

## CTDI Products

### Features

- Supports emerging VoIP specifications (SIP, MGCP) "S" versions only
- Seamless voice and high-speed data integration over SDSL
- Supports symmetrical data rates from 144 Kbps to 2.3 Mbps and multiple customer premises interfaces including POTS, 10/100BaseT Ethernet
- 4, 8, 16, or 24 Port POTS interface with Loop Start or Ground Start
- Universal Serial Interface (USI) (16 and 24 Port models only)
- Toll-quality voice
- Dynamic bandwidth allocation and prioritization for voice and data traffic
- DHCP and NAT to support IP address management
- Firewall support - IP filtering
- 10/100 Ethernet LAN interface
- Compatible with WAN Network Transports including ATM and Frame Relay
- Dynamic and Static IP Routing and Bridging Capabilities

## Verilink 8300 Series

### VoIP/VoDSL IAD (SDSL)

#### Extend the Power of Convergence Across Your Networks

The Verilink 8300 series is leading the way in providing a highly interoperable, cost-effective bundled voice and data service solution. The Verilink IADs are uniquely designed for interoperability and are compatible with the industry's leading DSLAM manufacturers. With the Verilink 8300 series, service providers can offer small and medium-sized enterprises the ability to cost effectively deploy advanced communications technologies previously available only to larger organizations. Local telephone service through the Verilink 8300 series is identical in quality and features to those available through the conventional circuit-switch voice network. Subscribers experience the voice quality they have come to expect, along with Centrex and Class features including Caller ID and Call Waiting.



#### Flexible and Scalable

The Verilink 8300 series consists of access products available in two models: a base model supporting VoATM only and an "S" version that supports VoATM and VoIP in a single device. Both the base and "S" units are available in models equipped with 4 and 8 derived voice lines and a 10/100 BaseT interface for high-speed data connections. The 16 and 24 port versions come standard as "S" versions. The Verilink 8300 series also delivers robust features such as routing, bridging, NAT and DHCP. This provides service providers with the ability to offer peak performance at an affordable price. Using the existing copper infrastructure, Verilink 8300 IADs provide voice services and high-speed Internet or corporate network connectivity over SDSL lines. The Verilink 8300 series prioritizes voice packets and dynamically allocates bandwidth between voice and data services.

#### Subscriber Value

The Verilink 8300 is particularly valuable to a carrier's subscribers because the integrated firewall and router eliminate the need to purchase additional hardware. With Dynamic Host Control Protocol (DHCP) and Network Address Translation (NAT), the Verilink 8300 automatically generates unique addresses for different workstations. This allows subscribers to secure the heightened security of hidden internal addresses without purchasing additional costly IP addresses. Additionally, remote diagnostics, provisioning, and easy upgrades are critical benefits to services providers since they dramatically simplify the deployment process and eliminate the need for costly truck rolls.

#### Interoperability

The Verilink IADs have been extensively tested to ensure support of existing modems and telephones including key systems, fax machines, and analog telephones. The Verilink 8300 is also designed for simple installation and easy remote network management. Via Telnet, SNMP, and TFTP, Verilink IADs can be remotely monitored, provisioned, tested and upgraded without the cost of an on-site visit.

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## Verilink 8300 Series Technical Specifications

### Voice Features

#### Analog

- Voice Ports: 4 or 8 POTS ports (RJ-11); 16 or 24 POTS ports FXS (RJ-21X)
- Failover: Analog input fail over to Line 1 (RJ-11)
- Signaling: Loop start, ground start
- Dialing: DTMF (tone), Pulse
- Ring Source: Internal
- Impedance: 600, 900, Complex (country-specific)
- REN: 5 REN per port, 16 REN total
- Loop Current: 20, 24 mA typical (country-specific)
- Idle State Voltage: 48 V typical
- Ring Voltage: Balanced 65 V rms  $\pm$ 5% at 5 REN load
- Ring Frequency: 20, 25, 50 Hz (country-specific)
- Gain/System Loss: Programmable, +3 to -9 dB

#### Digital

- Compression for VoIP Units: G.711 (64 kbps PCM), G.726 (32 kbps) (ADPCM), G.729a (8 kbps CSACELP) "S" Version
- Encoding: A-law,  $\mu$ -law
- Echo Cancellation: G.168 compliant (single reflector)
- Protocol Support: CopperCom, ELCP (afvmoa=0145), -Jetstream, LES (af-vmoa-0145), MGCP, SIP ("S"-version only)
- DID/DOD Support
- Fax Support: V.17, V.29 support
- Modem Support: V.34, V.90 support
- Calling Features: Caller ID, flash hook, distinctive ring, stutter dial tone, call forwarding, call waiting

