



ORION TELECOM NETWORKS INC.

VCL-EC™ T1 Echo Cancellor 1U, 19 inch Version with Telnet

T1, 1U Echo Cancellor

Product Brochure & Data Sheet

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Highlights

- Compact T1 Echo Canceller solution in 19 inch, 1U high (44mm height) chassis and accomodates 1, T1 Echo Canceller with telnet, per shelf
- Provides voice echo cancellation of up to 64ms. Bidirectional/128ms. unidirectional - User Selectable / User Programmable.
- Meets ITU-T G.164, G.165, G.168 (2000/ 2002) requirements for echo cancellation
- Signaling protocols supported:
 - 24B (24 Voice Channels) with out-of-band signaling
 - C7/SS7 Signaling on any user selected time-slot)
 - 23B+D, PRI ISDN (23 Voice Channels+D Signaling Channel)
 - D4 Robbed Bit
 - All signaling options are User Selectable/ User Programmable
- The echo canceller supports fax/modem G.164 and G.165 (2100 Hz) tone disable
- Carrier-grade voice quality per AT&T Voice Quality Assessment Lab
- Remote access through telnet over LAN/ TCP-IP link (10/100BaseT)
- Easy-to-use Graphical User interface (GUI) and text based CLI commands for management and configuration
- Adjustable gain/loss settings on all channels. Provides the user the flexibility to adjust and optimize the voice, transmit and receive levels
- Local access through COM port (RS232 serial port) and USB Port
- Remote access through telnet over LAN/TCP-IP link (10/100BaseT)
- Non-linear processor with comfort noise insertion
- T1 link by-pass on power failure. This feature helps to maintain the link integrity even in the event of power failure
- Option for user to select voice echo cancellation or digital-data transmission selectively on each time-slot for selective echo cancellation. This feature allows the user to use selected time-slots for data transmission to enable digital data/CCS signaling transmission
- Transmission (data mode), while keeping the echo cancellation "ON" on the remaining time-slots (voice mode), on which echo is required to be cancelled
- Ensure echo canceller maintains excellent performance at all times in presence of tones or signals including DTMF tones
- Fully integrated independent 24-channel voice echo canceller

Applications

- GSM, CDMA, TDMA and Cellular Base Stations
- Digital Circuit Multiplication Equipment (DCME) : Satellite Communications and Multiplexers
- PCS, mobile and digital cordless wireless systems
- PBX and central office systems
- Datacomm: Voice over Frame Relay, Voice over ATM and Voice over Internet
- Voice over ATM, Frame Relay or packet switching systems and fax transmissions
- Central Office and PBX: Network Trunks, Echo Canceller Pool, Common Equipment and Audio Conferencing Bridges
- Voice over datacomm including Voice over Internet (VoIP), Voice over ATM (VoATM) and Voice over Frame Relay (VoFR)

Fault Recovery

The Echo Canceller equipment offers fault recovery feature. It offers automatic by-pass upon power-supply failure (i.e. it offers T1 circuit by-pass in the event of power supply failure).

Clock

Internal	Stratum 3 Level
Loop-timed	T1 Line Clock

Datacomm Applications

- Voice over Frame Relay
- Voice over ATM
- Voice over Internet/LAN (VoIP)

Central Office and PBX Applications

- Network Trunks
- Echo Canceller Pool
- Common Equipment
- Audio Conferencing Bridges

Voice Over ATM Applications

- A multi-channel echo canceller resource or pool is shared among many channels to reduce cost
- Echo cancellation is done at a DS0 level

Satellite Communications Applications

- Digital Circuit Multiplication Equipment (DCME)

Wireless Applications

- Digital Cordless and Cellular Basestations
- GSM, CDMA
- Access Controllers

Voice over Frame Relay, ATM Applications

- Frame Relay and ATM routers and switches introduce large, variable and unpredictable delays
- Echoes from the Public Switched Telephone Network (PSTN) in combination with the delays from Frame Relay and ATM equipment yield objectionable speech quality

Regulation Compliance

- Meets CE requirements
- Complies with FCC, Part 68 and Part 15 sub part A Specifications
- Safety - UL 1459 Issue 2

Management and Control

- Remote access through telnet over LAN/TCP-IP link (10/100BaseT)
- Local access through COM Port (RS232 serial port) and USB Port

VCL-EC, T1 Echo Canceller, 1U 19 inch Version with Telnet Shelf Description:

The VCL-EC, T1 Echo Canceller is a 1U, 19 inch shelf, fitted with a back plane. The T1 interface, power input, COM Port, USB Port and LAN Port are all accessed from the system front panel.

