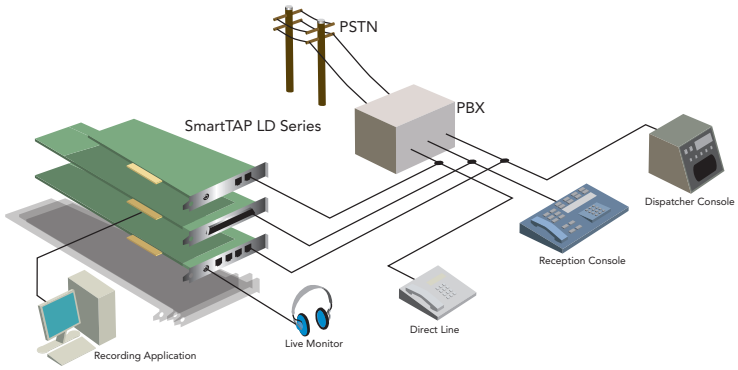
AudioCodes Enabling Technology Products

SmartWORKS™ LD Series Next Generation Analog Passive/Active Telephony Card

- 4-24 Port Telephony Cards
- On Demand Voltage Detection
- Programmable Voltage Thresholds
- Detects Polarity Reversal
- Minimum 18k Ohm Impedance
- Vast CODEC Support



LD Application Model

The SmartWORKS™ LD is perfect for telephony recording and dialing applications in small to large offices and call centers.

Designed for analog networks, the **SmartWORKS™ LD** has both passive and terminate network interface capabilities. Featuring programmable voltage thresholds and loop reversal detection, the SmartWORKS™ LD is easily configured to accommodate variations across analog networks. This product is offered in 4, 8, 16 and 24 port versions, suitable for small to large offices and call centers.

Tap Environment

The LD series accomodates low to high density environments with 4, 8, 16, or 24 port blades. The SmartWORKS™ API supports a total of 512 channels per system. The tapping point can be anywhere on an analog line: between Central Office and PBX, Central Office and phones, or PBX and phones.

Terminate Environment

The LD series can be used to initiate as well as terminate calls. When configured as an interactive resource, phone lines can directly connect to and terminate on the LD blades. Standard ring detection is available.

World-Wide Analog Support

The SmartWORKS™ LD supports passive call recording on ground start and loop start analog networks. It has line terminating capabilities for loop start environments. Features such as programmable voltage thresholds, voltage detection, and polarity reversal are managed through the common SmartWORKS™ API. As a result, the SmartWORKS™ LD easily adapts to variations found on analog systems throughout the world.

Built in Performance Monitoring

Built in voltage detection allows SmartWORKS™ LD to distinguish a disruption of service if a cable is damaged or disconnected. This feature is unique in the industry and only available on the LD series.

Common SmartWORKS™ API features:

- Media Control - CODECS
- Tone Detection / Generation
- CallerID/FSK/DTMF/MF Detection
- Activity / Silence Detectors
- Switching (H.100 and MVIP)
- Automatic Gain Control (AGC)
- Automatic Volume Control (AVC)
- Stereo Recording
- Echo Cancellation
- Call Progress Monitoring (CPM)
- Full-duplex Channels
- Media Streaming
- Live Monitoring
- Start/Stop Call Recording Triggers
- Beep tone generation for passive mode

AudioCodes
BLADE BUSINESS LINE

AudioCodes Enabling Technology Products

LD Series

Specifications

System Requirements	
Hardware Requirements	Pentium 4/equivalent · 2 GHz, PCI motherboard or passive backplane with 3.3V power supply, PCI 2.2 bus
Operating Systems	Windows 2000 · Windows XP Windows 2003 32 bit· Linux (Call for variant details)
Technical Specifications	Max blades per system: 16 · Max ports per system: Up to 512, · Resource Sharing Bus H.100 (409H, 809, 1609, and 2409 only)
Physical Characteristics	Form Factor: Full or Half-size PCI card
Environmental Conditions	Operating Temperature: 0C to +50C · Storage Temperature: -20C to +85C · Humidity: 8% to 80% non-condensing · Storage humidity: 8% to 80% non-condensing

