

### Pattern Select

0	QRSS
1	1 in 8
2	3 in 24
3	2 <sup>15</sup> -1
4	2 <sup>20</sup> -1
5	Clear

### Supervisory Port

1	Control Out
2	Signal Ground
3	Data Out
4	Data In
5	Signal Ground
6	Control In

## Front Panel Description

- Status:** The green LED lights when the unit is powered and operation is normal. The red LED lights if an alarm exceeding thresholds is detected.
- ACO:** This yellow LED lights if the Alarm Cut Off switch is placed in the left ON position. It indicates that the alarm relay contacts are disabled.
- ACO SW:** This switch controls the alarm relay circuitry. If the switch is placed in the left ON position, this circuitry is deactivated.
- BV/CR/FE:** This LED lights one second for each second that has an occurrence of bipolar violations, cyclic redundancy check errors, or frame bit errors.
- LOS/OOF:** This LED blinks with loss of signal (LOS) from the network or DTE. It lights constantly when an out of frame (OOF) condition is detected.
- AIS:** This LED lights if an unframed all ones condition (alarm indication signal) is detected from the network or equipment.
- REM ALM:** This LED lights constantly when a yellow alarm signal is received from the far end.
- LOC ALM:** This LED lights when a local alarm exceeding alarm thresholds exists. It remains lit until the Alarm Reset Timer period ends.
- DENSITY:** This LED lights when the ones density requirement of the received equipment signal is below the minimum.
- LLB:** This LED lights continuously when the network interface is in a line loopback. It flashes when the DTE interface is in a line loopback.
- PLB:** This LED lights continuously when the network interface is in a payload loopback.
- TST:** This LED lights continuously during a far or local test. It flashes when loop codes are transmitted at the start of a far test and when unloop codes are transmitted at the end of a far test.
- ERR:** This LED lights for one second when BERT pattern errors are received during a Far test.
- Test Switch:** This switch is used for local testing. If transmitting IBLC, the test LED blinks. If transmitting a test pattern, it lights continuously.
- Test Jacks:** Provides access to the T1 line on the DTE side – the top two jacks break connection to the DTE and make connection to the unit in the direction of the network, the middle two ports monitor the signals passing through the unit, and the bottom two ports break connection to the unit and make connection to the DTE.
- Activity LEDs:** These two small, recessed LEDs are provided to indicate supervisory and NMS port activity.
- SUPV:** This 6-pin supervisory jack provides direct terminal access for CSU control and gathers status/facility performance data. Refer to the table above.
- Pattern Select:** This rotary switch determines the BERT pattern sent by the unit when the test switch (item 14) is in the FAR position. Refer to the table above.

## Specifications

### Network Interface

Line Rate:	1.544 Mbps, ± 50 bps for internal clock, ± 200 bps in through mode
Line Impedance:	balanced 100 Ω (± 5%)
Input Signal:	DS1, 0 to -27 dB (ALBO)
Output Signal:	3.0 V (± 15%), base-peak into 100 Ω
Line Build Out:	0, -7.5, -15, and -22.5 dB attenuation
Line Protection:	1000 V lightning, fused input/output
Jitter Control:	per TR62411 and T1.403
Pulse Density:	per TR62411

### Equipment Interface

Line Rate:	1.544 Mbps, ± 50 bps for internal clock, ± 200 bps in through mode
Line Impedance:	balanced 100 Ω (± 5%)
Input Signal:	DSX1 to -6 dB
Output Signal:	Selectable DSX1 level from 0 to 655 feet in six incremental levels

Line Protection: 1000 V lightning, fused input/output

### Clock Sources

Internal:	25 ppm (1.544 MHz), 1.5 ppm option
Receive:	100 ppm, 1.544 MHz
External (optional):	-27 dB T1 signal @ 1.544 MHz
Time of Day:	Internal clock battery backup set by network manager

### Diagnostics

Loopbacks:	Line loopback and payload loopback on the network interface; Line loopback on the DTE interface
Network BERT:	QRSS, 63, 511, 2047, 2 <sup>15</sup> , 2 <sup>20</sup> , 2 <sup>23</sup> , 1 in 8, 3 in 24, Alternate, and Clear

