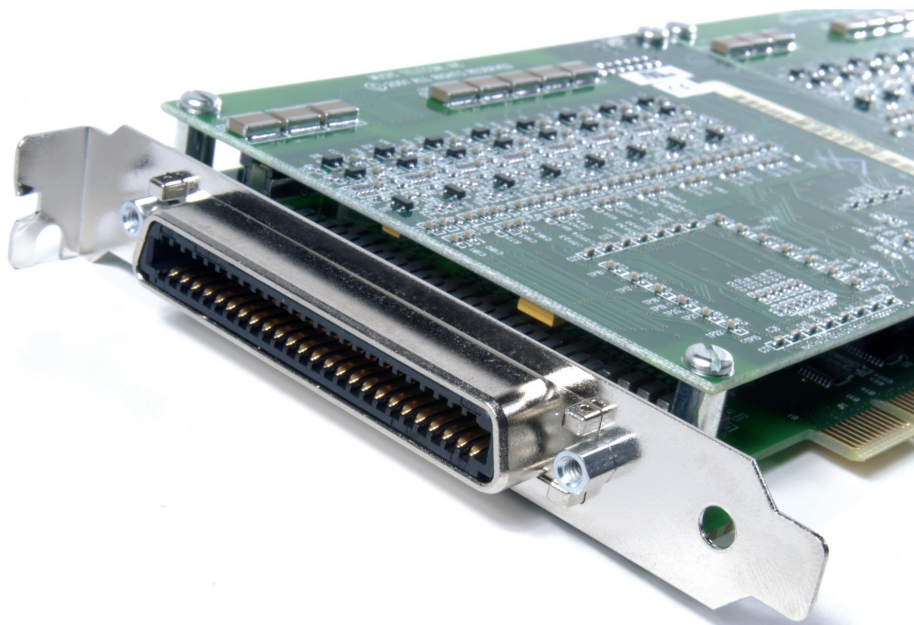


Ai-Logix

An **AudioCodes** Company



SMARTWORKS™ PRODUCT CATALOG

Ai-LOGIX CORPORATE HEADQUARTERS

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Room 403, Huai Hai China Tower, 885 Ren Min Road, Huangpu District, Shanghai, 200010 P.R.China · 200010

SmartWORKS™ Product Many Products, One Powerful API

- SmartWORKS PLUS™ Support JAVA development
- Common native API across entire product line
- All SmartWORKS™ Products have a 1:1 ratio for DSP voice resource channels to external ports
- Selectable CODECS per channel
- Caller ID/FSK/DTMF/MF
- Advanced SDK & JAVA
- Operating Systems Support
 - Windows2000 Professional/Server
 - WindowsXP Professional (SP3)
 - Windows7 (32-bit/64-bit)
 - Windows2003 server (32-bit/64-bit)
 - Windows2008 server (32-bit/64-bit)
 - Windows2012 Server
- Full duplex for simultaneous record and play
- Stereo recording – record far and near end of conversations separately
- Supports industry leading CODECS, including G.729a/G.723

SMARTWORKS

CALL RECORDING PRODUCT

Ai-Logix offers our customers and partners a wide range of Call Recording Products. With over 22 years' experience in Call Recording, Ai-Logix is at the forefront of technology and provides our customers and partners everything from Enabling Technology to a Recording Middleware. Our Recording Products are deployed in major Enterprise Customers and by the leading Call Recording and Analytics companies throughout the world.

CALL RECORDING MIDDLEWARE

Software toolkit for Java developer to build call recording solution.

IP PASSIVE RECORDING

IP trunk, IP extension include Avaya Cisco Alcatel-Lucent NEC Siemens and other IP-PBX.

IP TERMINATE RECORDING

SIP terminate, Avaya AES terminate and terminate recording of other IP-PBX.

TDM PASSIVE RECORDING

Analog Trunk, Analog extension, BRI Trunk, BRI extension, Digital extension, E1/T1 trunk, PCM32.

TDM TERMINATE RECORDING

Analog Terminate, E1/T1 Terminate, PCM32 Terminate.

SmartWORKS™ Call Recording Product Family

Middleware	Analog POTs <i>Universal</i>	Digital Extension <i>Passive</i>	Digital Trunk <i>Passive</i>	Digital Trunk <i>Terminate</i>	IP PBX <i>Call Recording</i>	Accessories	SmartWORKS SDK
SmartWORKS PLUS	LD409	NGX800	DP3209	DT6409	IPX-C + HPXMedia	RTS BOX	SmartWORKS API
SmartDEMO	LD809	NGX1600	DP6409	PCM6409	IPX-EX + HPXMedia	TX100	SmartView
	LD809X	NGX2400	PCM6409	DT3209-eh	HPX + HPXMedia	TX1000	
	LD1609	MX80	DP3209-eh	DT6409-eh		SmartEXPANSION	
	LD2409	NGX800-eh	DP6409-eh	PCM6409-eh		MICBOX	
	LD809-eh	NGX1600-eh	PCM6409-eh				
	LD1609-eh	NGX2400-eh					
	LD2409-eh	MX80A					

Legend

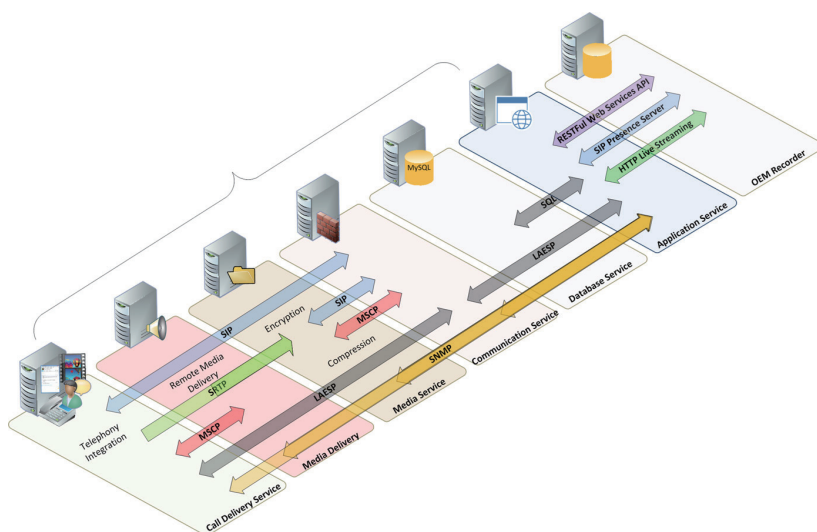
Software

PCI Express Slot

Universal PCI Slot

Ai-Logix Enabling Technology Products

SmartWORKS PLUS™ Recording Made Simple



- RESTful web services API to control recorder functions
- SIP Presence for recording status
- HTTP Streaming for Live Call Monitoring
- All-In-One or Distributable solution support
- 300 Concurrent Recording sessions per instance with scalability to N number of instances
- Pause / Resume recording for PCI compliance
- Record on Demand for user initiated recording
- Remote branch survivability with buffering technology
- Granular security profiles with LDAP integration
- Audit Trail monitoring
- AES 128bit encryption
- Audio File Compression
- Support for industry-leading telephony systems such as Microsoft LYNC, Cisco, Avaya, ShoreTel, SIP and many others

SmartWORKS PLUS™ recording engine enables Call Recording solution providers to focus on the Analytics and less on continuous investment in Telephony due to new PBX platforms or upgrades. SmartWORKS PLUS™ normalizes all telephony integrations into one common interface eliminating the need for continual development and the easy migration to new PBX platforms.

RESTFUL WEB SERVICES API

Using the RESTful API allows for a platform and language independent standards based integration to the SmartWORKS Plus™ recording engine offering unprecedented flexibility and future proof investment protection.

SIP PRESENCE SERVER

SmartWORKS Plus™ SIP Presence server enables a 3rd party application to be call aware via SIP based messaging. The application using SIP will register to receive messages for a specific user or device. Combined with the RESTful API, the application could start/stop recording, live monitor or simply know recording has started.

HTTP LIVE STREAMING

SmartWORKS Plus™ live streaming enables near real-time ability to listen to a call via the client browser from their PC, Tablet or Smartphone.

SECURITY ROLES AND PERMISSIONS

Using the RESTful API HTTP Authentication is required to access the SmartWORKS Plus™ engine. Depending upon the user credentials used to access the SmartWORKS Plus™ engine, the OEM application will have access to all user calls or specific users.

DISTRIBUTABLE SOLUTION WITH CENTRALIZED MANAGEMENT

For branch office recording, SmartWORKS Plus™ allows you to install a subset of the recording engine at the remote location to capture calls while managing any number of SmartWORKS Plus™ systems from a central site. In the event of a network failure, SmartWORKS Plus™ will continue to record and buffer all local calls until the network is restored completing the survivability story.

TDM AND IP INTEGRATIONS AT THE SAME TIME

SmartWORKS Plus™ supports the integration between both IP & TDM simultaneously including Microsoft LYNC. This unique capability provides customers with a future proof call recording solution, which enables a migration path to their future telephony environment. Integrating with many popular IP Phone Systems, including those of Microsoft LYNC, Cisco and Avaya. Ai-Logix' SmartWORKS Plus™ has the largest library of telephony integrations with support for over 100 PBX systems.

