



||| Bhumika International Inc.

VCL-ECTM DS3, Echo Cancellor

Data Sheet / Brochure

BHUMIKA INTERNATIONAL INC.

812 - 350 WEBB Drive
Mississauga, Ontario, L5B3W4, CANADA

Phone: +1 (416) 930 2931

E-mail: info@bhumika.ca

Website: <http://www.bhumika.ca>

DS3 Echo Cancellor Product Overview

Bhumika provides robust and cost effective DS3 echo canceller and voice quality enhancement solutions for the long distance, wireline, wireless, (GSM, CDMA, TDMA), VoIP, satellite and radio communications. The VCL-EC, DS3 echo cancellers are offered to provide cancellation of upto 128ms echo tails. The echo canceller equipment is compliant to ITU-T G.164, G.165, G.168 (2000 / 2002) requirements for echo cancellation. The echo canceller solutions offers carrier-grade voice quality per AT&T Voice Quality Assessment Lab. The echo canceller supports fax / modem G.164 and G.165 (2100 Hz) tone disable function.

Applications

- GSM, CDMA, TDMA
- Digital Cordless and Cellular Basestations
- Voice Over Frame Relay
- Voice Over ATM
- DCME
- Voice Over Internet / LAN (VoIP)
- Network Trunks
- Digital Circuit Multiplication Equipment
- A multi-channel echo canceller resource or pool is shared among many channels to reduce cost
- Echo cancellation is done at a DS0 level
- Frame Relay and ATM routers and switches introduce large, variable, and unpredictable delays.
- Echoes from the Public Switched Telephone Network (PSTN)

Datacomm Applications

- Voice Over Frame Relay
- Voice Over ATM
- Voice Over Internet/LAN

Central Office and PBX Applications

- Network Trunks
- Echo Cancellor 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

- GSM, CDMA, TDMA
- Digital Cordless and Cellular Basestations

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.

Highlights

- Provides voice echo cancellation of up to 128ms Uni- Directional - echo tails
- 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). All Signaling options are USER SELECTABLE / USER CONFIGURABLE
- Built in cross-connect at DS-0 level for all channels.
- Maps any DS3 time slot (input) to any DS3 time slot (output).
- The echo canceller supports fax / modem G.164 and G.165 (2100 Hz) tone disable.
- Offers RS232 serial interface for external PC COM port and Ethernet (10Base-T) interface for remote LAN
- Non-Linear Processor with Comfort Noise Insertion
- Redundant Power Supply (Optional)
- Automatic by-pass upon power supply failure / removal of power supply.
- Fully integrated independent 672-channel voice echo canceller
- User Programmable tail-side
- Supports 2100 Hz fax / analog data modem tone detection and echo canceller disabling on all channels
- USER PROGRAMMABLE dedicated data channels

Signaling Support

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).
- All signaling options are USER SELECTABLE

Types Offered

User Selectable:

128ms - Uni-directional (cancels the echo with upto 128ms tail at the far end).

By-pass all signaling, digital data and video channels.

Management and Control

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

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).

