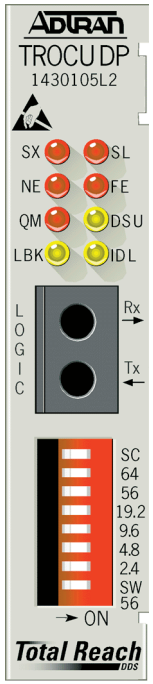
TOTAL REACH® OCU DP / TOTAL REACH® DDS-R

JOBAID
61430105L2-22A
9911

TROCU DP

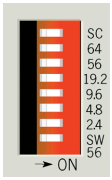
CLEI: D4D3MS1D



STATUS LEDs

SX	● RED	No sealing current detected between the TROCU DP and the TR DDS-R unit
SL	● RED	No synchronization
	○ OFF	Synchronization
NE	● RED	CRC errors on incoming data stream
FE	● RED	CRC errors toward the TR DDS-R
QM	● RED	Customer transit signal has been disabled due to errors on the loop
DSU	● YELLOW	Customer DSU/CSU is absent as determined by the TR DDS-R
LBK	● YELLOW	OCU or CSU loopback activated
IDL	● YELLOW	Presence of the control mode idle toward the network

FACEPLATE SWITCHES



- SC (Secondary Channel) may not be selected if circuit is SW56 or 64 kbps.
- Only one data rate can be selected.

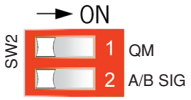
CIRCUIT BOARD SWITCH - SW2

Quality Monitor (SW2-1)

- TROCU DP monitors incoming 2-wire loop and 4-wire customer interface data for errors. Customer transmit data may be ignored if errors are excessive.

AB Signaling (SW2-2)

- This switch is typically OFF to allow the unit to search for frames containing signaling bits. (Only applicable for SW56 applications)



PREPROVISIONED PARAMETERS

Error Correction

- Enables a software algorithm that is used to insure accurate data transmission across the T1. Always disabled.

Zero Code Suppression

- Ensures pulse density in the T-carrier data stream. This option is automatically disabled for 64 kbps circuits and enabled for all other rates.

Latching Loopback

- Unit automatically responds to OCU and CSU latching loopback sequences.

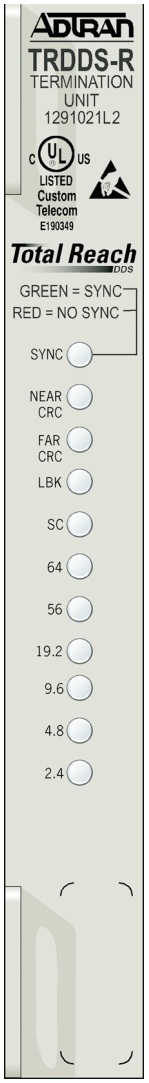
BANTAM JACKS

NEAR and FAR logic level Bantam test access jack. These test points are intrusive into the data stream.

Note: These jacks are for TPI 108/109, FIREBERD 6000 or other DS0 level test set

TR DDS-R

CLEI: D40IKRR8AA



STATUS LEDs

SYNC	● RED	No synchronization
	● GREEN	Synchronization
NEAR CRC	● RED	Errors on incoming data stream
FAR CRC	● RED	Errors occuring towards the TROCU DP
LBK	● YELLOW	Loopback towards network is activated
	✷ FLASHING	Bidirectional loopback at TROCU DP
SC	● GREEN	Secondary channel enabled
64	● GREEN	64 kbps data rate enabled
56	● GREEN	56 kbps data rate enabled
19.2	● GREEN	19.2 kbps data rate enabled
9.5	● GREEN	9.5 kbps data rate enabled
4.8	● GREEN	4.8 kbps data rate enabled
2.4	● GREEN	2.4 kbps data rate enabled

CIRCUIT BOARD SWITCH - SW1

LBK (SW1-1)

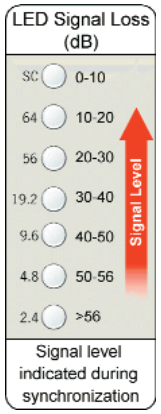
- When ON, unit will respond to CSU and NIU loopback commands with a regenerative loopback towards the network. When OFF, unit will only respond to latching loopback sequence for the NIU.

LBO (SW1-2)

- When OFF, unit will transmit a 0dB AMI signal across the 4-wire customer interface toward the DSU/CSU. When ON, unit will transmit a –10 dB AMI signal toward the DSU/CSU.

SIGNAL LOSS INDICATION

This figure is a display of the data rate LEDs on the faceplate, which act as a signal meter during turn-up. The signal meter is activated automatically upon power up of unit and remains active until synchronization occurs (usually 30-90 seconds after power up). During this period, the meter may be read as follows.



2.4 LED Illuminated Only

- Loop loss is greater than 56dB. Total Reach system will not synchronize.

2.4 & 4.8 LEDs Illuminated Only

- Loop loss is between 50 and 56dB indicating marginal deployment.

Three or More LEDs Illuminated

- Circuit is considered within deployment guidelines with range of dB loss corresponding to topmost illuminated LED.

WARRANTY

Warranty for Carrier Networks products manufactured by ADTRAN and supplied under Buyer's order for use in the U.S. is ten (10) years. For a complete copy of ADTRAN's *U.S. and Canada Carrier Networks Equipment Warranty*: (877) 457-5007, Document #414.

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

For a complete Installation and Maintenance Practice: (877) 457-5007, Document #386 (P/N 1430105L2) and #340 (P/N 1291021L2). Please have your fax number available.