Ai-Logix Enabling Technology Products

SmartWORKS PLUS™

SPECIFICATIONS

Key Features

RESTful Web Services API
SIP Presence – Active Call Notification
HTTP Live Streaming
IP, TDM, and blended environments
Granular security profiles with optional integration to LDAP

Recording Modes

Full Time Recording
Record on Demand
Pause / Resume Recording

Security

Sarbanes-Oxley Compliant
PCI Compliance (GA)
HIPPA / MIPPA Compliance
Media File Encryption
Audit Trail

Storage

Local or Remote storage NAS / SAN
File Compression Optional

Platforms

Windows 7, 2008 & 2012 64bit

Scalability

Up to 300 simultaneous recordings per server

Telephony Integrations

Microsoft Lync 2010/2013, Avaya, Cisco, Ericsson, Siemens, NEC, Mitel, Nortel, Panasonic, SIP and more...

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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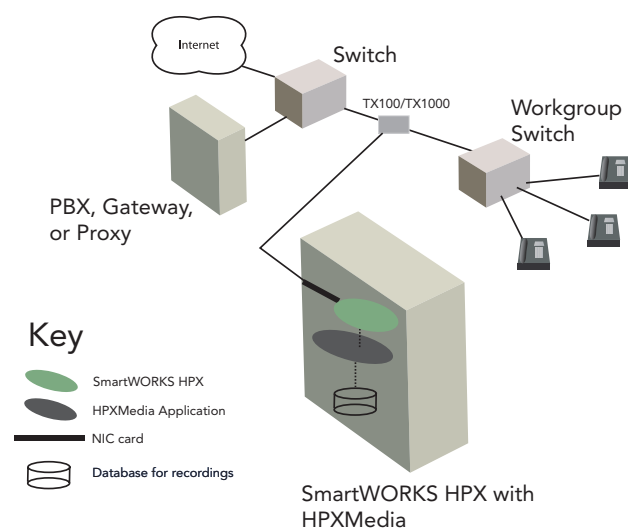
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SmartWORKS™ HPX Call Recording for IP-PBXs



- Eliminates need for hardware
- Multiple PBX/Protocol Support
- Runs without a PCI slot
- Flexible Event Triggering
- RTP Forwarding
- RTP timeout & RTCP QoS



HPX Application Model

The **SmartWORKS™ HPX** is an essential component of your call recording solution that provides packet filtering and media forwarding for IP-PBXs. The HPX is designed to service low to medium density solutions and is capable of monitoring and forwarding 480 concurrently active calls. When combined with the Ai-Logix HPXMedia, the HPX provides complete event triggering, call state reporting and media processing for many of the industry leading IP-PBXs.

TAP ENVIRONMENT

The HPX is the first software only SmartWORKS™ blade. The host computer's NIC card can be connected directly to an available mirror port. When used in conjunction with a TX100/TX1000, it can be connected passively anywhere within the IP-PBX configuration.

SESSION MANAGEMENT

The HPX includes a Session Manager for tracking calls and media sessions on the IP network. Each media session is treated independently with a unique session ID. Your application can easily manage call forwarding with the session IDs provided by the HPX software using the SmartWORKS API.

STATION MANAGEMENT

Automatically locates all VoIP stations on the network and assigns a unique ID to each endpoint. HPX dynamically identifies phones as they are added to the network and reports when they are removed.

RTP TIMEOUT & RTCP QoS

HPX detect the RTP timeout, when exceed the time set in the SmartControl, the IPX regard this call is already ended and report the "EVT_MEDIA_SESSION_STOPPED" to user application. This feature can avoid the recording problem due to lost packets.

MULTIPLE PBX SUPPORT

The same HPX supports multiple protocols including Skinny and Avaya and is designed to accommodate future protocols such as SIP and H.323 with just a software upgrade.

SMARTWORKS™ HPX FEATURES:

- Uses SmartWORKS API
- Supports 10/100/1000 network interfaces
- Decodes proprietary VoIP signaling as well as standard SIP and H.323
- Scalable - 1 to N Sessions support per server. 480 session support tested and certified. HPX performance limited by Server capabilities and Network bandwidth. It may be possible to exceed 480 sessions

Ai-Logix Enabling Technology Products

SmartWORKS™ HPX

SPECIFICATIONS

System Requirements

Hardware Requirements	Minimum - Dual Core CPU, 1 Gig RAM or better Recommended - Xeon 1.86 Quad Core CPU, 2 Gig Ram or better - Certified for 480 Monitoring and Forwarding
Operating Systems	Windows2000 Professional/Server, WindowsXP Professional (SP3), Windows2003server (32-bit/64-bit), Windows2008 server (32-bit/64-bit), Widnows7 (32-bit/64-bit), Windows2012 Server (Call for variant details)
IP Interface	Designed to support RFC 355

Product Specs and Info

Protocols	Cisco Call Manager (Skinny), Cisco Call Manager Express, SIP (Station & Trunk Side), H.323 (Station & Trunk Side), Avaya Office Manager (H.323), IP Office, Ericsson (H.323), Mitel 5000, Nortel Unistem, Alcatel OmniPCX 4400, Siemens Hi-Path 4000, Intertel CS-5200, NEAX 2400, and more...
RTP Forwarding	Certified for forwarding 480 full duplex media sessions
Application Performance	Capacity to monitor from 1 to N active VoIP endpoints limited by license. Certified for 480 Monitoring and Forwarding HPX performance limited by Server capabilities and Network bandwidth. It may be possible to exceed 480 sessions

Software

SDK	Ai-Logix SmartWORKS™ API
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Order Information

HPX Dongle 10 Lic	912-0801-004
HPX Dongle 30 Lic	912-0801-008
HPX Dongle 50 Lic	912-0801-005
HPX 10 Lic	910-0909-001

ABOUT AI-LOGIX

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Ai-Logix Enabling Technology Products

SmartWORKS™ IPX Call Recording for IP-PBXs



- Multiple PBX Support
- Multiple Protocol Support
- Mirror Port Independent
- Flexible Event Triggering
- RTP Forwarding
- RTP timeout & RTCP QoS

The **SmartWORKS™ IPX** is an essential component of your call recording solution that provides complete event triggering, call state reporting and media forwarding for many of the industry leading IP-PBXs. The IPX is capable of monitoring up to 480 concurrently active calls and is available in PCI or PCIe form factors. Supporting multiple protocols, it has 2 on-board connections for monitoring upstream and downstream traffic and 1 on-board connection for the forwarding of up to 480 full-duplex sessions.

TAP ENVIRONMENT

The IPX is designed for IP call recording applications capable of monitoring a large number of VoIP endpoints and forwarding a total of 480 full-duplex or 960 half-duplex streams.

SESSION MANAGEMENT

The IPX includes a Session Manager for tracking calls and media sessions on the IP network. Each media session is treated independently with a unique session ID. Your application can easily manage call forwarding with the session IDs provided by the IPX.

STATION MANAGEMENT

Automatically locates all VoIP stations on the network and assigns a unique ID to each endpoint. IPX dynamically identifies phones as they are added to the network and reports when they are removed.

RTP TIMEOUT & RTCP QoS

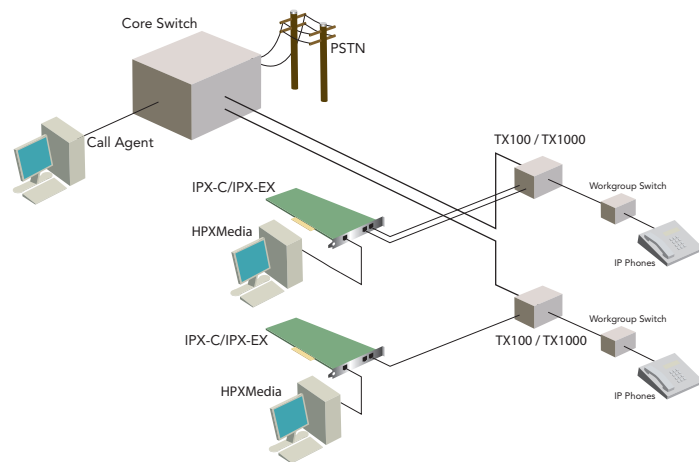
IPX detect the RTP timeout, when exceed the time set in the SmartControl, the IPX regard this call is already ended and report the "EVT_MEDIA_SESSION_STOPPED" to user application. This feature can avoid the recording problem due to lost packets.

MULTIPLE PBX SUPPORT

The same hardware supports multiple protocols including Skinny and Avaya and is designed to accommodate future protocols such as SIP and H.323 with just a software upgrade.

