ADTRAN
PRACTICES

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

BR1/10 2x CHASSIS
BR1/10 23 INCH DUAL WIDE
INSTALLATION/MAINTENANCE

CONTENTS

FIGURES

TABLES

1. GENERAL

This practice provides installation and maintenance procedures for the ADTRAN BR1/10 2x Chassis. Figure 1 shows the BR1/10 2x Chassis.

Features

The BR1/10 2x Chassis, part number 1150.081L2, features include:

- Compact modular platform for extending ISDN Basic Rate Service over a T1 carrier system.
- BR1/10 common equipment and BR1/10 ISDN BR1TE cards accepted.
- Two separate BR1/10 systems on a 23 inch chassis.
- Single T1, clock, and power interface on each BR1/10 system.
- Enhanced reliability from fewer common equipment cards.
- Fully conforms to Network Equipment Building Standard (NEBS) Level 3 requirements, per Bellcore Special Report, SR-3580, Issue 1, Nov 1995

Description

The BR1/10 2x Chassis is designed for ISDN applications in telephone Central Offices or in Remote Terminals. The chassis contains two separate BR1/10 systems, two DSX-1 connections, two sets of BR1/10 common equipment, and up to 20 ISDN channel units.

The ADTRAN BR1/10 2x Chassis is fabricated from sheet steel and measures 2.875 inches high, 23 inches wide, and 11.5 inches deep. It can be flush-mounted on a 23 inch wide, unequal flange, duct-type bay.

The BR1/10 2x Chassis mounts two individual backplanes. Each backplane provides (1)50-pin male Amphenol connector, (13)36-pin card edge connectors, and (1)3-terminal barrier strip. The 50-pin male Amphenol
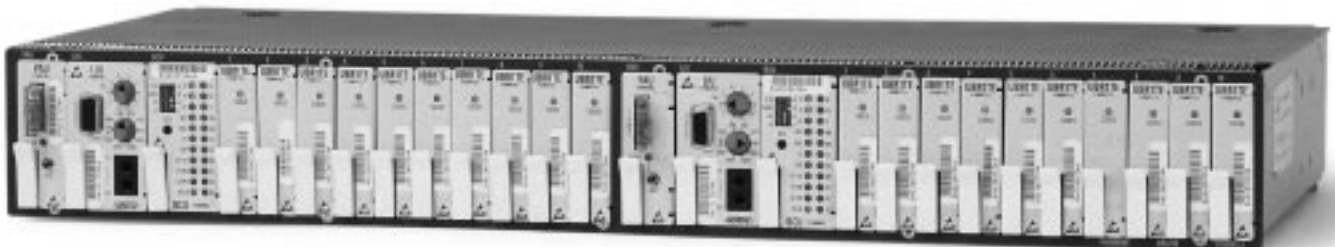

Figure 1. BR1/10 2x Chassis

connector interfaces with the T/R and T1/R1 connections for each of the 10 channel slots; the (13) 36-pin card edge connectors are used for BR1/10 common equipment and channel units. The three-position terminal strip labeled JP16 supplies power connections. External timing, alarms, RS-485 connection and T1 interface terminations are provided through wire-wrapped connectors, JP15 and JP17.

2. INSTALLATION

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

Before installing the BR1/10 2x Chassis in a communications bay, remove all plug-in cards that may have shipped with the chassis. To remove the common equipment and channel units, grasp the latch at the bottom left of each faceplate and pull the latch downward. This forces the unit to separate from its connector. Temporarily place these units in an ESD-protected area.

> **NOTE** *When selecting a location, make sure that the T1, power, clock source, and channel unit wiring are easily accessible, and can be routed to the rear of the chassis.*

> **NOTE** *When using the List 1 Line Interface Unit (LIU), part number 1150.079L1, this equipment is suitable for connection to intra-building or non exposed cable or wiring only. Use the List 2 LIU, part number 1150.079L2, for external wiring applications.*

Mounting

The two slotted holes on the faceplate flange allow mounting on racks with 1" to 1-5/8" spacing. The 2x chassis is designed to be mounted 4 inches from the front of the chassis. Holes are provided in the 2x chassis to mount the flanges 5 inches from the front of the chassis.

If changing the position of the mounting flanges is required, first unscrew the #8-32 Phillips head screws and then relocate the flange and reinsert all four of the Phillips head screws.