### Alarms

Activation:	Programmable thresholds
Reporting:	NO or NC contacts, NMS, front panel LEDs, internal buzzer
Contact Ratings:	UL 0.3 A @ 110 VAC 1.0 A @ 30 VDC

### DC Power

19 VDC to 60 VDC range, 4.3 W, 15 BTU

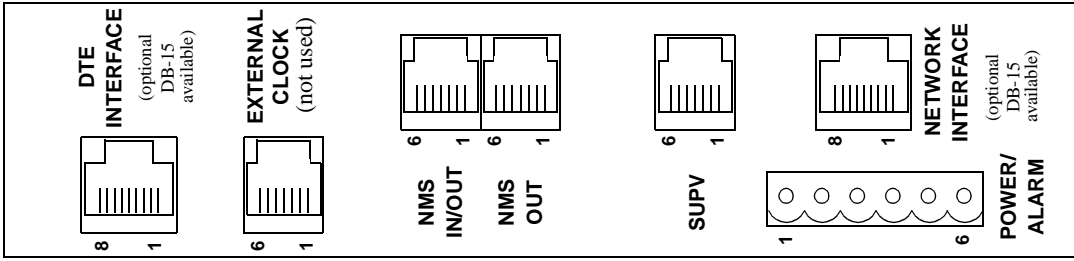
### Mechanical

Mounting:	desktop, wall, horizontal/vertical rack
Dimensions:	1.72" W, 6.8" H, 10.5" D
Weight:	2 lbs

### Industry Standards

FCC Compliance:	Part 15 Subpart B, Class A
FCC Part 68 Reg. #:	FXXUSA-74451-DE-N
UL Approved	E110448
CSA Certified:	LR98859
IC/CSO3:	1653 5188 A
TR 54016	
TR 62411	
ANSI T1.403	

## TxPORT 2000 CSU Rear Panel



### NET/DTE Connection

Pin	DTE	NET
1	Data Out	Data In
2	Data Out	Data In
3	Not used	Not used
4	Data In	Data Out
5	Data In	Data Out
6	Not used	Not used
7, 8	Chassis gnd	Chassis gnd

### Network Cable Lengths

Cable Type	Loss per 1000'	Max Length
26 gauge	6.8 dB	4,400 ft
24 gauge	5.4 dB	5,500 ft
22 gauge	4.2 dB	7,100 ft
19 gauge	3.0 dB	10,000 ft

### NMS Connection

Pin	NMS In/Out	NMS Out
1	Not Used	Not Used
2	Signal Gnd	Signal Gnd
3	Data Out	Data Out
4	Data In	Not Used
5	Signal Gnd	Signal Gnd
6	Not Used	Not Used

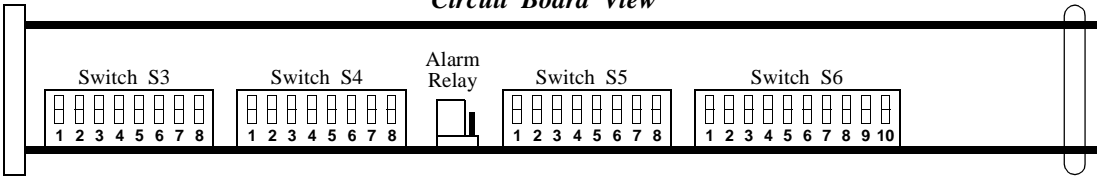
### Power/Alarm Connection

Pin	Function
1	48 VDC Return
2	Signal Ground
3	-48 VDC
4	Frame Ground
5	Alarm Contact
6	Alarm Common

### Optional DB-15 Connection

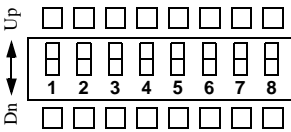
Pin	DTE	NET
1	Data In	Data Out
2	Frame Gnd	Frame Gnd
3	Data Out	Data In
4	Frame Gnd	Frame Gnd
9	Data In	Data Out
11	Data Out	Data In

### Circuit Board View



**NOTE:** For future reference, all DIP switches are provided with upper and lower boxes to check according to the particular user selection. Factory default settings are shown underlined.