SMARTWORKS™ IPX FEATURES:

- Universal PCI & PCI Express
- Two 10/100 BT ports for non-intrusive monitoring
- Target Recording
- One 10/100 BaseT active NIC
- Forwards VoIP RTP sessions to one or more network devices
- Processes all VoIP call and terminal control signaling
- Field upgradeable
- Low to high density - call capacity up to 480 stations
- RTP timeout & RTCP QoS



IPX Application Model

Ai-Logix Enabling Technology Products

SmartWORKS™ IPX

SPECIFICATIONS

System Requirements	IPX-C	IPX-EX
Hardware Requirements	P4 CPU at 850Mhz or better PCI 2.3 compliant Bus Speed: 33 or 66Mhz Bus Mode: 32bits	P4 CPU at 850Mhz or better PCI-E1.1/x1,x4, x8, x16 and Gen 2.0 PCI Express slots
Operating Systems	Windows2000 Professional/Server, WindowsXP Professional (SP3), Windows2003server (32-bit/64-bit), Windows2008 server (32-bit/64-bit), Widnows7 (32-bit/64-bit), Windows2012 Server (Call for variant details)	
Technical Specifications	Max 8 blades per system	
Environmental Conditions	Operating Temperature: 0°C to +50°C Storage Temperature: -20°C to +85°C Storage Humidity: 8% to 80% non-condensing	
Product Specs and Info	IPX-C	IPX-EX
Physical Characteristics	Form Factor: Full Length, Full Height Host interface: PICMG 2.3 Ethernet Interface: 802.3 10/100Base-T: 3xRJ45	Form Factor: ½ size (5.5"L), Full Height Host interface: PICMG 2.3 Ethernet Interface: 802.3 10/100Base-T: 3xRJ45
Protocols	Cisco Call Manager (Skinny), Cisco Call Manager Express, SIP (Station & Trunk Side), H.323 (Station & Trunk Side), Avaya Office Manager (H.323), IP Office, Ericsson (H.323), Mitel 5000, Nortel Unistern, Alcatel OmniPCX 4400, Siemens Hi-Path 4000, Intertel CS-5200, NEAX 2400, and more...	
RTP Forwarding Capacity	960 RTP streams (480 full-duplex conversations)	
MTBF	854,137 hours	876,903 hours

Power Requirements	IPX-C	IPX-EX
3.3V	2A	2A
+5V	15mA	15mA

Certifications	IPX-C	IPX-EX
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	
IPX-C Card 30 Lic	910-0331-007
IPX-EX Card 30 Lic	910-0705-001
IPX 10 Lic	910-0905-001

ABOUT AI-LOGIX

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Ai-Logix Enabling Technology Products

SmartWORKS™ HPXMedia VoIP Recording Device



The **Ai-Logix HPXMedia** provides an easy to deploy low to high density recording solution for VoIP networks.

VOIP CALL RECORDING

Supports multiple CODECs commonly used on VoIP networks. Encoding support of both low/high bit rate formats with .WAV header support.

HIGH DENSITY ARCHITECT

The HPXMedia is designed to create a high density recording solution by offering recording capabilities up to 480** conversations per server. Communicates over TCP/IP allowing for a geographically separate installations of multiple servers (under development).

AUTOMATED TERMINATION OF RECORDING

The HPXMedia API provides programmatic control of termination conditions while recording. Provides maximum time and file size (bytes) conditions to control the automated termination of recording.

AUTOMATIC SUMMATION

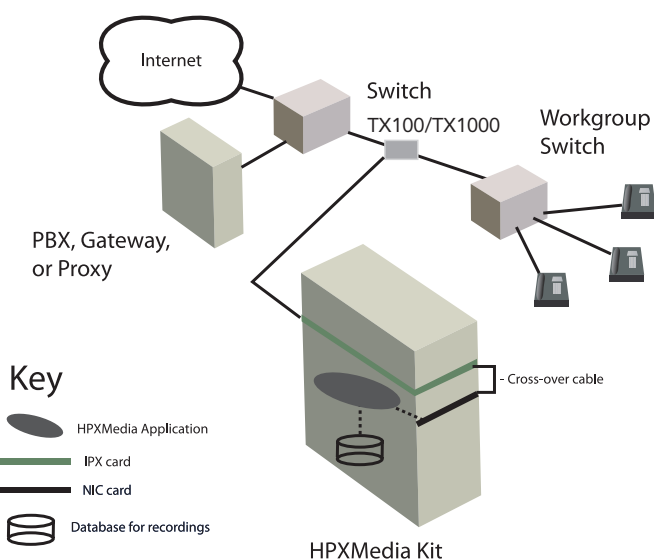
Complete support of full-duplex recording. Once recording is initiated the Ai-Logix automatically sums the conversation without application management.

PRODUCT FEATURES:

- Low/High Density VoIP Recording
- Automated Stop Recording
- Media Control - CODECS
- DTMF Tone Detection (RFC 2833)
- Programmable Jitter Buffer
- Full-duplex Recording
- Stop Recording Triggers
- File Offset (recording to file)
- Single Side recording

** User experience varies depending on host CPU, transcoding needs, as well as user application.

- Low/High Density VoIP Recording
- Automated Stop Recording
- DTMF Detection



HPXMedia Application Model

The HPXMedia installed with both a TX100/TX1000 and the SmartWORKS™ IPX, HPX.

Ai-Logix Enabling Technology Products

SmartWORKS™ HPXMedia

SPECIFICATIONS

System Requirements

Hardware Requirements	Minimum - Dual Core CPU, 1 Gig RAM or better Recommended - Xeon 1.86 Quad Core CPU, 2 Gig Ram or better - Certified for 480 Monitoring and Forwarding
Operating Systems	Windows2000 Professional/Server, WindowsXP Professional (SP3), Windows2003server (32-bit/64-bit), Windows2008 server (32-bit/64-bit), Widnows7 (32-bit/64-bit), Windows2012 Server (Call for variant details)

Telephony Interface

IP Interface	Designed to support RFC 3550
Jitter Buffer	Programmable jitter buffer
RTP Port Management	The HPXMedia supports any number management skema, no restrictions apply
CODECs	RAW, WAV file formats PCM, G.711, G.729A, G.723 & GSM. Other LBR CODECs available, contact Product Manager for details

Software

SDK	Ai-Logix HPXMedia™ API · License Key Utility
DTMF Tone Detection	DTMF digits: 0 - 9, *, #, A, B, C, D · Primary & Secondary stream - out-of-band RFC 2833
Audio Digitizing	Microsoft GSM & μ-law or A-law per G.711
Gain Control	Programmable gain can be set per each input (upstream/downstream)
Recording Termination	Automatic stop record upon maximum time and file size (bytes)

Server Configurations (IPX/HPX+HPXMedia)

1~300ch	<ul style="list-style-type: none">• Windows2008 32bit• Quad Core 2GHz• 4Gb Memory• 250Gb 7200 RPM C:\• Dual Gb NIC (HPX)• PCI/PCIe slots (IPX)• 1 USB Port * Contact us for more detail
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Order Information

IPX-C Card 30 Lic	910-0705-001
IPX-EX Card 30 Lic	910-0331-007
HPX Dongle 10 Lic	912-0801-004
HPX Dongle 30 Lic	912-0801-008
HPX Dongle 50 Lic	912-0801-005
HPXMEDIA Lic	910-0910-001

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Ai-Logix Enabling Technology Products

SmartWORKS™ LD Next Generation Analog Passive/Active Telephony Card



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 accommodates low to high density environments with 4, 8, 16, or 24 port blades. The SmartWORKS™ 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™ 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.

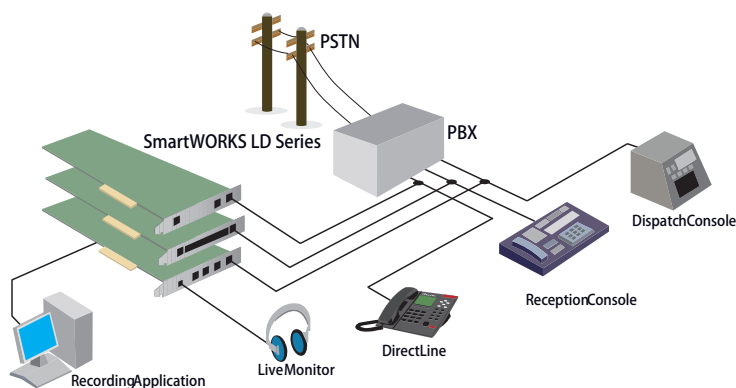
BUILT-IN PERFORMANCE MONITORING

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

- 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.

Ai-Logix Enabling Technology Products

SmartWORKS™ LD

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	Windows2000 Professional/Server, WindowsXP Professional (SP3), Windows2003server (32-bit/64-bit), Windows2008 server (32-bit/64-bit), Widnows7 (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)
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: 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)

Telephony Interface

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	LD409 · LD809 · LD809-eh: RJ-14 · LD809X · LD1609 · LD1609-eh, LD2409 · LD2409-eh: RJ-21x (no PCI Express in 409 model)
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
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	Ai-Logix 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 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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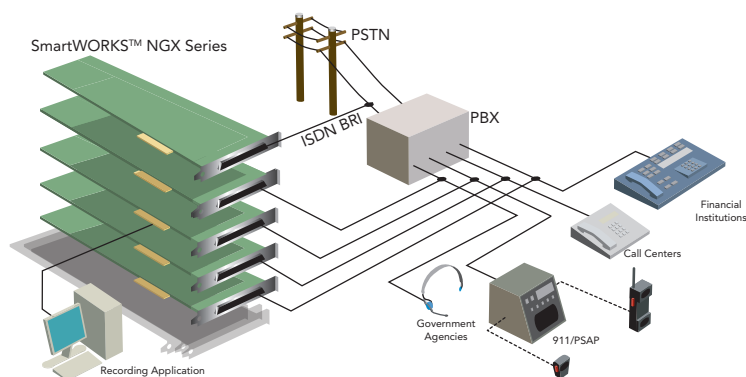
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Ai-Logix Enabling Technology Products

SmartWORKS™ NGX Single Card Solution to Passively Record Proprietary PBX Extensions



- Multiple PBX Support
- Firmware Upgradeable to any PBX
- Wide Spectrum of Trigger Events
- Summation
- CODEC Support



NGX Application Model

Applied Use: The SmartWORKS™ NGX is perfectly suited for information centers, financial trading centers or call centers where tapping behind a proprietary PBX is required.

The **SmartWORKS™ NGX** is an all-in-one resource for logging behind a PBX. Every key pressed, call taken, and telephone action performed by an agent is automatically decoded and sent to the recording application. A powerful set of features, combined with PBX integration, makes the NGX a true single slot solution for call logging application providers.