The following steps provide instructions for mounting the BR1/10 2x Chassis directly into a 23"-wide bay.

1. Determine the chassis' location in the bay.
2. Identify where the flange mounting holes on each side of the chassis will fit over the bay mounting holes.
3. Align the flange mounting holes on each side of the chassis with the bay mounting holes, and secure with proper screws and washers (see Figure 2).
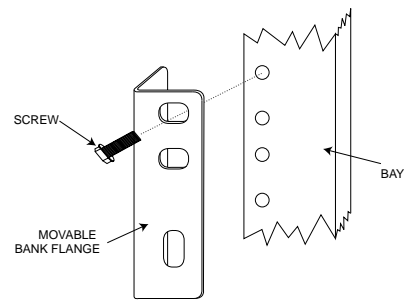

Figure 2. Chassis Mounting

Connections

All permanent connections to the BR1/10 2x Chassis are made on the backplane. Table A describes the pin designations for JP15, JP16, and JP17. Figure 3 shows the chassis backplane and connectors.

> **NOTE** *JP15, JP16, and JP17 read from left to right with Pin 1 being the first pin on the left.*

Table A. JP15, JP16, and JP17 Descriptions

| Pin	Label	Description
JP15		
1	R1-I	DSX-1 Ring input from the network
2	T1-I	DSX-1 Tip input from the network
3	R-O	DSX-1 Ring output to the network
4	T-O	DSX-1 Tip output to the network
5	SG	Shield Ground, Cable shield for DSX-1
6	-48ALM	-48VDC Alarm, output -48VDC when PAU fuse tripped
7	MJ	Major Alarm Audible, normally open contacts. ACO provides override during bank alarm
8	MJR	Major Alarm Audible, common
9	MJV	Major Alarm Visual, normally open contacts
10	MJVR	Major Alarm Visual, common
11	LX(IN)	Input BITS compatible composite clock
12	LY(IN)	Input BITS compatible composite clock
13	EU1	Cable shield for output clock
14	LX(OUT)	Output BITS compatible composite clock
15	LY(OUT)	Output BITS compatible composite clock
16	EU2	Cable shield for input clock
JP16		
1	FG	Frame Ground
2	-48R	-48VDC Return
3	-48I	-48VDC Input
JP17		
1	GND	Ground
2	B	Future Applications
3	A	Future Applications
4	+	Local Clock (+)
5	-	Local Clock (-)
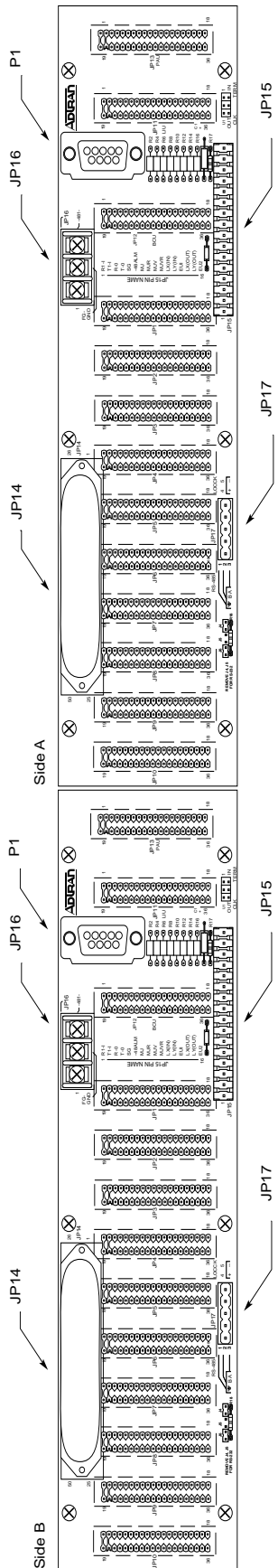
Figure 3. BR1/10 2x Chassis Backplane

