# Ai-Logix Enabling Technology Products

### SmartWORKS<sup>TM</sup> LD 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<sup>®</sup> 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<sup>™</sup> API supports a total of 384 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<sup>™</sup> 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<sup>™</sup> API. As a result, the SmartWORKS<sup>™</sup> LD easily adapts to variations found on analog systems throughout the world.

### **BUILT-IN PERFORMANCE MONITORING**

Built-in voltage detection allows SmartWORKS<sup>™</sup> 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<sup>TM</sup> 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 Cancelation
- Call Progress Monitoring (CPM)
- Full-duplex Channels
- Media Streaming
- Live Monitoring
- Start/Stop Call Recording Triggers
- · Beep tone generation for passive mode



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## SmartWORKS<sup>™</sup> LD

LD809-EH LD1609-EH

LD2409-EH

#### **S**PECIFICATIONS 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 Windows2000 Professional/Server, WindowsXP Professional (SP3), Windows2003server (32-bit/64-bit), Windows2008 server (32-bit/64-bit), Windows7 (32-bit/64-bit), Windows2012 Server (Call for variant details) Technical Specifications Max blades per system: 16 · Max ports per system: Up to 384, · Resource Sharing Bus H.100 (809, 1609, and 2409 only) Form Factor: Full PCI card (PCI express also available-full size only) Physical Characteristics Operating Temperature: OC to +50C · Storage Temperature: -20C to +85C · Humidity: 8% to 80% non-condensing · Storage humidity: 8% to 80% non-condensing **Environmental Conditions** Bus Compatibility: PCISIG 2.2/PCI-X/PCI-E1.1/x1,x4, x8, x16 and Gen 2.0 PCI Express slots Bus · Specifications: Rev. 2.2 · Bus Speed: 33/66/2500MHZ Bus Mode: 32 bit bus master/target (PCI express available-1x connector) Host Interface (PCI 2.2) **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 +/-: Ring detection: 30Vrms (min), 16 to 68Hz · REN: < 0.5 · Echo return loss: 28 dB +/- 3dB @1400Hz Telephony Interface -3dB 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 (Passive 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 Interface (Terminate Mode) LD409 · LD809 · LD809-eh: RJ-14 · LD809X · LD1609 · LD1609-eh, LD2409 · LD2409-eh: RJ-21x (no PCI Express in 409 model) **Telephony Connectors** Analog Jack/Ports Audio Connector · LD409: no H.100 4 ports · LD809 · LD809X · LD809-eh: 8 ports · LD1609 · LD1609-eh: 16 ports LD2409 · LD2409-eh: 24 ports 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 Audio Signal Software Ai-Logix SmartWORKS™ API SDK 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 Caller ID: V.23 & Bell 202 · DTMF Detector: Primary & Secondary channel Voice Processing Echo Cancelation (Terminate) Echo Cancelation (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 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 Encoding & Decoding **Power Requirements** + 3.3 VDC: 1.0 A, +5 VDC: n/a, -12 VDC: n/a, +12 VDC: 100 mA, Watts (Max): 4.5W + 3.3 VDC: 1.3 A, +5 VDC: n/a, -12 VDC: n/a, +12 VDC: 200 mA, Watts (Max): 6.7W + 3.3 VDC: 1.5 A, +5 VDC: n/a, -12 VDC: n/a, +12 VDC: 220 mA, Watts (Max): 7.6W + 3.3 VDC: 2.1 A + 3.3 VDC: 2.1 A + 3.3 VDC: 2.3 A 4 or 8 Channel (PCI 2.2) 16 Channel (PCI 2.2) 24 Channel (PCI 2.2) 8 Channel (PCI Express) 16 Channel (PCI Express) 24 Channel (PCI Express) Certifications EN60950 IEC60950 (third edition) UL60950 · CAN · CSA-C22.2 No Safety 60950-00 (third edition) EN55022 47 CFR FCC part 15 EN55024 Emissions **Order Information** 910-0801-001 910-0802-001 910-0808-001 910-0803-001 910-0804-001 910-0804-001 LD409 LD809 LD809X LD1609 LD2409

910-0701-001 910-0701-002

910-0701-003

### **ABOUT AI-LOGIX**

Since 1991, Ai-Logix has designed boards used in interactive and passive telephony applications. With global support for all types of telephone and radio systems - analog, digital, and enterprise PBXs, Ai-Logix products have set a new world standard in telephony communications. A single API, combined with event driven reporting simplifies application development by providing one standard for all types of networks.

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