TAP ENVIRONMENT

The NGX is designed for tapping behind a proprietary PBX. Residing between the PBX and agent phones, the SmartWORKS™ NGX's high impedance receivers record both sides of a call without interrupting service. The NGX is available in 8, 16, and 24 port configurations. The SmartWORKS™ API supports a total of 384 channels per system. As a result, the SmartWORKS™ NGX is ideal for low to high-density environments.

EXTENSIVE PBX SUPPORT

Designed with international deployment in mind, the SmartWORKS™ NGX taps 2-wire, 4-wire, BRI and full duplex PBX's. The list of PBXs that the NGX supports is constantly growing. Contact your Ai-Logix sales representative for more information.

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

The SmartWORKS™ API provides framer alarms and network statistics to pass easily into performance monitoring applications. Event driven framer alarms are generated with a loss of signal condition. Network statistics are available for both sides of the conversation, incoming and outgoing. Statistics such as synchronization errors, line amplitude, noise or clipping are available via a simple API function call.

COMMON SMARTWORKS™ API FEATURES:

- Media Control - CODECS
- Tone Detection
- 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

Ai-Logix Enabling Technology Products

SmartWORKS™ NGX

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	Windows2000 Professional/Server, WindowsXP Professional (SP3), Windows2003server (32-bit/64-bit), Windows2008 server (32-bit/64-bit), Widnows7 (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
Host Interface	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)
Environmental Conditions	Form Factor: Full-size PCI or PCIe card · Operating Temperature: 0C to +60C · Boards Status: On-board LEDs Clocking: Master/Slave Storage Temperature: -20C to +85C · Humidity: 8% to 80% non-condensing Storage humidity: 8% to 80% non-condensing

Telephony Interface

Tap Interface	Insertion loss: <1dB · Isolation: Galvanic 500VDC +/-10%, 100VRMS 1 sec · Impedance: Soft-Switchable 1KOhms/100Ohms External connector: RJ-21X 25 Pair female
Analog Jack	Audio Connector: 3-pin 0.1" ctr header · Output impedance: 300Ohms · Input impedance: 33KOhms · Return loss: >25dB Mic bias: +5VDC @ 4.7KOhms · Input gain: +9dB · Output gain: 2.6dBm @ 300Ohms · Full scale input: 370 mVRMS Full scale output: 1.5 VRMS open circuit
PBX Interface	PBX Support: Software Configurable
Audio Signal	Receive range: -68 dBm to + 3 dBm · Input gain control: +24 to -50 dB · Silence Detection: Programmable from API
Transmit volume control	+24 to -50 dB to MVP/H.100 · Automatic Gain Control (AGC): Programmable from API Automatic Volume Control (AVC): Programmable from API

Software

SDK	Ai-Logix SmartWORKS™ API
Activity Detection	Programmable from API · Frequency Response: 300 - 3400 Hz (+/- 3dB)
Encoding & Decoding	5.3 Kb/s:G.723.1 · 8 Kb/s:G.729A · 13 Kb/s:GSM 6.10, Microsoft GSM · 16 Kb/s:G.726 24 Kb/s:G.726, OKI · 32 Kb/s:G.726, OKI · 40 Kb/s:G.726 · 64 Kb/s:µ-law or A-law per G.711, 8 bit linear PCM (signed & unsigned) · 96 Kb/s:6 KHz 16 bit linear PCM (signed) 128 Kb/s: 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
DTMF Tone Detection	DTMF digits: 0 - 9, *, #, A, B, C, D · Dynamic range: -38 dBm to 0 dBm · Minimum tone detection: 40 ms /programmable Interdigit timing: 40 ms min.
Acceptable twist	Per LSSGR sec. 6, 8 dB forward, 4 dB reverse · Frequency variation: Accept all +/- 1.5%, reject all +/-2.5%
Talk off	Bellcore TR-TSY-000762
D Channel Events	The following types of D-channel events are decoded:
PBX Event (Command Events)	Generated by the PBX and passed to the phone as a command to perform some type of action.
Signaling	These events indicate a call progress tone (dial tone, ring tones), or audio changes
LEDs	These events correspond to light changes on the phone
Display	These events indicate that the LCD on the phone has been updated. These are usually related to the clock display, or messages displayed on the LCD.
Phone Events	Generated by the phone indicating an action has been taken (i.e. button pressed).
Hook State	Off hook and on hook changes occur when the handset is removed or replaced
Button events	Indicate that a button on the phone was used. For example: digits pressed, speaker buttons etc.

Power Requirements

NGX (PCI 2.2 base)	+ 3.3 VDC: 0.9 A · +5 VDC: 1.5 mA · -12 VDC: 25 mA · +12 VDC: 25 mA
NGX (PCI 2.2 24 channel)	+ 3.3 VDC: 1.6 A · +5 VDC: 1.5 mA · -12 VDC: 35 mA · +12 VDC: 35 mA
NGX (PCI express base)	+ 3.3 VDC: 1.3 A
NGX (PCI express 24 channel)	+ 3.3 VDC: 2.0 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

NGX800	910-0314-001	NGX800-EH	910-0700-001
NGX1600	910-0314-002	NGX1600-EH	910-0700-002
NGX2400	910-0314-003	NGX2400-EH	910-0700-003
MX80	910-0315-001	MX80A	910-1315-001

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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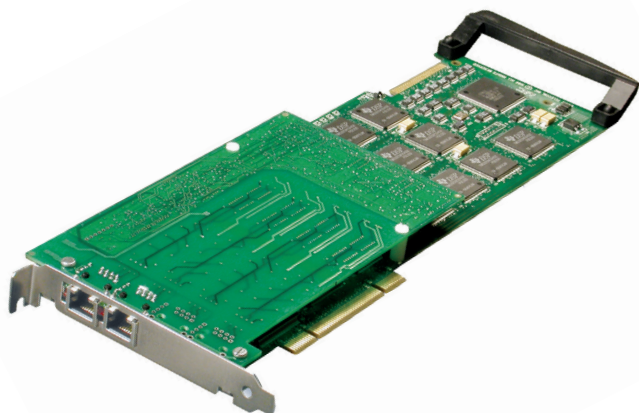
Tel: +86-21-5358-0108

Website: www.ai-logix.com.cn

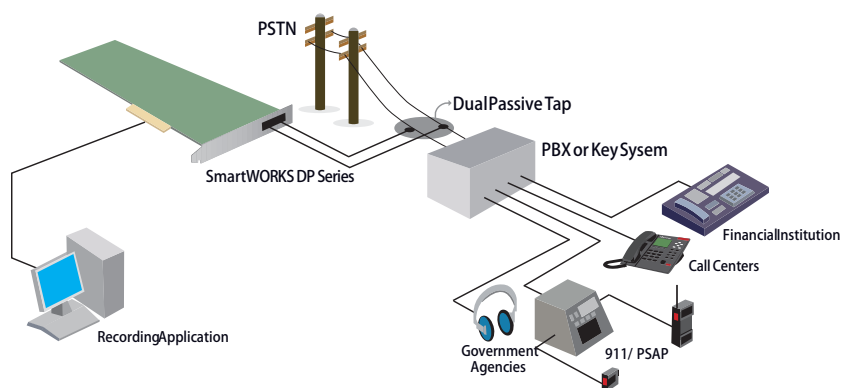
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Ai-Logix Enabling Technology Products

SmartWORKS™ DP T1/E1 Passive Tap Card



- Software Switchable T1/E1 Interface
- ISDN Call State Monitoring
- True Dual Span Capabilities
- On-board DSP to Complete Voice Processing
- CODEC Support
- DPNSS, MFR2 (RAW), ABCD Signaling



Applied Use: With a proven field record, the SmartWORKS™ DP has been successfully deployed in various international agencies such as banking, law enforcement, trading and customer support centers.

The **SmartWORKS™ DP** sets the standard for passive tapping of T1/E1 trunks in high-density environments. The SmartWORKS™ DP is a reliable tool used globally by many of the world's largest call logging application providers.

HIGH DENSITY PASSIVE TAP CAPABILITIES

Operating between a central office and PBX, the SmartWORKS™ DP's high impedance receivers records both sides of a call without interrupting service. Each blade can process up to 60 channels, with a maximum of 512 channels per host. Service is never interrupted even if the SmartWORKS™ DP-equipped PC is shut down.

INTERNATIONAL PROTOCOL SUPPORT

The SmartWORKS™ DP supports common Channel Signaling (CAS), Non-Facility Associated Signaling (NFAS), DASS2 and any Q.931 based ISDN variant and RAW ABCD signaling. Trunk coding and framing is selected on a per framer basis. This allows a single blade to monitor two trunks, each with different settings.

BUILT IN PERFORMANCE MONITORING

Network conditions and call statistics are easily accessed via the SmartWORKS™ API. Event driven alarms are reported for loss of signal conditions or synchronization errors. Framers and call statistics are available through standard API function calls.