### Data Features

- LAN Interface: 10/100Base-T (RJ-45)
- Bridging: IEE 802.1d including spanning tree
- Routing: Default, Static, RIP1 (RFC 1058), RIP2 (RFC 2453), ICMP for IP Packet Processing
- DHCP: Server, Client (RFC 2131), Relay Agent (RFC 1542)
- PPP: PpPoA, PpPoE, PAP, CHAP, IPCP (RFC 1332) HCLC Support
- Management: SNMP via IP or EOC, MIB1, MIB2 (RFC 1213), Enterprise MIB, LES MIB
- Configuration: Console, Telnet (local, remote)

### WAN Features

#### Interface

- WAN: SDSL (2B1Q) (RJ-11)
- Standards: ITU-T G.992.2, G.992.1
- Transport: ATM and Frame Relay
- Protocols: Point-to-Point (PPP)

#### ATM

- Adaption Layers: AAL2 (voice), AAL5 (data), AAL5 (for layer 3 voice)
- Encapsulation: RFC 1483 multiprotocol encapsulation over ATM; RFC 2364 (PPP over ATM); ITU 366.2 (AAL2)
- AAL2 Profiles: ATM: 9, 10, 11 and ITU: 1; "S" versions also support ATM Profiles 7, 8, 12, and ITU 2
- Voice: Single AAL2 PVC
- Data: Up to 8 AAL5 PVCs
- Security: Software configurable payload scrambling
- Voice QoS: CBR; VBR-rt (16 and 24 Port model only)
- Data QoS: CBR, UBR
- Cell Delay Variation Buffer: Configurable 0-30 ms
- OAM Cell Handling: F4/F5 segment and end-to-end loopbacks
- Frame Relay
- Encapsulation: RFC 1490 multiprotocol encapsulation
- Voice: Single PVC
- Data: 8 Data Link Identifiers (DLCI)
- Data Link Format: Q.922
- Data Link Control: FRF.12 support, adjustable jitter buffer
- Framing: HDLC support

### Voice Gateways Supported

- DSLAMs Supported: ATM: Lucent, Nortel, Nokia
- Frame: AccessLan, CopperMountain, Paradyne
- Voice Gateways Supported: Verso, CopperCom, JetStream, TdSoft, Broadsoft, MetaSwitch, CirPack, NuERA
- Tollbridge: General Bandwidth, Accelerated AAL2/LES and ELCP and any af-vmoa-0145 compliant gateway
- SoftSwitches: NCS, LCS, MGCP 1.0, (RFC 2705.bis), SIP, "S" versions only

### Configuration & Management

- 10/100 Ethernet (Management or IP Gateway)
- Connection: 8-pin modular
- Network Protocol: TCP/IP based networks
- Data Rate: 10/100 Mbps
- Compatibility: 10/100Base-T
- Supervisory Port Connection: DB-9 female
- Data Rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps (default: 19.2 kbps)
- Upgrades
- Trivial File Transfer Protocol (TFTP) server and client for software upgrades and configuration
- Software download via gateway (wherever supported)
- Telnet (local and remote)
- Management: SNMP 1.0, SNMP 3.0, Telnet, Console

### Security Features

- Firewall: IP filtering (in and out)
- NAT: RFC 1631, Port translation, exported services, multi-NAT (up to 8 public IP addresses)
- Security: Multilevel password protection
- Other: Radius client support (RFC 2865)

### Physical Characteristics

- Dimensions: 4 or 8 port models: 11.8" W x 8.3" D x 1.8" H (30cm W x 21cm D x 4.6cm H) 12, 16 or 24 port models: 17.5" W x 10.25" D x 1.75" H (45cm W x 26cm D x 4.5cm H)
- Weight: 4 or 8 port model: 1.8 lbs (1.35 kg); 16 or 24 port models: 4.75 lbs (3.50 kg)
- Mounting: Stand alone or wall mountable
- LEDs: Power, LAN link, LAN act, WAN link, Voice

### Power

#### Power Supply

- 4 or 8 port models: External 90-240 VAC, 50- 60 HZ
- 16 or 24 port models: Internal 90-240 VAC, 50- 60 HZ

#### Power

- 4 port model: 15 watt nominal, 30-watt max operating
- 8 port model: 20 watt nominal, 50 watt max
- 16 or 24 port models: 40 watt nominal, 76/110 watt max

### Environmental Tolerances

- Operating Temp: 0° C to 40° C
- Storage Temp: -10° C to 70° C
- Operating Humidity: 5%-90% non-condensing

### Regulatory - Compliance and Agency Approval

- This product complies with or has obtained Regulatory Agency approval at least against the following standards:
  - EMC - Emission - Class A : FCC Part 15
  - Safety: UL 1950, CSA C22.2 No 950:95
  - Telecom: FCC Part 68, IC CS-03 Issue 8

### Warranty and Support

- One (1) year warranty