Telco Connector

One 50-pin male Amphenol connector (JP14) is provided for the interconnect wiring of the ten channel positions for each BR1/10 backplane. This connector is usually terminated with a punch-down block for premises wiring, or connected directly to a cross-connect or main distribution frame. Figure 4 details the pinout of the connector.
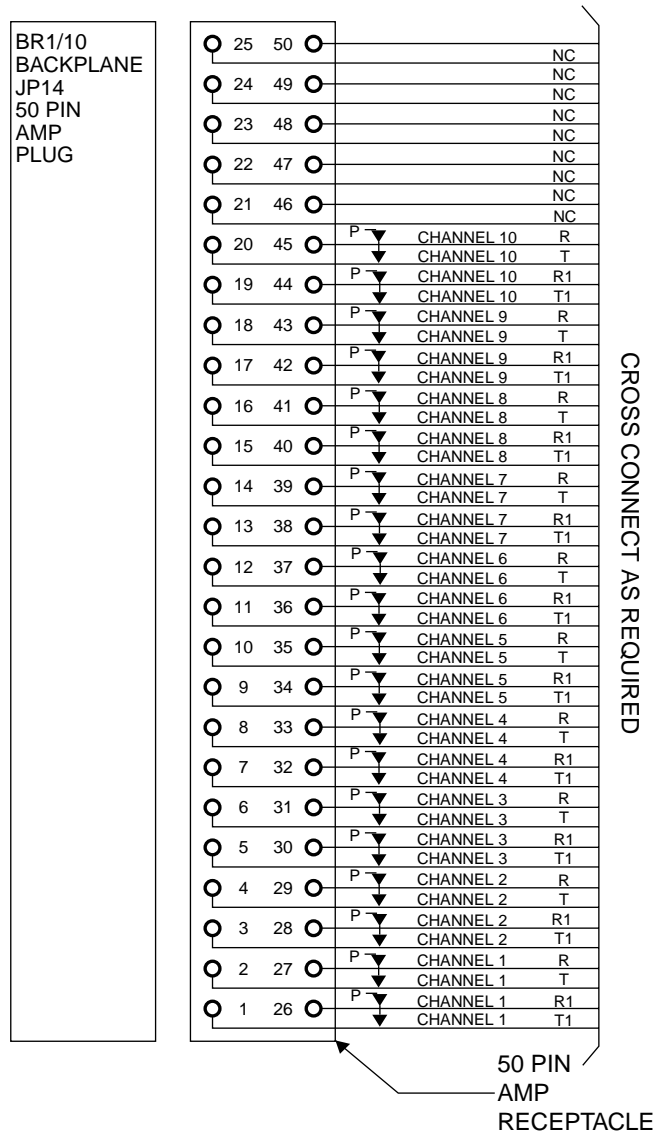

Figure 4. Telco Connector (JP14) Pinout

NOTE: *Leads T1 and R1 are not used in applications requiring the BR1/10 U-BR1TE. The T1 and R1 leads will be used in future applications.*

DSX-1 Termination, Office Timing, Office Alarms, and the Shelf Alarm are connected via JP15. Figure 5 shows a detailed look at each of the connections of JP15.
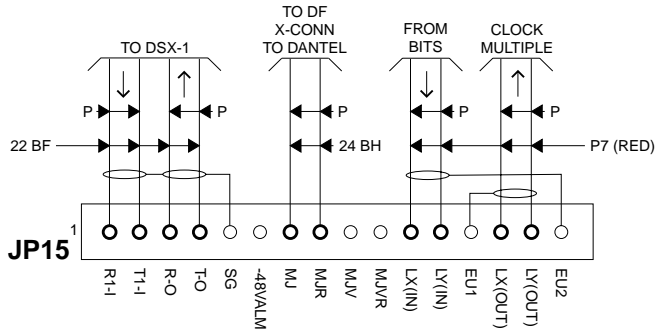

FIgure 5. JP15 Connections

DSX-1 and DS1

DSX-1 and DS1 connections are made via JP15, pins 1 through 5 (see Figure 6). The Line Interface Unit (LIU)List 1, part number 1150.079L1, provides termination for a DSX-1 signal only. The LIU List 2, part number 1150.097L2, provides termination for either DSX-1 or DS1 signal. Line build-out and equalization settings are made on the Bank Controller Unit (BCU).
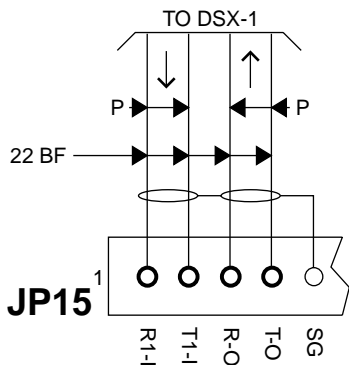