COMMON SMARTWORKS™ API FEATURES:

- Media Control - CODECS
- Tone Detection
- 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

Ai-Logix Enabling Technology Products

SmartWORKS™ DP

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	Windows2000 Professional/Server, WindowsXP Professional (SP3), Windows2003server (32-bit/64-bit), Windows2008 server (32-bit/64-bit), Widnows7 (32-bit/64-bit), Windows2012 Server (Call for variant details)
Technical Specifications	Max blades per system: 16 · Max ports per system: Up to 512 · Resource Sharing Bus H.100
Physical Characteristics	Form Factor: Full PCI card (PCI express also available-full size only)
Environmental Conditions	Form Factor: Full-size PCI or PCIe card · Operating Temperature: 0C to +60C · Boards Status: On-board LEDs Clocking: Master/Slave · 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: 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)

Telephony Interface

Trunk type	T1/E1 · Trunk Interface Digital High Impedance (Z) · AC Impedance 1k Ohms · Input Impedance 1000 Ohm +/- 5%
Maximum Tap Length	100 feed feet · T1=30m of Cat 3 or better and E1=16m · Connectors Two RJ-45 connectors
Signaling Protocol	ISDN, NFAS, CAS (Raw), DASS2 (E1 Only), DPNSS (E1 Only), MFR2 Brazil & China Call Control - All other countries RAW ABCD Signaling
T1 Interface	Receive Clock Rate: 1.544 MHz +/-200ppm · Transmit Clock: Recovered RX clock or 50 ppm Input Level: LBO 0dB to -22dB · Framing: SF (D4), ESF · Line Coding: AMI, B8ZS Clock and Data Recovery: Complies with AT&T TR6241.1 and Bellcore TA-TSY-000170 Loss of Signal Detection: ANSI T1.231 · Alarm Detection and Integration LOS, LOF, Yellow, and AIS per ANSI T1.231
E1 Interface	Receive Clock Rate 2.048 +/- 175ppm · Transmit Clock: Recovered RX clock or 50 ppm · Input Level 3.2V down to 0.45 V Framing Basic G.704, CRC-4 · Line Coding: AMI, HDB3 · Loss of Signal Detection per ITU-T G.775 · Alarm Detection and Integration: LOS, LOSMF, TS16, CRC, DPNSS, MFRZ (Raw)
Audio Signal Receive range	-68 dBm to + 3 dBm · Input gain control: +24 to -50 dB · Silence Detection: Programmable from API
Transmit volume control	+24 to -50 dB to MVIP/H.100 · Automatic Gain Control (AGC): Programmable from API Automatic Volume Control (AVC): Programmable from API

Software

SDK	Ai-Logix SmartWORKS™ API
Activity Detection	Programmable from API · Frequency Response: 300 - 3400 Hz (+/- 3dB)
DTMF Tone Detection	DTMF digits: 0 - 9, *, #, A, B, C, D · Dynamic range: -38 dBm to 0 dBm · Minimum tone detection: 40 ms / programmable Interdigit timing: 40 ms min.
Acceptable twist	Per LSSGR sec. 6, 8 dB forward, 4 dB reverse · Frequency variation: Accept all +/- 1.5%, reject all +/-2.5% Noise tolerance: Per LSSGR sec. 6
Talk off	Bellcore TR-TSY-000762
Encoding & Decoding	5.3 Kb/s: G.723.1, 6.3 Kb/s: G.723.1, 8 Kb/s: G.729A, 13 Kb/s: GSM 6.10, Microsoft GSM, 16 Kb/s: G.726, 24 Kb/s: G.726, OKI, 32 Kb/s: G.726, OKI, 40 Kb/s: G.726, 64 Kb/s: µ-law or A-law per G.711, 8 bit linear PCM (signed & unsigned) 96 Kb/s: 6 Khz 16 bit linear PCM (signed), 128 Kb/s: 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

DP3209	+3.3 VDC 2.0A, +5 VDC 5mA, -12 VDC n/a, +12 VDC 20mA, Watts(MAX): 7W
DP6409	+3.3 VDC 2.6A, +5 VDC 5mA, -12 VDC n/a, +12 VDC 20mA, Watts(MAX): 9W
DP3209-EH	+3.3 VDC 2.4A, +5 VDC 5mA, -12 VDC n/a, +12 VDC 20mA, Watts(MAX): 8.5W
DP6409-EH	+3.3 VDC 3.0A, +5 VDC 5mA, -12 VDC n/a, +12 VDC 20mA, Watts(MAX): 10.5W

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

DP3209	910-0308-002
DP6409	910-0324-001
DP3209-EH	910-0703-001
DP6409-EH	910-0703-002

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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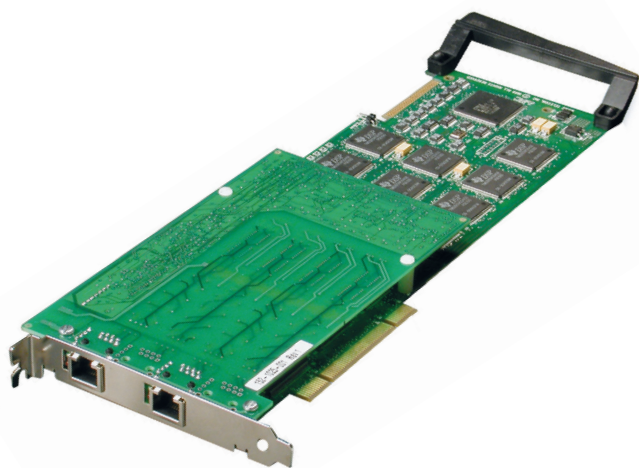
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Ai-Logix Enabling Technology Products

SmartWORKS™ DT Digital Terminate Card



The **SmartWORKS™ DT** provides trunk termination and call control on digital T1/E1 networks. Call Progress Monitoring (CPM), DTMF detection, voice play/record, and barge-in features makes this blade an invaluable resource for interactive telephony applications.

TERMINATE ENVIRONMENT

The SmartWORKS™ DT connects directly to a Central Office or PBX providing line supervision to answer and generate inbound and outbound calls. Each blade processes up to 60 channels, with a maximum of 512 channels per system. Each channel has programmable volume control, tone generation, echo cancelation, and Call Progress Monitoring. Outbound dialing and call control is managed through the SmartWORKS™ API.

INTERNATIONAL PROTOCOL SUPPORT

The SmartWORKS™ DT supports Common Associated Signaling (CCS) with any Q.931 based ISDN variant and IRBS. Trunk coding and framing is selected on a per framer basis. This allows a single blade to control two trunks, each with different settings.

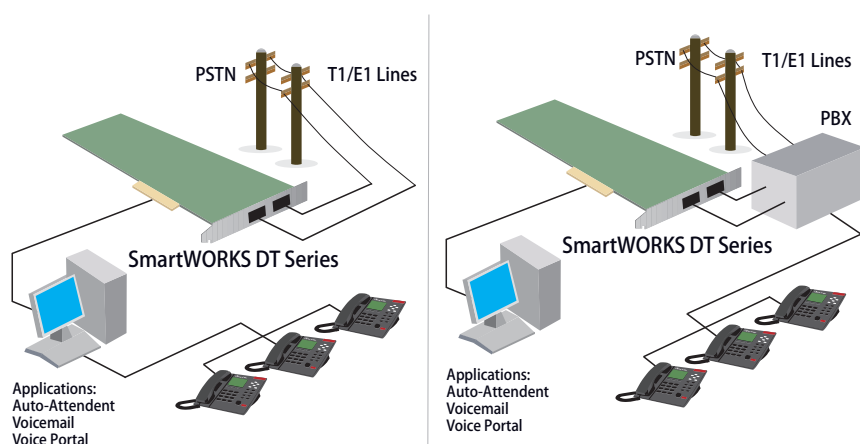
BUILT IN PERFORMANCE MONITORING

Network conditions and call statistics are available via the SmartWORKS™ API. Event driven alarms are reported for loss of signal conditions or synchronization errors. Framers and call statistics are available through standard API functions.

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 Cancelation
- Call Progress Monitoring (CPM)
- Full-duplex Channels
- Media Streaming
- Live Monitoring
- Start/Stop Call Recording Triggers

- Software Switchable T1/E1 Interface
- Auto-configures for all ISDN variants
- ANI and DNIS
- On-board DSP to complete voice processing
- CODEC Support



DT Application Model

Ai-Logix Enabling Technology Products

SmartWORKS™ DT

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	Windows2000 Professional/Server, WindowsXP Professional (SP3), Windows2003server (32-bit/64-bit), Windows2008 server (32-bit/64-bit), Widnows7 (32-bit/64-bit), Windows2012 Server (Call for variant details)
Technical Specifications	Max blades per system: 16 · Max ports per system: Up to 512 · Resource Sharing Bus H.100
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: 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)

Telephony Interface

Trunk Type	T1/E1 · Trunk Interface: Digital network interface · Connectors: RJ-45 connectors
Signaling Protocol	ISDN, Robbed Bit Signaling, E&M Immediate, E&M wink, FXS, FXO
T1 Interface	Receive Clock Rate: 1.544 MHz +/-200ppm · Transmit Clock: Recovered RX clock or 50 ppm Input Level: LBO 0dB to -22dB · Framing: SF (D4), ESF · Line Coding: AMI, B8ZS Clock and Data Recovery: Complies with AT&T TR6241.1 and Bellcore TA-TSY-000170 Loss of Signal Detection: ANSI T1.231 · Alarm Detection and Integration: LOS, LOF, Yellow, and AIS per ANSI T1.231
E1 Interface	Receive Clock Rate: 2.048 +/- 175ppm · Transmit Clock: Recovered RX clock or 50 ppm Input Level: 3.2V down to 0.45 V Framing: Basic G.704, CRC-4 · Line Coding: AMI, HDB3 Loss of Signal Detection: per ITU-T G.775 · Alarm Detection and Integration: LOS, LOSMF, TS16, CRC, and Yellow
Audio Signal	Receive range: -68 dBm to +3 dBm · Input gain control: +24 to -50 dB · Silence Detection: Programmable from API Transmit volume control: +24 to -50 dB · Automatic Gain Control (AGC) Programmable from API Automatic Volume Control (AVC) Programmable from API · Activity Detection Programmable from API Alert Tone Programmable · Frequency Response 300 - 3400 Hz (+/- 3dB)