Features

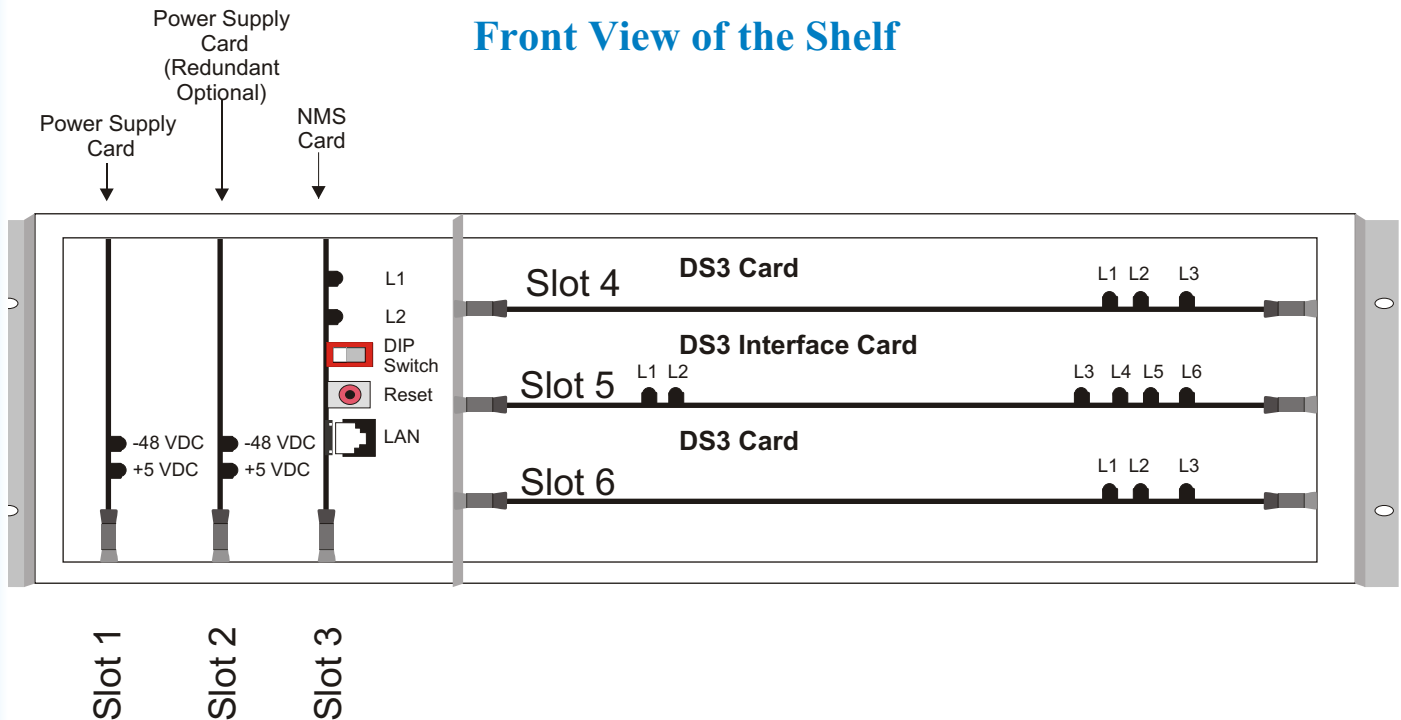
- User Selectable - 128ms - Uni-directional echo canceller with Programmable off-set. Allows echo canceller deployment at the local end.
- Carrier-grade voice quality per AT&T Voice Quality Assessment Lab.
- Fax / Modem G.164, G.165 - 2100 Hz tone disable as per ITU-T G.164/G.165 Recommendations. Allows fax and analog modem data transmission through automatic echo-cancellation enable / disable function.
- Disable Tone detection supported on all audio paths.
- Fully integrated independent 672-channel voice echo canceller.
- Option for user to select data or voice channels for selective echo cancellation. This feature allows the user to use selected time-slots for data transmission to enable digital data / CCS signaling transmission.
- Data Transmission on select slots (data mode), while keeping the echo cancellation "ON" on the remaining time-slots (voice mode), on which echo is required to be cancelled.
- DS3 Circuit by-pass in the event of power supply failure. This feature enables the by-pass of the DS3 Circuit in the event of power failure. This ensure continued service even if the power to the echo-canceller fails.
- Programmable Double-Talk detection threshold.
- Narrow-Band signal detection.
- Adjustable gain/loss settings on all channels. Provides the user the flexibility to adjust and optimize the voice and transmit receive levels.
- The equipment offers RS232 serial interface for configuration through a PC COM Port, and an Ethernet (10BaseT) interface for remote LAN configuration and monitoring which allows the user to monitor and configure the equipment over a TCP-IP network from anywhere in the world.
- Redundant Power Supply (Optional)
- Removes residual echo and minimizes switching effects thereby providing high perceived speech quality.
- Ensure echo canceller maintains excellent performance at all times in presence of tones or signals including DTMF tones.
- Instability detector suppresses variable pitched ringing or oscillation.
- Path change detect permits fast re-convergence when a major change occurs in the echo channel.
- Usable in telecommunications systems worldwide.
- The echo canceller equipment offers fault recovery feature. It offers automatic by-pass upon power-supply failure / removal power supply. (i.e. it offers T1 circuit by-pass in the event of power supply failure).
- Built-in cross-connect at DS-0 level. Allows user to cross-connect DS-0 to any DS-0 and by-pass all signaling, digital data and video channels.

VCL-EC, DS3 Voice Echo Cancellor SHELF DESCRIPTION:

The VCL-EC, DS3 Voice Echo Cancellor is a 3U, 19 Inch Shelf, fitted with a backplane that provides rear access of all external interfaces. The DS3 interface, power input, alarm extension are all accessed from the system backplane.