### Configuration Switch S3



**Network LBO:** Sets the output signal level of the transmitted data.

S3-1	S3-2	Line Build Out
Dn	Dn	0 dB
Dn	Up	-7.5 dB
Up	Dn	-15.0 dB
Up	Up	-22.5 dB

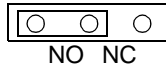
**DTE LBO:** The output level of the DTE interface should match the cable length from the CSU DTE port to the attached equipment.

S3-3	S3-4	S3-5	Distance
Dn	Dn	Dn	0 - 110 ft
Dn	Dn	Up	110 - 220 ft
Dn	Up	Dn	220 - 330 ft
Dn	Up	Up	330 - 440 ft
Up	Dn	Dn	440 - 550 ft
Up	Dn	Up	550 - 655 ft
Up	Up	Dn	> 655
Up	Up	Up	Square

**Clock:** Sets the CSU's timing source for data transmitted toward both the network and DTE.

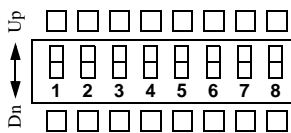
S3-6	S3-7	S3-8	Source
Dn	Dn	Dn	Normal
Up	Dn	Dn	Internal
Up	Up	Dn	Network
Up	Up	Up	DTE

### Alarm Relay Mode



This 3-pin jumper straps the ACO alarm contact. Move the jumper to the left for normally open operation (closes on alarm) or to the right for normally closed operation (opens on alarm).

### Configuration Switch S4



**S4-1:** T1.403 PRM:  
Down - enabled    Up - disabled

**S4-2:** Audible Alarm (buzzer)  
Down - disabled    Up - enabled

### S4-3 S4-4 Boot Mode

Dn	Dn	Boot from Switches
Dn	Up	Boot from RAM
Up	Dn	Boot from Manager
Up	Up	Boot from ROM

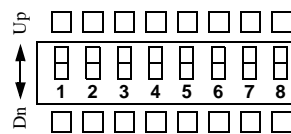
### S4-5 S4-6 SUPV Port Rate

Dn	Dn	19200 bps
Dn	Up	9600 bps
Up	Dn	2400 bps
Up	Up	1200 bps

### S4-7 S4-8 NMS Port Rate

Dn	Dn	19200 bps
Dn	Up	9600 bps
Up	Dn	2400 bps
Up	Up	1200 bps

### Configuration Switch S5



**S5-1:** Network Line Framing - matches the CSU to the framing of the network line.  
Down - ESF    Up - D4

**S5-2:** DTE Line Framing - Matches the CSU to the framing of the DTE line.  
Down - ESF    Up - D4

**S5-3:** Network Line Coding  
Down - AMI    Up - B8ZS

**S5-4:** DTE Line Coding  
Down - AMI    Up - B8ZS

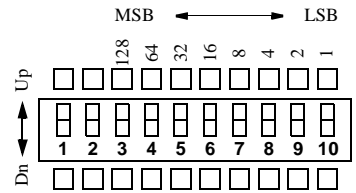
**S5-5:** Network AIS - Sets the all ones signal sent out to the network in a *Keep Alive* condition.  
Down - Unframed    Up - Framed

**S5-6:** Network Keep Alive Mode - Selects the action to occur on a DTE loss of signal.  
Down - Send AIS    Up - Loop NET data in to NET data out

**S5-7:** ESF CRC Mode - Regenerates the CRC code or passes the CRC code through unchanged.  
Down - Regenerate    Up - Pass

**S5-8:** ESF FDL Mode - Terminates the received data link in the CSU or passes it through unchanged.  
Down - Terminate    Up - Pass

### Configuration Switch S6



**S6-1:** Zero Suppression (ones density):  
Down - Enable    Up - disable

**S6-2:** Maintenance Reset  
Down - Off    Up - On

**S6-3 to S6-10:** The NMS address is defined with this 8-bit binary code. The factory default value is 1, which is S6-10 in the up position and S6-3 through S6-9 down.

# TXPORT

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