Telephony Interfacing	
Telephony Interface	Signal/Noise ratio: 35dB referenced to -15dBm · Idle channel noise: Less then 20dBrnc Crosstalk coupling: Less then -70 dB (0dBm, 1004Hz) Frequency response: 300Hz to 3400Hz +/-3dB Ring detection: 30Vrms (min), 16 to 68Hz · REN: < 0.5 · Echo return loss: 28 dB +/- 3dB @1400Hz
Telephony Interface (Passive Mode)	Trunk Type: Loop Start/Ground Start · Trunk Interface: High Impedance (Z) · AC Impedance: 18 kOhms Voltage Detection: Two software programmable thresholds — Range: -61V to + 61V, Accuracy +/- 2V
Telephony Interface (Terminate Mode)	Trunk Type: Loop Start · AC Impedance: Software Selectible (FCC, EU, China, Australia) Loop Detection: Off Hook: 8mA (max) LD409, LD409H, LD809 · On Hook: 6mA (min) LD409, LD409H, LD809 OFF Hook: 11mA (max) LD1609, LD2409 · On Hook: 9mA (min) LD1609, LD2409
Telephony Connectors	LD409, LD409H, LD809: RJ-14 · LD1609, LD2409: RJ-21x
Host Interface	Bus Compatibility: Complies with PCISIG Bus · Specifications: Rev. 2.2 · Bus Speed: 33 MHz Bus Mode: 32 bit bus master/target
Analog Jack/Ports	Audio Connector · LD409: 4 ports, no H.100 · LD409H: 4 ports · LD809: 8 ports · LD1609: 16 ports LD2409: 24 ports
Audio Signal	Receive range: -68 dBm to + 3 dBm · Input gain control: +24 to -50 dB · Silence Detection: API Programmable Transmit volume control: +24 to -50 dB to H.100

Software	
SDK	AudioCodes Native SmartWORKS™ API
Tone Detection	DTMF digits: 0 - 9, *, #, A, B, C, D · MF Detection: R1 & R2 · R1 digits: Per Q.151
Call Progress Monitoring (Terminate)	Programmable tones: 20 · Bandpass filters: 10 · Filters per tone: 1, 2 or 3 · Cycles: 0 to 255 SIT tones: Yes, programmable frequencies and duration · Answering Machine Detect: Yes
Voice Processing	Caller ID: V.23 & Bell 202 · DTMF Detector: Primary & Secondary channel
Echo Cancellation (Terminate)	Echo Cancellation (Terminate) Input Dynamic Range: G.165 compliant · Double-talk detection: G.165 compliant End path delay: 8ms
Tone Dialing (Terminate)	DTMF digits: 0 – 9, *, #, A, B, C, D · Frequency variation: Less then 1 Hz
Safety and Certifications (Pending)	Telecom: DOC · Emissions: FCC Part 15 class A · EN 55022 · Immunity: EN 55024 · Safety: EN 60950 Estimated MTBF: 250,000 hours per Bellcore Method I
Audio Digitizing (Encoding & Decoding)	G.723.1, G.723.1, G.729A, GSM 6.10, Microsoft GSM, G.726, G.726, OKI, G.726, µ-law or A-law per G.711 8 bit linear PCM (signed & unsigned), 6 Khz 16 bit linear PCM (signed), 16 bit linear PCM (signed & unsigned) Wave file formats: Microsoft GSM, Linear signed, 8 & 16-bit PCM Digitization selection: Programmable per channel, independent for encode and decode

Power Requirements	
4 or 8 Channel	+ 3.3 VDC: 1.0 A, +5 VDC: n/a, -12 VDC: n/a, +12 VDC: 100 mA, Watts (Max): 4.5W
16 Channel	+ 3.3 VDC: 1.3 A, +5 VDC: n/a, -12 VDC: n/a, +12 VDC: 200 mA, Watts (Max): 6.7W
24 Channel	+ 3.3 VDC: 1.5 A, +5 VDC: n/a, -12 VDC: n/a, +12 VDC: 220 mA, Watts (Max): 7.6W

RoHS 2002/95/EC

RoHS COMPLIANT, LEAD FREE TECHNOLOGY

Lead and other materials banned in the RoHS directive are below ALL applicable substance levels as mandated by the EU

About AudioCodes

AudioCodes Ltd. (NASDAQ: AUDC), Your Gateway to VoIP, provides innovative, reliable and cost-effective Voice over Packet (VOP) technology and Voice Network products to OEMs, Network Equipment Providers, Service Providers and System Integrators worldwide. AudioCodes provides a diverse range of flexible, comprehensive media gateway and media processing technologies (based on VoIPerfect™ – AudioCodes' underlying, best-of-breed, core media gateway architecture) and Session Border Controllers (SBCs). The company is a market leader in product development, focused on VoIP Media Gateway, Media Server and SBC technologies and network products. AudioCodes has deployed tens of millions of media gateway and media server channels globally over the past few years and is a key originator of the ITU G.723.1 standard for the emerging Voice over IP market. The Company is a VoIP technology leader focused on quality, having recently received a number one ranking from ETSI for outstanding voice quality in its media gateways and media servers. AudioCodes voice network products feature media gateway and media server platforms for packet-based applications in the converged, wireline, wireless, broadband access, enhanced voice services and video markets. AudioCodes enabling technology products include VoIP and CTI communication blades, VoIP media gateway processors and modules, and CPE devices. AudioCodes' headquarters and R&D facilities are located in Israel with an R&D extension in the U.S. Other AudioCodes' offices are located in Europe, the Far East, and Latin America.

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