TRI-C channel units for either bearer channel. A local test pattern source is not required for this test. To initiate a local loopback, perform the following:

1. Select the desired TRI-C channel unit using the DSL rotary switch on the TR TAU. The selected TRI-C 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 on the TR TAU.
3. Select the desired bearer channel using B1/B2 DIP switch on the BCU.
4. Press the recessed TEST push-button to initiate the test. The DS0-LB LED will *Flash* YELLOW once a second for B1, or twice in succession for B2.
5. To deactivate the loopback, press the TEST push-button or select another channel unit using the DSL rotary switch on the TR TAU. Upon deactivation of the test the DS0 LED will go out.

Local Performance Monitoring

Performance monitoring of the TRI and 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:

1. Make sure that a Bantam plug is NOT installed in the faceplate TX Bantam jack on the BR1/10 TR TAU.
2. Select the desired TRI-C channel unit using the DSL rotary switch on the TR TAU. The selected TRI-C channel card STATUS LED will *Flash* GREEN and RED for approximately 3 seconds when selected.
3. Select ADR1 on the TR TAU.
4. Press the recessed TEST Push-button to initiate the test. The DS0-LB will *illuminate* YELLOW.

5. The total number of *crc* errors are simultaneously displayed by the LP and CR CRC status LEDs. LEDs will flash upon the receipt of 6 to 19 *crc* errors and will illuminate solid when 20 or more *crc* errors are received.
6. To exit Local Performance monitoring, press the TEST push-button or select another channel unit using the DSL rotary switch on the TR TAU. Upon deactivation of the test the YELLOW DS0 LB LED will go out.

4. SPECIFICATIONS

The specifications for the BR1/10 TR TAU are listed in Table 2.

5. MAINTENANCE

The BR1/10 TR TAU requires no routine maintenance to operate properly.

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

6. WARRANTY AND CUSTOMER SERVICE

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

Contact CAPS prior to returning equipment to ADTRAN.

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

ADTRAN Technical Support

(800) 726-8663

Standard hours: Monday-Friday, 7 am-7 pm CST

Emergency hours: 7 days/week, 24 hours/day

ADTRAN Sales

(800) 827-0807

ADTRAN Repair/CAPS

(256) 963-8722

Repair and Return Address

ADTRAN, Inc.

Customer & Product Service (CAPS) Department

901 Explorer Boulevard

Huntsville, Alabama 35806-2807

Table 2. BR1/10 TR TAU Specifications

Environmental	
Operating Temperature	-40 to +70°C (-40 to +158°F)
Storage Temperature	-40 to +85°C (-40 to +185°F)
Relative Humidity	95% maximum, non-condensing
Mechanical	
Dimension	2.5" high x 9.375" deep x 1.25" wide
Weight	3.2 oz
Mounting	ADTRAN BR1/10 Channel Banks
Input Power	+5VDC 20 mW nominal 315 mW maximum