Software

SDK	Ai-Logix SmartWORKS™ API
Call Progress Monitoring	Number of programmable tones: 20 · Number of bandpass filters: 10 · Number of filters per tone: 1,2 or 3 Number of cycles: 0 to 255 · SIT tones: Yes, programmable frequencies and duration Answering Machine Detection: Yes
Encoding & Decoding	5.3 Kb/s: G.723.1 · 6.3 Kb/s: G.723.1 · 8 Kb/s: G.729A · 13 Kb/s: GSM 6.10, Microsoft: GSM · 16 Kb/s: G.726 24 Kb/s: G.726, OKI · 32 Kb/s: G.726, OKI · 40 Kb/s: G.726 · 64 Kb/s: µ-law or A-law per G.711 8 bit linear PCM (signed & unsigned) · 96 Kb/s: 6 KHz 16 bit linear PCM (signed) 128 Kb/s: 16 bit linear PCM (signed & unsigned)
Wave file formats	Microsoft GSM, Linear signed 8 & 16-bit PCM · Digitization selection: Programmable per channel,
DTMF/MF Tone Detection	DTMF digits: 0 - 9, *, #, A, B, C, D · MF R2 Digits 15 Digits Forward & Reverse per Q.441 Dynamic range: -38 dBm to 0 dBm · Minimum tone detection: 40 ms /programmable · Interdigit timing: 40 ms min. Tone Dialing: Frequency variation less than 1 Hz Rate API Programmable Acceptable twist: Per LSSGR sec. 6, 8 dB forward, 4 dB reverse Frequency variation: Accept all +/- 1.5%, reject all +/- 2.5% Noise tolerance: Per LSSGR sec. 6 · Talk off: Bellcore TR-TSY 000762
Trigger Conditions	Event Driven Caller ID, Min/Max silence, Min/Max activity
Global Tone Generation	Tone Type Single or dual frequency · Frequency range 300 Hz - 3400 Hz · Frequency resolution 1 Hz Duration 1 ms - 8191 ms programmable in 1 ms steps · Amplitude +3 dBm to -68 dBm · Duration API Programmable
Voice Processing	Echo cancellation G.165 · Caller ID V.23 & Bell 202 · DTMF Detector Primary & Secondary channel MF Detection R1 & R2 PCI 2.2: +3.3 VDC; 2.8 A · +5 VDC: 5mA · -12 VDC: Not Required · +12 VDC: 20 mA · PCI express: +3.3 VDC: 3.2 A

Power Requirements

DT6409	+3.3 VDC 2.6A, +5 VDC 5mA, -12 VDC n/a, +12 VDC 20mA, Watts(MAX): 9W
DT3209-EH	+3.3 VDC 2.4A, +5 VDC 5mA, -12 VDC n/a, +12 VDC 20mA, Watts(MAX): 8.5W
DT6409-EH	+3.3 VDC 3.0A, +5 VDC 5mA, -12 VDC n/a, +12 VDC 20mA, Watts(MAX): 10.5W

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

DT6409	910-0323-002
DT3209-EH	910-0704-001
DT6409-EH	910-0704-002

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.

Ai-Logix USA

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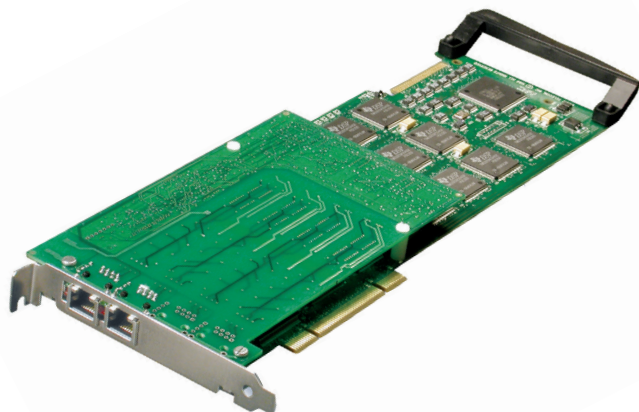
Room 403, Huai Hai China Tower, 885 Ren Min Road, Huangpu District, Shanghai, 200010 P.R.China

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SmartWORKS™ PCM PCM32 Passive/Terminate Card



The **SmartWORKS™ PCM** series cards have been designed to combine the same features and capabilities of SmartWORKS cards with a PCM32 front end. This board has been designed to work with the PCM32 Megalink protocol.

OPTICALLY ISOLATED

The front end of the cards have been designed with a standard RS485 electrical interface that is optically isolated from the board.

PROGRAMMABLE TRUNK IMPEDANCE

An API has been included in the SmartWORKS API to control trunk impedance which is configured on a per trunk basis. Trunk impedance is switchable between Hi-Z and 120 Ohm.

PROGRAMMABLE IDLE CODING FORMAT

Software selectable idle coding format: μ -law, A-law (terminate setting only).

ON-BOARD DSP TO COMPLETE VOICE PROCESSING

Encoding capabilities, with a rich set of CODECS, reduces the need to purchase other hardware components.

CODEC SUPPORT

SmartWORKS™ products offer a large selection of voice CODECS, (including G.723.1, G.729A and MS GSM)

PCM INTERFACE

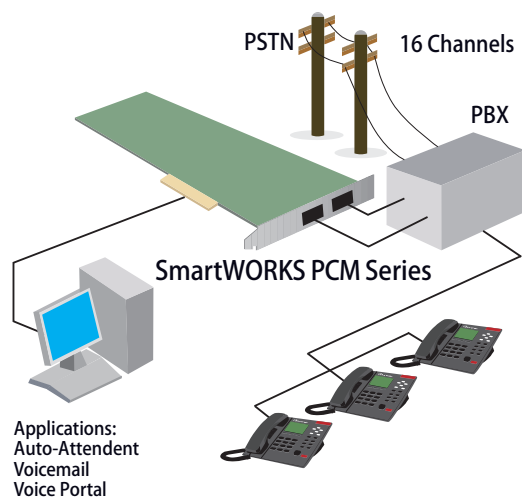
The electrical interface conforms to RS485 specifications. Each trunk processes up to 32 channels, with a maximum of 512 channels per system. The SmartWORKS PCM supports programmable trunk impedance, coding format, frame sync. and signal configuration through the SmartWORKS™ API.

BUILT IN PERFORMANCE MONITORING

Event driven alarms are reported for loss of synchronization. This feature is enabled through the SmartWORKS API.

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 with AGC
- Echo Cancellation
- Call Progress Monitoring (CPM)
- Full-duplex Channels
- Media Streaming
- Live Monitoring
- Start/Stop Call Recording Triggers



PCM Application Model

Ai-Logix Enabling Technology Products

SmartWORKS™ PCM

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	Windows2000 Professional/Server, WindowsXP Professional (SP3), Windows2003server (32-bit/64-bit), Windows2008 server (32-bit/64-bit), Widnows7 (32-bit/64-bit), Windows2012 Server (Call for variant details)
Technical Specifications	Max blades per system: 16 · Max ports per system: Up to 512 · Resource Sharing Bus H.100
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: 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)

Software

SDK	Ai-Logix SmartWORKS™ API
Interface	Input Data Rate: 2.048 Mbit/s · Output Data Rate: 2.048 Mbit/s · Frame Signal: 8 KHz square wave signal Alarm Detection and Integration: Loss of Synchronization · Input Impedance: Hi-Z / 120 Ohm (sign) Audio Signal: Receive range: -68 dBm to +3 dBm · Input gain control: +24 to -50 dB Silence Detection: Programmable from API · Transmit volume control: +24 to -50 dB Automatic Gain Control (AGC): Programmable from API · Automatic Volume Control (AVC): Programmable from API Activity Detection: Programmable from API · Alert Tone: Programmable from API · Frequency Response: 300 - 3400 Hz (+/- 3dB)
Encoding & Decoding	5.3 Kb/s: G.723.1 · 6.3 Kb/s: G.723.1 · 8 Kb/s: G.729A · 13 Kb/s: GSM 6.10, Microsoft GSM · 16 Kb/s: G.726 24 Kb/s: G.726, OKI · 32 Kb/s: G.726, OKI · 40 Kb/s: G.726 64 Kb/s: μ-law or A-law per G.711, 8 bit linear PCM (signed & unsigned) · 96 Kb/s: 6 KHz 16 bit linear PCM (signed) 128 Kb/s: 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
DTMF/MF Tone Detection	DTMF digits: 0 - 9, *, #, A, B, C, D · MF R2 Digits: 15 Digits Forward & Reverse per Q.441 · Dynamic range: -38 dBm to 0 dBm Minimum tone detection: 40 ms /programmable · Interdigit timing: 40 ms min Acceptable twist: Per LSSGR sec. 6, 8 dB forward, 4 dB reverse · Frequency variation: Accept all +/- 1.5%, reject all +/- 2.5% Noise tolerance: Per LSSGR sec. 6 · Talk off: Bellcore TR-TSY 000762
Trigger Conditions	Event Driven, Caller ID, Min/Max silence · Min/Max activity
Global Tone Generation	Tone Type: Single or dual frequency · Frequency range: 300 Hz - 3400 Hz · Frequency resolution: 1 Hz Duration: 1 ms - 8191 ms programmable in 1 ms steps · Amplitude: +3 dBm to -68 dBm · Duration: API Programmable
Voice Processing	Echo cancellation: G.165 · DTMF Detector: Primary & Secondary channel · MF Detection: R1 & R2

Power Requirements

PCM6409	2.6A 5mA n/a 20mA 9W
PCM6409-EH	3.0A 5mA n/a 20mA 10.5W

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

PCM6409	910-0329-001
PCM6409-EH	910-0702-001

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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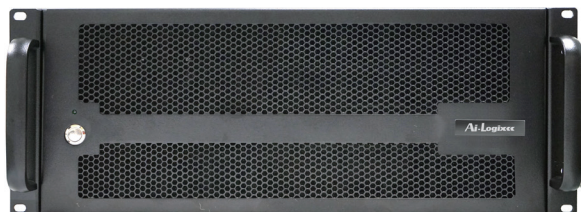
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Ai-Logix Enabling Technology Products

SmartEXPANSION™

PCI Expansion solution of standard PC/Server



Simply need more full size PCI slots or storage space when you build your logging solution? You can install practically any SmartWORKS™ card into the **SmartEXPANSION™** System and connect it to your standard server through SmartEXPANSION™ host cards. The SmartEXPANSION™ 7 Slot PCI Expansion System is a 4U, rack mountable chassis that allows you to plug-in up to seven PCI cards.

