

Front Panel Description

- 1 **Status:** The green LED lights when the unit is powered and operating normally. The red LED lights if an alarm exceeding thresholds is detected or another type of unit failure exists.
- 2 **ACO:** This LED lights if the Alarm Cut Off switch is placed in the left On position. It indicates that the alarm relay contacts are disabled.
- 3 **ACO SW:** This switch controls the alarm relay circuitry. The right On position disables the alarm relay contacts. The left Off position enables the contacts to report alarm conditions.
- 4 **Switch S2:** This seven-position DIP switch is used for unit configuration. The black squares indicate the direction of factory default settings. Refer to the switch diagram and table on back.
- 5 **BPV:** This LED lights (0.1 seconds minimum) for each occurrence of bipolar violations from the network.
- 6 **LOS:** This LED lights to indicate that a *loss of signal* is detected from the network.
- 7 **AIS:** This LED lights if an unframed all ones condition (alarm indication signal) is detected from the network.
- 8 **LOOP:** This LED lights to indicate that the unit is in a line loopback condition.
- 9 **DENSITY:** This LED lights if the ones density of the received data from the DTE is less than 12.5 percent.
- 10 **SET:** This LED flashes when the set code is transmitted. It lights constantly when the set code is received.
- 11 **RESET:** This LED flashes when the reset code is transmitted. It lights for five seconds when the reset code is received.
- 12 **ERR:** This LED flashes if a BERT pattern error is received during network testing.
- 13 **Test Switch:** This three-position switch is used for performing a network test or a local loopback. The LOC setting invokes a bidirectional loop. If the unit receives a loop code from the network, then the setting of Switch S3-7 applies.
- 14 **Test Jacks:** These bantam jacks provide access to the T1 line on the DTE side as follows – 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 are used for monitoring the signals passing through the unit (between the DTE and the network), and the bottom two ports break connection to the unit and make connection to the DTE.

SPECIFICATIONS

Network Interface

Line Rate:	1.544 Mbps, ± 50 ppm (internal clock), ± 200 bps (through mode)
Line Framing:	D4 or ESF (transparent)
Line Code:	AMI or B8ZS
Input Signal:	DS1, 0 to -30 dB ALBO
Connection:	RJ-48C jack, 100 Ω ($\pm 5\%$)
Output Signal:	3.0 V ($\pm 15\%$) 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
Keep Alive:	Line loopback or all ones (framed or unframed)
Jitter Control:	per TR 62411 and T1.403
Pulse Density:	15 or 175 zeros

Equipment Interface

Line Rate:	1.544 Mbps, ± 50 ppm (internal clock), ± 200 bps (through mode)
Line Framing:	D4 or ESF (transparent)
Line Code:	AMI or B8ZS
Input Signal:	DSX1 to -6 dB
Connection:	RJ-48C jack, 100 Ω ($\pm 5\%$)
Output Signal:	Selectable DSX1 level from 0 to 655 feet in six incremental levels

Diagnostics

Loopbacks:	Line loopback on network interface
Network BERT:	1 in 8 (B8ZS), 3 in 24 (AMI), Clear test, selectable framed/unframed

Alarms

Network Activation:	BPVs, all zeros, AIS
DTE Activation:	Low density (> 15 or > 175 zeros)
Reporting:	Front panel LEDs and alarm contacts
Contact Ratings:	UL 120 mA @ 110 VAC or 110 VDC
Connection:	Terminal strip

Power

Local Power:	19 VDC to 60 VDC, 4.3 W, 15 BTU
Connection:	Terminal strip

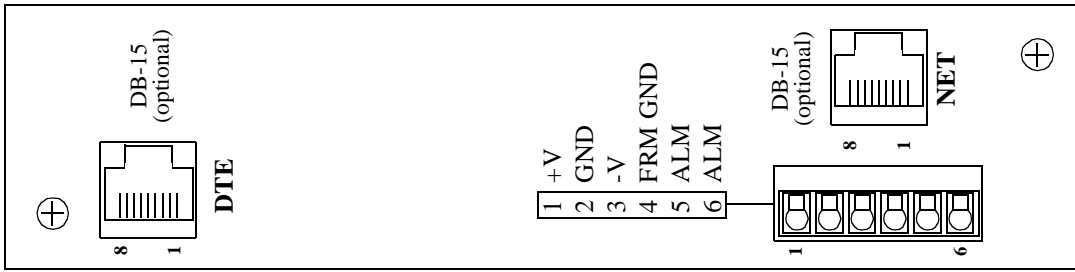
Mechanical

Mounting:	desktop, wall, horizontal or 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:	FXKUSA - 74937-DE-N
UL Approved:	E110448
CSA Certified:	LR98859