VCL-EC, DS3 Voice Echo Cancellor

Front View of the Shelf



Front View (Left to Right)	Details	Part No.
Slot 1:	PS, Power Supply Card	VCL-EC-128-1110
Slot 2:	PS, Power Supply Card (Redundant Optional)	VCL-EC-128-1110
Slot 3 :	EC, DS3 NMS Card	VCL-EC-DS3-NMS
Slot 4 to Slot6:	EC, DS3 Card	VCL-EC-DS3
19 Inch Shelf	3U, 19inch shelf with connectorized Backplane (One 3U high shelf can accomodate upto 3, DS3 Echo Cancellers)	

Mechanical Specifications

Height	133.33mm.
Depth	292 mm.
Width	482 mm.
Weight	5.00 Kgs.

Technical Specifications

Network Interface

Number of Interfaces	2,1 - Input (BNC),1 - Output (BNC)
Bit Rate	44.736 Mbps
DS3 Line Code	B3ZS
DS1 Line Code	B8ZS AMI (User Selectable)
Framing	* Meet ANSI T1.404 * M13 or C-bit parity
PCM Encoding Law	Mu Law as per ITU-T G.711
Signaling	Pass-Through: 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). - All signaling options are USER SELECTABLE
Pulse Shape	Meets ANSI T1.102-1993 and Bellcore GR-499-CORE
Connectors	BNC, Co-axial Un-balanced
Impedance	75 Ohms
Signal Level to declare Loss of Signal condition	$\leq 20\text{mV}$
Signal Level to clear Loss of Signal condition	$\geq 90\text{mV}$

Echo Cancellor

Echo Tail Cancellation	128ms - Uni-directional echo canceller programable off-set - allows echo canceller deployment at the local end.
Tone Disabler	As per ITU-T G.164, G.165
ERLE (Echo Return Loss Enhancement)	>35dB (with 6dB ERL) at 10dBm0 input >65dB with NLP enabled
ERL (Echo Return Loss)	Selectable 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 and Control	RS232 serial interface for Management through a PC COM Port
Remote Monitoring and Control	Ethernet (10BaseT) interface for remote LAN Management and Control
Local and Remote Provisioning	CLI (text commands)
Front Panel Indicators	- In SYNC / Failure - Individual Card - LEDs for power on/off
Power Supply Redundancy	Optional: -48VDC Power Supply (1+1)
Environmental-Operational	0° C to 50° C
Humidity	5% to 95%, non-condensing

Power Supply Specifications

Input DC voltage	-48V DC (nominal)
Range of Input Voltage	-40V to -60V DC
Output voltages	+5V
Maximum Full Load Output Current	10A at +5V
Input Voltage Reversal Protection	Provided in the Card
Over Current Protection	> 10A for +5V
Short Circuit Protection	Current limit - 10A. Recovers on removal of short
Under Voltage	< 4.5V
Over Voltage	5.4V
Efficiency at full load	>86%
Ripple at full load	<5mVrms
Spike at full load	<50mV

NMS (with Telnet) Xport Specifications

Network Interface	RJ-45 Ethernet 10BaseT or 100BaseT-TX (auto sensing)
Compatibility	Ethernet Version 2.0 IEEE802.3
Protocols Supported	ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP, DHCP, BOOTP, TFTP, Auto IP, SMTP and HTTP
LEDs	10Base-T & 100Base-TX Activity, Full/half duplex.
Management	Internal web server, SNMP (read only), Serial login, Telnet login
EMI Compliance	Radiated & conducted emissions - complies with Class B limits of EN55022:1998 Direct & Indirect ESD - complies with EN55024:1998 RF Electromagnetic Field Immunity - complies with EN55024:1998 1998 Electrical Fast Transient/Burst Immunity - complies with EN55024:1998 Power Frequency Magnetic Field Immunity - complies with EN55024:1998 RF Common Mode Conducted Susceptibility - complies with EN55024:1998

Power Consumption of DS3 Echo Cancellor

Input Voltage = -48VDC	Current (in Amps.)	Power Consumption (in Watts)
1 Unit	1.2	57.6

Management Port Specifications - RS232 COM Port

Serial Port: 9.6Kbps (Async) ASCII / VT100 / HyperTerminal.

Notes : _____

Technical specification are subject to change without notice.
Windows is the registered Trademark of Microsoft Corporation, USA.
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