Figure 6. DSX-1 Connections on JP15

Office Timing Supply

The Office Timing input/output pins for the BR1/10 2x Chassis are located on JP15, pins 11 through 16 (see Figure 7). The incoming Building Integrated Timing Supply (BITS) connects to pins LX (in) and LY (in); EU2 is used to shield the two inputs. Figure 8 shows timing connections for a single side of the BR1/10 2x Chassis.
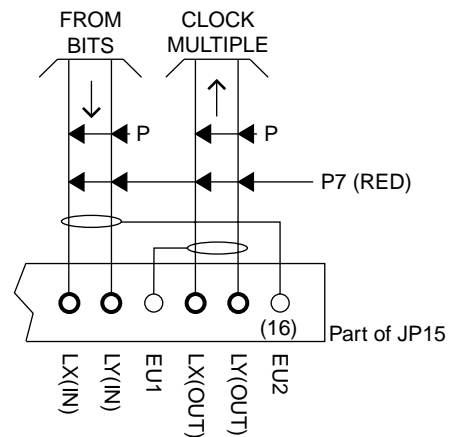

Figure 7. Office Timing Connections on JP15

* This configuration was tested using a TELECOM SOLUTIONS, DIGITAL DISTRIBUTOR, DCD 523.

* This configuration was tested using a TELECOM SOLUTIONS, DIGITAL DISTRIBUTOR, DCD 523.

Note 1: Chassis 1, Side A is terminated **In** (U1 is strapped for **In**).
Note 2: The ground pin (pin 13 and 16 of JP15) is an optional connection for shielded cables; it is not required.

Figure 8. Local Composite Clock Wiring For A Single Side

In installations where the A side of the BR1/10 2x Chassis provides BITS to the B side of the same chassis or other chassis in the same bay, pins LX (out) and LY (out) provide the output signal and EU1 is used for the shield between the chassis (see Figure 7). Figure 9 shows the A side of the BR1/10 2x Chassis providing timing to the B side.

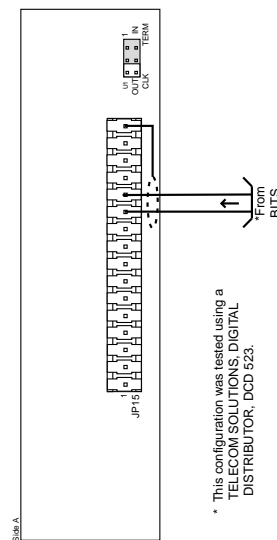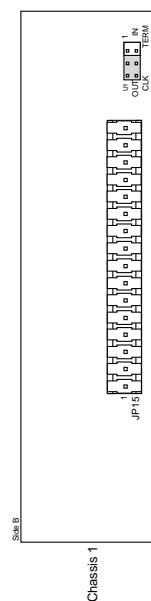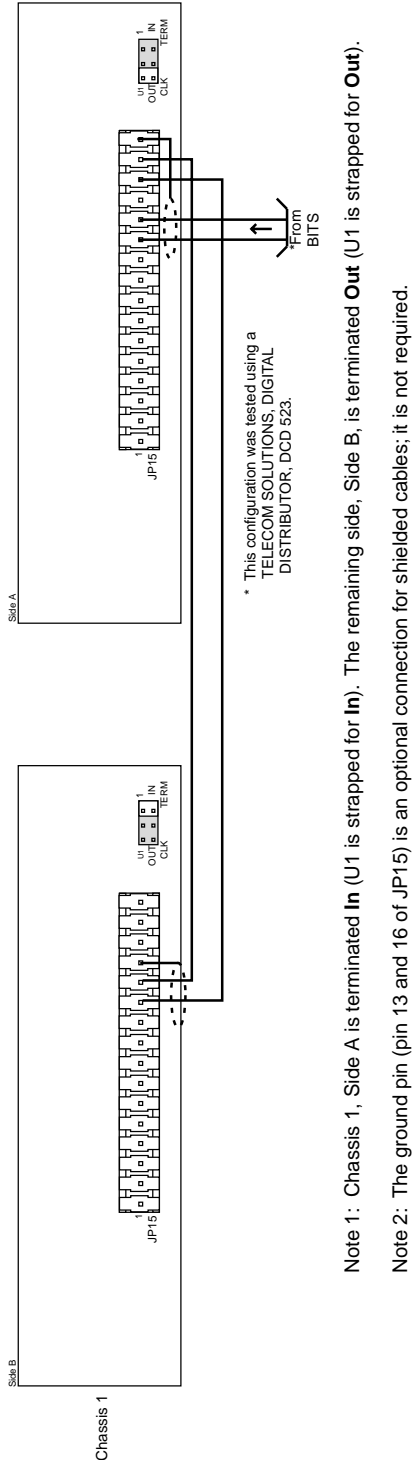Side A

Side B

Chassis 1

* This configuration was tested using a TELECOM SOLUTIONS, DIGITAL DISTRIBUTOR, DCD 523.