INCREASE I/O CAPABILITY

There are numerous performance and functionality hungry professionals that simply need more PCI slots than a typical server provides. Even with the introduction of more robust desktop computers and servers, increased slot capability is still required. If you have logging application that requires the use of several PCI cards, increase the number of PCI slots in your system with a SmartEXPANSION™ PCI Expansion System.

FLEXIBLE SYSTEM

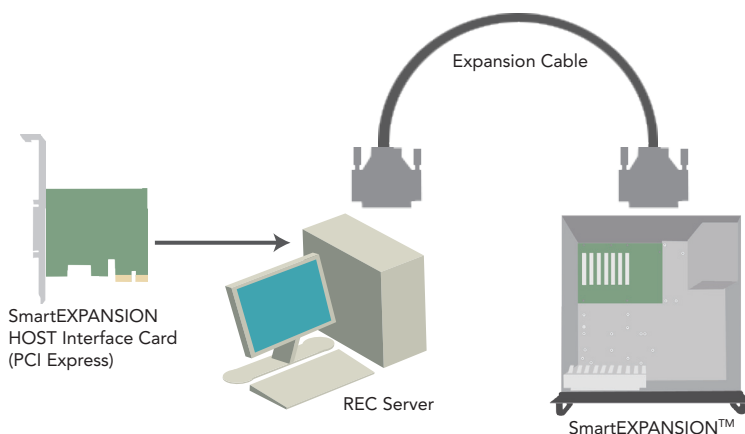
The use of computer specific host cards makes using your PCI cards and vital data as simple as “Plug & Play” because all you need to do is to connect the SmartEXPANSION™ PCI Expansion System to the host card for your computer and turn it on.

FAMILIARITY BREEDS SUCCESS

Setting up your PCI cards and data in one chassis provides you an opportunity to use a consistent hardware configuration – regardless of what type of computer is available. Being able to “hit the ground running” is vital to every successful venture. Being able to use “the same PCI cards,” regardless of location also reduces project risks.

SMARTEXPANSION™ FEATURES:

- PCIe(Host) to PCI(Expansion)
- Easy Plug and Play installation up to 7 SmartWORKS PCI boards
- PCI Express host card provides easy connection to servers
- Includes 1-meter expansion cable
- PCI backplane (32-bit)
- 450W Power Supply, optional 400W Hot-Swappable Redundant Power Supply
- Dedicated fan for cooling PCI cards
- PCI card hold down mechanism prevents cards from being dislodged during transportation



SmartEXPANSION™ Application Model

Ai-Logix Enabling Technology Products

SmartEXPANSION™

SPECIFICATIONS

System Requirements

Backplane	7 PCI slots (32-bit/33Mhz) Supports full or half-length SmartWORKS™ PCI cards
Operating Environment	0° to 50° C Operating Temperature -20° to 60° C Storage Temperature 5% to 85% Relative Humidity, Non-condensing
Operating Systems	Windows Vista/XP/2000/Server 2003/Server 2008

Product Specs and Info

PCI Local Bus Specification	Revision 2.2
PCI Bridge Architecture Spec	Revision 1.2
Enclosure	19" Rack-mount Standard
MTBF	53,000 hours
Standard Cable	1-meter PCI expansion cable
Regulatory Compliance	FCC Class A Verified CE Certified
Interconnect Bandwidth	132 MB/sec (Theoretical Max of PCI 32/33)
Dimensions	(4U) 482 W x 177 H X 440 D (mm)
Weight	11.2 kg
Cooling	One 85CFM/12cm fan and one fan in power supply
Construction	All Steel Chassis
Warranty	1 Year Return to Factory

Power Requirements

Host Connection and Power Consumption	Universal PCI 32/33: 0.63W max; 5V @ 0.125A Low Profile PCI (64/33): 0.86W max; 3.3V @ 0.25A x1 PCI Express@: 0.69W max; 3.3V @ 0.21A
Chassis Power Supply (Design for SmartWORKS™)	<ul style="list-style-type: none">• 450W Power Supply (ATX12V 1.3) DC Output: 300Watts Max +12V 18A maximum +5V 26A maximum +3.3V 27A maximum -12V 0.8A maximum +5VSB 2.0A maximum• 400W redundant (Optional)

Order Information

SmartEXPANSION Chassis	910-9910-001
SmartEXPANSION Chassis (Redundant Power)	910-9910-003

ABOUT AI-LOGIX

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Ai-Logix Enabling Technology Products

SmartEXPANSION™

PCI Expansion solution of standard PC/Server



Simply need more full size PCI slots or storage space when you build your logging solution? You can install practically any SmartWORKS™ card into the **SmartEXPANSION™** System and connect it to your standard server through SmartEXPANSION™ host cards. The SmartEXPANSION™ 3 Slot PCI Expansion System is a 2U, rack mountable chassis that allows you to plug-in up to seven PCI cards.

INCREASE I/O CAPABILITY

There are numerous performance and functionality hungry professionals that simply need more PCI slots than a typical server provides. Even with the introduction of more robust desktop computers and servers, increased slot capability is still required. If you have logging application that requires the use of several PCI cards, increase the number of PCI slots in your system with a SmartEXPANSION™ PCI Expansion System.

FLEXIBLE SYSTEM

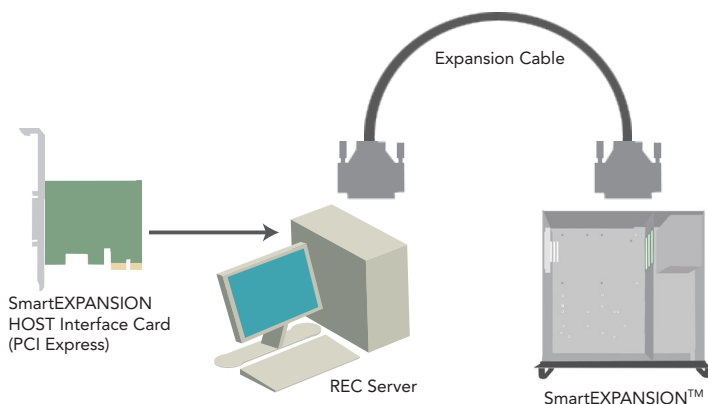
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SMARTEXPANSION™ FEATURES:

- PCIe(Host) to PCI(Expansion)
- Easy Plug and Play installation up to 3 SmartWORKS PCI boards
- PCI Express host card provides easy connection to servers
- Includes 1-meter expansion cable
- PCI backplane (32-bit)
- 300W Power Supply
- Dedicated fan for cooling PCI cards
- PCI card hold down mechanism prevents cards from being dislodged during transportation



SmartEXPANSION™ Application Model

Ai-Logix Enabling Technology Products

SmartEXPANSION™

SPECIFICATIONS

System Requirements

Backplane	3 PCI slots (32-bit/33Mhz) Supports full or half-length SmartWORKS™ PCI cards
Operating Environment	0° to 50° C Operating Temperature -20° to 60° C Storage Temperature 5% to 85% Relative Humidity, Non-condensing
Operating Systems	Windows Vista/XP/2000/7/Server 2003/Server 2012

Product Specs and Info

PCI Local Bus Specification	Revision 2.2
PCI Bridge Architecture Spec	Revision 1.2
MTBF	53,000 hours
Standard Cable	1-meter PCI expansion cable
Regulatory Compliance	FCC Class A Verified CE Certified
Interconnect Bandwidth	132 MB/sec (Theoretical Max of PCI 32/33)
Dimensions	(2U) 480 W x 88 H x 475 D (mm)
Weight	7kg
Cooling	One 85CFM/12cm fan and one fan in power supply
Construction	All Steel Chassis
Warranty	1 Year Return to Factory

Power Requirements

Host Connection and Power Consumption	Universal PCI 32/33: 0.63W max; 5V @ 0.125A Low Profile PCI (64/33): 0.86W max; 3.3V @ 0.25A x1 PCI Express®: 0.69W max; 3.3V @ 0.21A
Chassis Power Supply (Design for SmartWORKS™)	• 300W Power Supply DC Output: 285Watts Max +12V 11A maximum +5V 18A maximum +3.3V 14A maximum -12V 0.3A maximum +5VSB 2.5A maximum

Order Information

SmartEXPANSION Chassis	910-9910-002
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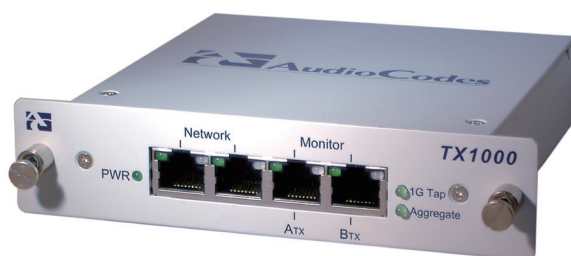
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Ai-Logix Enabling Technology Products

SmartWORKS™ TX100/TX1000 For Use With IPX/HPX



The **TX100 & TX1000** provides access to a gigabit network with connections to 10/100M (TX1000: support 1000M) monitoring equipment such as a SmartWORKS™ IPX or HPX. It can be placed anywhere in the configuration between two network devices.