VCL-EC, T1, 1U Echo Canceller Front View of the 1U Version



Technical Specifications

Network Interface

Number of Interfaces	2, 1-Input (RJ-45), 1-Output (RJ-45)
Line Rate	T1 - 1.544 Mbps
Line Code	B8ZS, AMI (User Selectable)
Frame Structure	D4, ESF (User Selectable)
PCM Encoding Law	μ Law as per ITU-T G.711
Signaling	Pass-Through: Signaling protocols supported: <ul style="list-style-type: none"> - 24B (24 Voice Channels) with out-of-band signaling - C7/SS7 signaling on any user selected time-slot - 23B+D, PRI ISDN (23 Voice Channels+D Signaling Channel) - D4 Robbed Bit Signaling. - All signaling options are User Selectable
PCM Sampling Rate	8000 samples/sec
Bit Rate	1544 Kbps \pm 50 ppm
Jitter Tolerance	As per ITU-T G.823
Output Jitter	< 0.05 UI (in the frequency range of 20Hz to 100 KHz)
Nominal Line Impedance	100 Ohms Balanced RJ-45
Nominal Pulse Width	244 ns
Pulse Mask	As per ITU (CCITT) Rec. G.703
Loss and recovery of frame alignment	As per clause 3 of ITU (CCITT) G.732
Loss and recovery of multiframe alignment	As per clause 5.2 of ITU (CCITT) G.732

Echo Canceller

Echo Tail Cancellation	Up to 64ms. Bidirectional/128ms. Unidirectional - User Selectable
Tone Disabler	As per ITU-T G.164, G.165
ERLE (Echo Return Loss Enhancement)	>35dB (with 6dB ERL) at -10dBm0 >65dB with NLP enabled
ERL (Echo Return Loss)	Selectable Threshold Levels Options: 0, 3, 6 dB
Transmit/Receive Levels (Programmable)	Selectable Levels Options: -12, -9, -6, -3, 0, +3, +6, +9
Comfort Noise Insertion	User Selectable - Enable/Disable
Local Monitoring	RS232 serial interface and USB Port
Remote Monitoring	10/100BaseT Ethernet Port
Local and Remote Provisioning	CLI (text commands) and GUI
Front Panel Indicators	-In SYNC/Failure -LEDs for power on/off
Environmental-Operational	0° C to 50° C
Humidity	5% to 95%, non-condensing

Power Consumption - T1 Echo Celler, 1U 19 inch Version

Input Voltage Option	Current (in Amps.)	Power Consumption (in Watts)
- 48V DC	0.15	6.0
220V AC	0.03	6.0

DC Power Supply Specifications

Input DC Voltage	-48V DC (nominal)
Range of Input	-40V to -60V DC
Input Voltage Reversal Protection	Provided

AC Power Supply Specifications

Range of input AC voltage	100 V to 240 V AC, 50Hz / 60Hz.
Connector Type	3 PIN AC Socket (IEC 60320 C14)
Efficiency at full load	> 86%

Mechanical Specifications

Height	44 mm.
Depth	260 mm.
Width	480 mm.
Weight	4 kgs.

Ordering Information

Part #	Specifications
VCL-EC-1U-T1-AC	T1, Echo Canceller 1U (44mm high) 64ms. Bidirectional/128ms. unidirectional - User Selectable - Available in 1U Rack-Mount version - OAM : 10/100BaseT Ethernet RJ45 (Telnet) and Serial Port (USB and DB-9 COM Port) - AC input, 100V AC to 240V AC, 50Hz / 60Hz.
VCL-EC-1U-T1-DC	T1, Echo Canceller 1U (44mm high) 64ms. Bidirectional/128ms. unidirectional - User Selectable - Available in 1U Rack-Mount version - OAM : 10/100BaseT Ethernet RJ45 (Telnet) and Serial Port (USB and DB-9 COM Port) - -48V DC (-40V DC to -60V DC).

Technical specifications are subject to changes without notice.
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