Note 1: Chassis 1, Side A is terminated **In** (U1 is strapped for **In**). The remaining side, Side B, is terminated **Out** (U1 is strapped for **Out**).

Note 2: The ground pin (pin 13 and 16 of JP15) is an optional connection for shielded cables; it is not required.

Figure 9. Local Composite Clock Wiring For A Single Chassis

In a bay configuration, multiple BR1/10 2x Chassis can be daisy-chained together off of one clock source input (see Figure 10, page 6).

NOTE *A maximum of 4 BR1/10 2x Chassis can be supported by a single clock source (which is the equivalent of 8 T1s).*

Each BR1/10 2x Chassis backplane provides jumper options to properly terminate and ground the Office Timing Supply. Jumper U1, designated CLK TRM, is used when the office timing source is not terminated externally. When U1 is set to **IN,** a 133 ohm resistor provides the proper clock termination and a 2.2 picofarad capacitor provides a capacitive path to ground via EU2, pin 16 of JP15.

Office Alarms
The backplane connections for the alarm relays are found on JP15, pins 7 through 10, and are labeled MJ, MJR, MJV, and MJVR (see Figure 11).
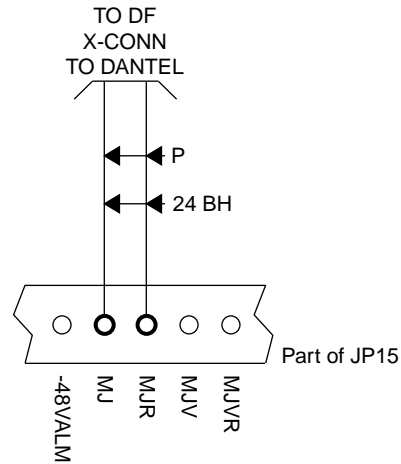

Figure 11. Alarm Connections on JP15

The alarm relay contacts are normally open when the BR1/10 is functioning properly, and no alarms are received from the T1 carrier. The alarm relay contacts will close in the event of a local alarm condition or the receipt of an alarm from a T1 carrier. In a carrier alarm condition such as red, yellow, or blue (Unframed All 1's), several alarm relay contacts located in the BR1/10 close. Carrier alarm conditions cause the BR1/10 to go into trunk processing and the following events will occur:

1. MJ will be directly shorted to MJR
2. MJV will be directly shorted to MJVR

Contacts MJ/MJR can be manually overridden during an Alarm Condition. The ACO push button on the BR1/10 PAU faceplate will open the contacts during a bank alarm condition providing a means to control an external Audible Alarm. No other alarm contacts are affected by the ACO push button.
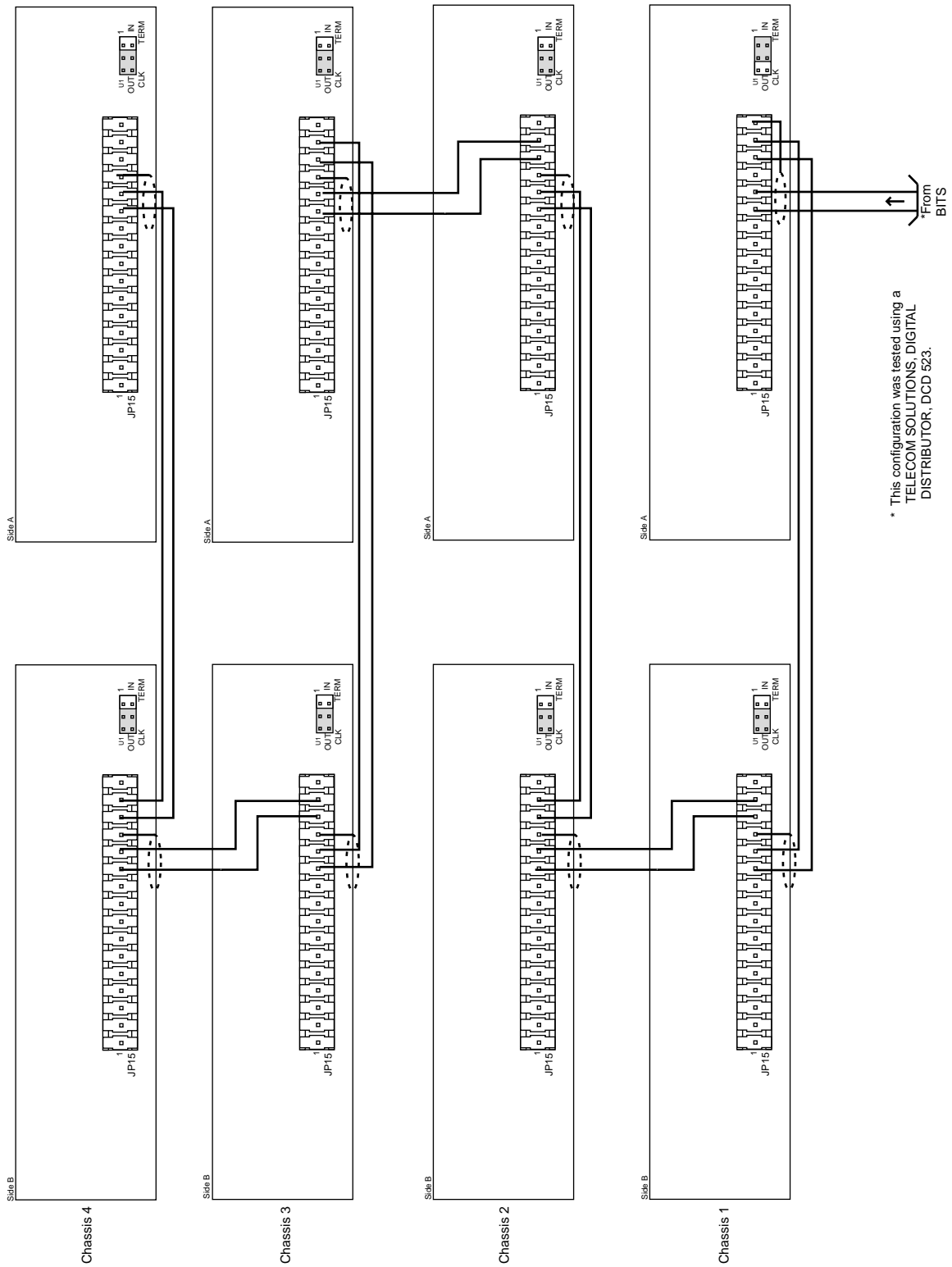
Figure 10. Local Composite Clock Wiring in a Rack With up to Four Chassis

Note 1: Chassis 1, Side A is terminated **In** (U1 is strapped for **In**). The remaining side and chassis are terminated **Out** (U1 is strapped for **Out**).

Note 2: The ground pin (pin 13 and 16 of JP15) is an optional connection for shielded cables; it is not required.

* This configuration was tested using a TELECOM SOLUTIONS, DIGITAL DISTRIBUTOR, DCD 523.

ADTRAN Section 61150081L2-5, Issue 1

The BR1/10 PAU List 2, P/N 1150.078L2, provides alarm relay contact closure in the event the -48V PAU faceplate fuse is tripped. In this alarm condition, the relay contacts will close in the same manner as if the BR1/10 was in a Carrier alarm condition, but depressing the ACO push button will not cancel the audible alarm.

Relay contact closures are a function of the PAU common unit only, not the chassis. A summary of alarm notification is found in Table B.

Table B. Alarm Notification

Condition	Relays Activated		Other Notification
	MJR	MJVR	-48 ALM
Red Alarm	X	X	
Yellow Alarm	X	X	
AIS Alarm	X	X	
PAU fuse blown	X[1]	X[1]	X
ACO Deactivates	X[2]	X	

[1]PAU List 2, P/N 1150.078L2, only.
[2]ACO does not deactivate MJR during a blown fuse condition

Shelf Alarm

The -48V alarm (-48ALM) located on JP15, pin 6, provides a -48VDC signal when the PAU fuse is tripped.