Verilink 2100 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

Maximum NET Cable Length

Cable Type	Loss per 1000'	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

Power/Alarm Connection

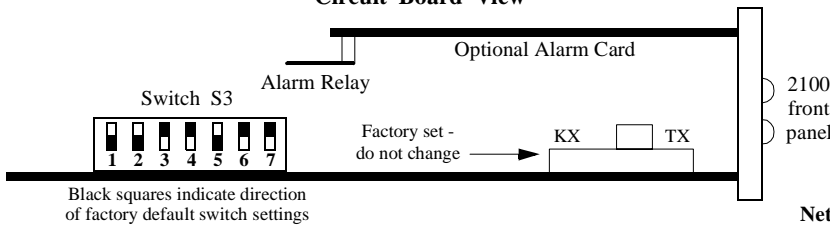
Pin	Function
1	48 VDC return (+)
2	Signal Ground
3	48 VDC (-)
4	Frame Ground
5	Alarm Contact
6	Alarm Common

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.

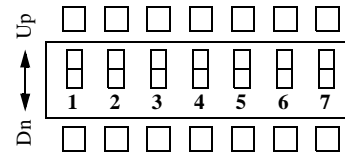
Optional DB-15 Connection

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

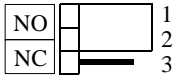
Circuit Board View



Switch S3



Alarm Relay



This 3-pin jumper straps the ACO alarm contact. Position jumper over pins 1 and 2 for normally open operation (closes on alarm) or over pins 2 and 3 for normally closed operation (opens on alarm).

Optional Alarm Card

The optional ACO/alarm card monitors the alarm indicators for an alarm active or an alarm clear condition and provides closure contact points on the rear panel. The corresponding front panel LED lights when an alarm condition is detected on the four different conditions shown below.

- 1) Network AIS (all ones)
- 2) Network LOS (all zeros)
- 3) Network BPVs
- 4) DTE ones density

Network LBO: Sets the output signal level of transmitted data. The telco should provide the proper setting. If unsure of the exact setting, set to 0 dB.

DTE LBO: The transmit output level is selectable according to the cable length from the CSU DTE port to the T1 equipment.

S3-1	S3-2	LBO Level
<u>Dn</u>	<u>Dn</u>	0 dB
Dn	Up	-7.5 dB
Up	Dn	-15.0 dB
Up	Up	-22.5 dB

S3-3	S3-4	S3-5	Distance
<u>Up</u>	<u>Up</u>	<u>Dn</u>	0'-133'
Dn	Dn	Up	134'-266'
Up	Dn	Up	267'-399'
Dn	Up	Up	400'-533'
Up	Up	Up	534'-655'

S3-6 Line Code

Up: Line code transparent
Dn: DTE AMI -> NET B8ZS

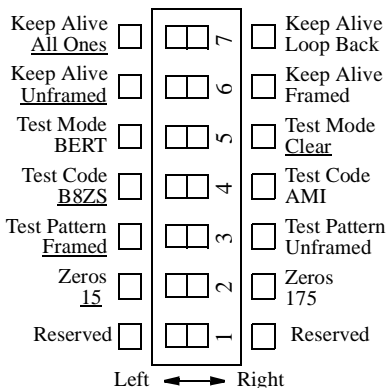
S3-7 During Remote Loop

Up: AIS to DTE
Dn: Network data to DTE

Switch S2 Description

7	Keep Alive: <u>All Ones</u> sends a consecutive sequence of all ones back to the network. Loopback sends any signal coming from the network back to the network.
6	Keep Alive: <u>Unframed</u> transmits the Keep Alive signal without framing. Framed adds framing information to the Keep Alive signal.
5	Test Mode: <u>Clear</u> allows network access via test jacks to run bit error tests (affects network test only). BERT allows the CSU to send a bit error rate test pattern after the set signal (LOOP) is sent.
4	Test Code: <u>B8ZS</u> allows the CSU to be transparent to a B8ZS code coming from the network and sets the test signals to B8ZS. AMI shows a BPV error for each event.
3	Test Pattern: <u>Framed</u> indicates that the test signals (Set, Reset, and BERT) are framed. Unframed indicates the test signals are unframed.
2	Zeros: <u>15</u> allows 15 successive zeros from the DTE before the Keep Alive mode is activated. 175 allows 175 zeros before activation.
1	Reserved

Switch S2 (front panel)



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