TOTAL REACH DDS

PRICING AND AVAILABILITY 800.827.0807
TECH SUPPORT 800.726.8663
RETURN FOR REPAIR 256.963.8722
www.adtran.com
61430105L2-22A

INSERTION LOSS MEASUREMENTS

TR DDS Design Limits at Traditional 4-wire Frequencies

The chart below is for comparison only. The TR DDS system operates at 13.3 kHz for all customer data rates.

Customer Rate	4-wire Qualifying Frequency (kHz)	TR DDS Loss Limit (dB)
2.4	1.2	21
2.4/SC	1.6	23
4.8	2.4	27
4.8/SC	3.2	30
9.6	4.8	35
9.6/SC	6.4	39
19.2	9.6	45
19.2/SC	12.8	50
56	28.0	59
56/SC & 64	36.0	61

DEPLOYMENT GUIDELINES

- All loops must be nonloaded.
- Actual Measured Loss (AML) should not exceed 50 dB at 13.3 kHz (135 ohm termination), the Nyquist frequency of Total Reach DDS.
- Loop length should not exceed 50 kft.
- Product is designed to be bridged tap (BT) tolerant. ADTRAN allows for 12 kft of BT, though further testing has shown no degradation up to 18 kft.
- Background noise level should not exceed 34 dBrn. ***Note:*** *measure noise with 50 kilobit filter.*
- Impulse noise should not exceed –40 dBm, (+50 dBrn).
- Maximum cable lengths (6 dB margin still available) –50 kft of 22 gauge, 36 kft or 24 gauge, 27 kft of 26 gauge.

TR DDS-R WIRING CONNECTIONS

Pair	Terminal Designations	T400 PIN#	Customer RJ-48
To/From Network	TT,TR	41,47	–
To Customer	DRT, DRR	5,15	7,8
From Customer	DTR,DTT	49,55	1,2

TROCU DP WIRING CONNECTIONS

TIN Designations	Backplane PIN#
T/R	3/4

Turnup Guide

1. Set dipswitches on both units according to circuit design and local practices.
2. Install TROCU DP and TR DDS-R.
   a) TROCU DP fits in ALCATEL D448 channel bank.
   b) TR DDS-R fits in standard non-powered T200 or T400 NCTE mounting.
3. See reverse side of this job aid to ensure all LEDs are correct and synchronization has occurred.
   a) TROCU DP DSU LED will be illuminated yellow if customer DSU is not connected. No other LEDs should be illuminated.
   b) TR DDS-R SYNC LED (green) and appropriate data rate LED will be illuminated. No other LEDs should be illuminated.
4. If LEDs in step 3 are as noted, proceed with loopback and BERT testing per DDS specifications.
5. If LEDs in step 3 are in any other configuration, see *Troubleshooting* portion of this job aid.
6. If problem cannot be solved via the job aid, please call technical support for assistance (see number in page header).
7. The TR DDS system will be qualified at the 13.3 kHz frequency for all customer data rates.

Troubleshooting Guide

No Power at the TR DDS-R

- Ensure TROCU DP is supplying necessary voltage to power the TR DDS-R. Measure t-r voltage at the frame (tip to ground = –125 to –130 VDC, ring to ground = 0). The TR DDS system is not polarity sensitive.
- Measure t-r voltage at the TR DDS-R.
- If voltage is not measured at the TR DDS-R, check continuity of cable pair.
- If voltage is measured at the TR DDS-R, replace the unit.
- The TRDDS-R does not place a measureable short between tip and ring. Cable resistance must be taken toward a manually applied short.

Power, but No Synchronization

- Check cable for load coils.
- Note signal meter reading on TR DDS-R during power up and synchronization process. Refer to *Signal Loss Indication* portion of this job aid for definitions. Loop loss may be too great for synchronization to occur. Ensure loop length is within allowable deployment guidelines.
- Check for excessive bridged taps.

Excessive Errors on Loop

- Ensure background noise does not exceed 34 dBrn.
- Ensure impulse noise is not greater than –40 dBm (+50 dBrn). ***Note:*** *measure noise with 50 kilobit filter.*
- Compare resistances of individual conductors. If these are different, high-resistance or intermittent opens may be indicated. A TDR is commonly required to find such faults.

Testing Guide

1. Connect the DS0 digital test set TPI 108/109 or equivalent to the logic level Bantam test jacks of the TROCU DP and configure the set for NEAR or FAR Logic (NEAR test toward the customer loop, FAR test toward the T-carrier) and select the desired data rate. Please note, remote testing is also acceptable.
2. Initialize the desired loopback OCU or NIU. If FAR direction is selected, send appropriate latching loopback sequence which will loop the unit directly across the T-carrier system. If the NEAR direction is selected, the OCU latching loopback sequence will loop the unit directly connected to the portable test set. The TROCU DP will always invoke a bidirectional loopback.
3. The LBK LED will illuminate if the OCU or CSU loopback is successful. It will not illuminate if the loopback failed.
4. Send and receive test pattern 2047 to the established loopback and observe the DS0 digital test set for bit error count.
5. Drop OCU latching loopback and send an NIE loopback sequence to loopback the TR DDS-R. Run test pattern and observe bit error count as in step 4 to test integrity of local loop.
6. Testing from the TR DDS-R may be accomplished by connecting the DDS loop test set (TPI 82 or equivalent) to the customer side jack of the TR DDS-R housing and running to a bi-directional TROCU DP loopback. Unseat and reseat the Total Reach DDS Remote unit before testing to gain access to the data stream.