Power Connections

The BR1/10 2x Chassis provides a three-position terminal strip, JP16, for each backplane (see Figure 12). Ring lug terminations are recommended for connecting to JP16. Insert a -48V office battery supply lead into terminal 3 (-48I) of JP16. Insert the battery return into terminal 2 (-48R). Insert the frame ground, or chassis ground, into terminal 1 (FG).

CAUTION
Since the frame ground and the -48V return are isolated in the bank, these grounds should be connected externally to a central ground.
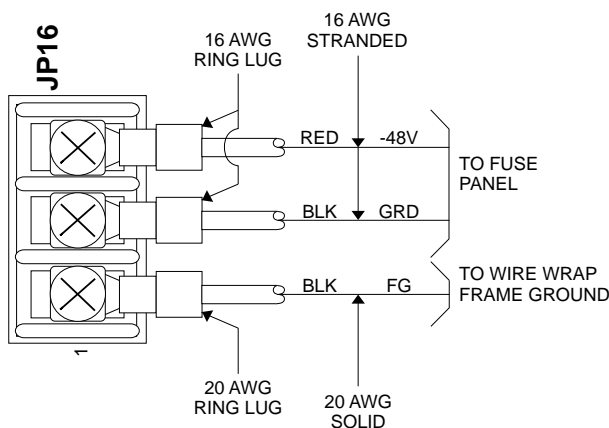

Figure 12. Power Connections on JP16

OPTIONS

RS-485 Connection

The RS-485 link connection is made on JP17, pins 1 through 3, located on the bottom of the backplane. This connection is provided for future applications.

LOC CK

When BITS is not available, JP17, pins 4 and 5, provide a phase-locked-loop local composite clock output. While not intended to provide multiple outputs, this output can be used to provide a clock source for a single channel bank when an external output is required. This option can be used in a tandem configuration that does not have a central composite clock source.

When necessary wiring and connections are completed, replace the clear plastic cover on the backplane. The common equipment and channel units may then be configured and installed. Refer to the appropriate ADTRAN Practices for information specific to each plug-in card.

DB-9

Figure 13 illustrates the DB-9 connector, labeled P1, located on each BR1/10 2x Chassis backplane. The DB-9 connector is reserved for future use.
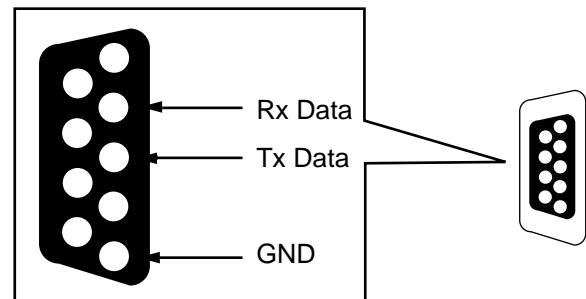

Figure 13. DB-9 Connector

3. MAINTENANCE

The BR1/10 2x Chassis requires no routine maintenance to operate properly. Test and maintenance for the specific plug-ins should be conducted in accordance with the recommendations and procedures prescribed in associated Installation and Maintenance Practices.

ADTRAN does not recommend that repairs be performed in the field. Repair services are obtained by returning the defective unit to ADTRAN's Customer and Product Service.

4. SPECIFICATIONS

Refer to Table C for unit specifications.

Table C. BR1/102x Chassis Specifications

System Power Requirements (for each T1 system)

Input: DC Voltage	-42 VDC to -55 VDC
	-48 VDC nominal
Max Current	1.0A fused
Fully Loaded (10 U-BR1TEs)	0.2A @ nominal
Commons Only	0.06A

Enviromental

Operating temperature:	-40° C to +70° C
	(-40° F to +158° F)
Storage temperature:	-40° C to +85° C
	(-40° F to +185° F)
Relative humidity:	95% max, non-condensing

Physical

Dimension:	10.5" long, 2.8" high, 21.2" wide
Weight:	13.2 lbs fully loaded

5. 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 60000.087-10A).

Customer and Product Service (CAPS) is required 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 support hours, Monday-Friday, 7am-7pm CST
Emergency Support:, 7 days/week, 24 hours/day

ADTRAN Sales .... (800) 827-0807

ADTRANService/CAPS .... (256) 963-8722

Repair and Return Address
ADTRAN, Inc.
Customer Service Department
901 Explorer Boulevard
Huntsville, Alabama 35806-2807