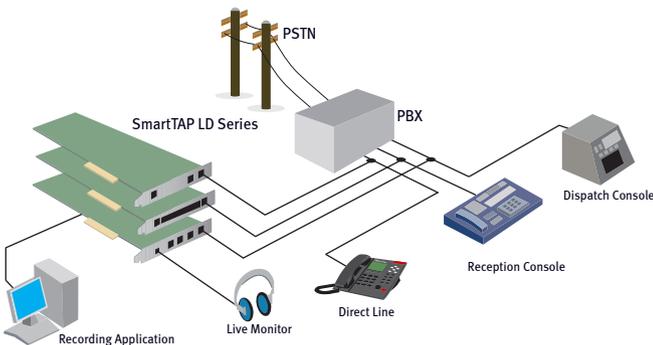


AudioCodes Enabling Technology Products

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



- 8-24 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 8, 16 and 24 port versions, suitable for small to large offices and call centers.

TAP ENVIRONMENT

The LD series accommodates low to high density environments with 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.

WORLDWIDE 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 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 (PCI express is also available with x1 connector)
Operating Systems	Windows XP, 2003 and 2008 32 bit, Windows 64 bit (planned), Linux (Call for variant details)
Technical Specifications	Max blades per system: 16 · Max ports per system: Up to 512, · Resource Sharing Bus H.100 (809, 1609, and 2409 only)
Physical Characteristics	Form Factor: Full PCI card (PCI express also available-full size only)
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
Host Interface (PCI 2.2)	Bus Compatibility: Complies with PCISIG Bus · Specifications: Rev. 2.2 · Bus Speed: 33 MHz Bus Mode: 32 bit bus master/target (PCI express available-1x connector)

Telephony Interfacing

Telephony Interface	Signal/Noise ratio: 35dB referenced to -15dBm · Idle channel noise: Less than 20dBmc Crosstalk coupling: Less than -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), LD809 · On Hook: 6mA (min), LD809 Off Hook: 11mA (max) LD1609, LD2409 · On Hook: 9mA (min) LD1609, LD2409
Telephony Connectors	LD809: RJ-14 · LD809X · LD1609, LD2409: RJ-21x (no PCI Express in 409 model)
Analog Jack/Ports	Audio Connector · LD409: no H.100 · 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 than 1 Hz
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 (PCI 2.2)	+ 3.3 VDC: 1.0 A, +5 VDC: n/a, -12 VDC: n/a, +12 VDC: 100 mA, Watts (Max): 4.5W
16 Channel (PCI 2.2)	+ 3.3 VDC: 1.3 A, +5 VDC: n/a, -12 VDC: n/a, +12 VDC: 200 mA, Watts (Max): 6.7W
24 Channel (PCI 2.2)	+ 3.3 VDC: 1.5 A, +5 VDC: n/a, -12 VDC: n/a, +12 VDC: 220 mA, Watts (Max): 7.6W
8 Channel (PCI Express)	+ 3.3 VDC: 1.6 A (RJ-21 connector only)
16 Channel (PCI Express)	+ 3.3 VDC: 2.1 A
24 Channel (PCI Express)	+ 3.3 VDC: 2.3 A

Certifications

Safety	EN60950 IEC60950 (third edition) UL60950 · CAN · CSA-C22.2 No 60950-00 (third edition)
Emissions	EN55022 47 CFR FCC part 15 EN55024

Order Information

LD409	910-0801-001
LD809	910-0802-001
LD809X	910-0808-001
LD1609	910-0803-001
LD2409	910-0804-001
LD809-EH	910-0701-001
LD1609-EH	910-0701-002
LD2409-EH	910-0701-003

ABOUT AUDIOCODES

AudioCodes Ltd. (NasdaqGS: AUDC) designs, develops and sells advanced Voice over IP (VoIP) and converged VoIP and Data networking products and applications to Service Providers and Enterprises. AudioCodes is a VoIP technology leader focused on VoIP communications, applications and networking elements, and its products are deployed globally in Broadband, Mobile, Cable, and Enterprise networks. The company provides a range of innovative, cost-effective products including Media Gateways, Multi-Service Business Gateways, Residential Gateways, IP Phones, Media Servers, Session Border Controllers (SBC), Security Gateways and Value Added Applications. AudioCodes underlying technology, VoIPerfectHD™, relies primarily on AudioCodes leadership in DSP, voice coding and voice processing technologies. AudioCodes High Definition (HD) VoIP technologies and products provide enhanced intelligibility, and a better end user communication experience in emerging Voice networks.

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