TX100: The traffic from the access point is amplified and balanced for connection to network monitoring equipment. Upstream and downstream traffic are separated for improved application flexibility.

TX1000: Advanced switching capabilities allows for filtering not available on other Gigabit tapping products.

MIRROR PORT OUTPUT

Upstream and downstream traffic can be maintained as separate streams or aggregated to a single output port.

FAIL OVER TECHNOLOGY

Relay capabilities will not break the Power Over Ethernet (PoE) circuit of the monitored line even in the event of power loss to the TX1000. PoE support means that endpoints will not lose power supply on PoE enabled networks.

RELAY TECHNOLOGY

Relay capabilities will not break the Power Over Ethernet (PoE) circuit of the monitored line even in the event of power loss to the TX1000. PoE support means that endpoints will not lose power supply on PoE enabled networks.

NETWORK TRANSPARENT

The TX100/TX1000 does not require a MAC or IP Address, therefore; will not be visible to your customer's equipment.

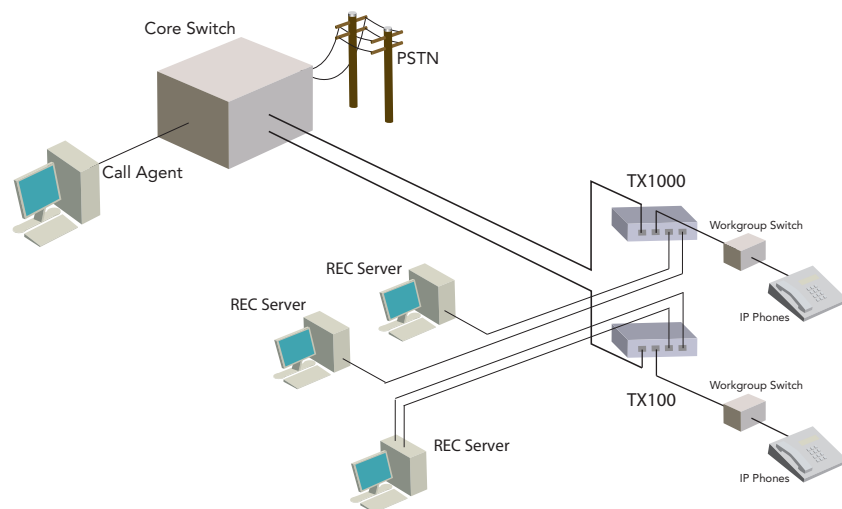
TX100 FEATURES

- Provides 2 active connections to network monitoring equipment
- Separate connections for monitoring upstream and downstream traffic
- Passive access point to 10/100BaseT network devices and traffic
- Network transparent, this device does not require a Mac/IP address
- Compatible with all major manufacturer's network equipment
- Redundant Power Supply (optional)

TX1000 FEATURES

- VLAN Filtering Support on Mirror ports
- Power Over Ethernet (PoE) relay
- 10/100/1000 network interfaces
- Redundant Power Supply (optional)
- Network Transparent
- Full-Duplex Monitoring
- Auto-Negotiation
- Rack Mountable (optional)
- VLAN Configurable
- Power Over Ethernet (PoE) relay

- Not require a Mac/IP address
- Auto-Negotiation
- Dual Power Supply



TX100/TX1000 Application Model

Ai-Logix Enabling Technology Products

SmartWORKS™ TX100/TX1000

SPECIFICATIONS

Physical Requirements

Dimensions	3.2cm H x 14.1cm W x 13.3cm D
Form Factor	Rack mounted (optional 3 card rack mount available)
Power Supply	Dual 12VDC/200mA

LEDs

- (1) power indicator
- (2) traffic activity indicators

Connectors

Network Ports two 10/100 RJ45
Tap Out Ports two 10/100/1000 RJ45
specifications
IEEE 802.3 compliant shielded 8-pin

Cabling

CAT 5 (straightthrough)

Safety And Certifications (Pending)

Safety	IEC60950-1 (pending)
EMI	EN55022:1994 + A1:95 + A2:97, EN55024:1998 + A1:01 + A2:03 and FCC CFR 47 part 15 subpart B: 2005

Order Information

TX100	910-0331-002
TX1000	910-0331-018

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Ai-Logix Enabling Technology Products

SmartWORKS™ MICBOX Resistive Tap Splitter



The **SmartWORKS™ MIC BOX** moves away from traditional telephone call recording to capture live conversations. By utilizing our new microphone capture technology, businesses can now record any transaction necessary, whether for verification or dispute resolution. Using sensitive, directional microphones combined with our industry leading SmartWORKS™ blade technology, a live conversation recording system is now just as easy to deploy as a standard telephone recording application.

BUSINESS USE CASES

There are many uses for SmartWORKS™ LIVE Recording. Any place where a transaction may occur is an ideal spot to deploy a SmartWORKS™ MIC BOX. Negotiation rooms, Bank Tellers, Loan Closings, Home Closings, Interviews, Dispute Conferences and Court Rooms are only a sample of where the SmartWORKS™ MIC BOX can be deployed.

RECORDING USING LD

VOX Trigger: Using the voice activity detectors of the SmartWORKS™ LD Board (requires application), conversations can be automatically recorded.

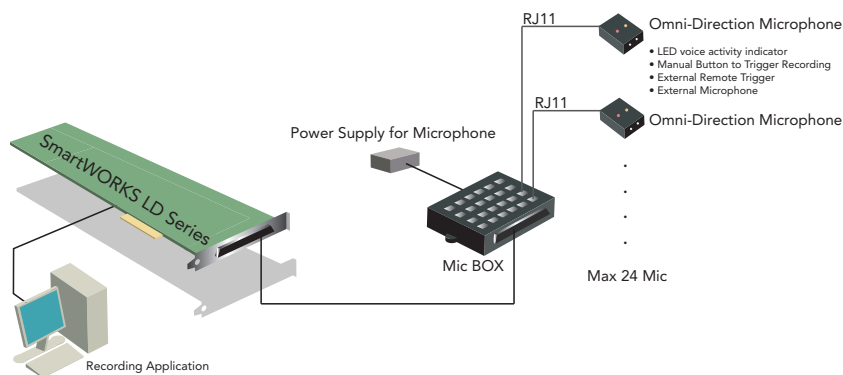
Voltage Trigger: Using the voltage detectors of the SmartWORKS™ LD Board (requires application), conversations can be automatically recorded when the manual button is pressed.

EXTERNAL POWER SUPPLY

Drive multiple microphones with a single power supply, significantly simplifying the installation process.

SMARTWORKS™ MICBOX FEATURES

- High Sensitivity Microphone
- Built-in High Pass Filter
- LED voice activity indicator
- Manual Button to Trigger Recording (Optional)
- External Remote Trigger (Optional)
- External Microphone (Optional)
- 1 Power Supply for 24 Microphones



MICBOX Application Model

Ai-Logix Enabling Technology Products

SmartWORKS™ MICBOX

SPECIFICATIONS

Power

Power Requirement	DC 15V~24V (External Power Adaptor connected to RJ11 Breakout box)
Current Consumption	4mA

Specifications

Dimension	50mm(L) x 35mm(W) x 20mm(H)
Operation Temperature	-20~70 C
Amplifier Fidelity	0.1%
Manual Trigger Switch	10V DC Normal State / Push button Momentary 24V DC 800ms
Microphone Type	Omni-direction Condenser
External Microphone	Audio Jack 3.5 mm (Internal Microphone disabled when connected)
Remote Trigger Switch	Audio Jack 2.5mm

Telephony

Frequency Response	600Hz ~ 3400Hz +/- 3db
Signal /Noise ratio	50db
Output Impedance	50ohm
Connections	RJ11 Connector (2wires)
Low Frequency Elimination	-40db (50Hz or 60Hz)
Sensitivity	-42db

Cable Lenth

Maximum length of RJ11 connector	750 meters
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Emissions	EN55022 47 CFR FCC part 15 EN55024
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Order Information

Microphone	910-0800-001
RJ11 Breakout Box with power adapter	910-0800-002

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Ai-Logix Enabling Technology Products

SmartWORKS™ RTSBOX Voice Acquisition Device



The **RTS BOX** is a tap-point product designed for use with the SmartWORKS™ NGX. Using the RTS BOX with two NGX2400 blades provides a 24-port solution for call recording applications.

The RTS Box is required when tapping Avaya Index, Mitel SX200/SX2000 and the Siemens Rolm 9751. The unique design supports all 3 PBXs with one assembly. The RJ21x Amp connectors provide reliable connections to the NGX, PBX, and phones by treating the PBX as a 4-wire supporting half the channels.

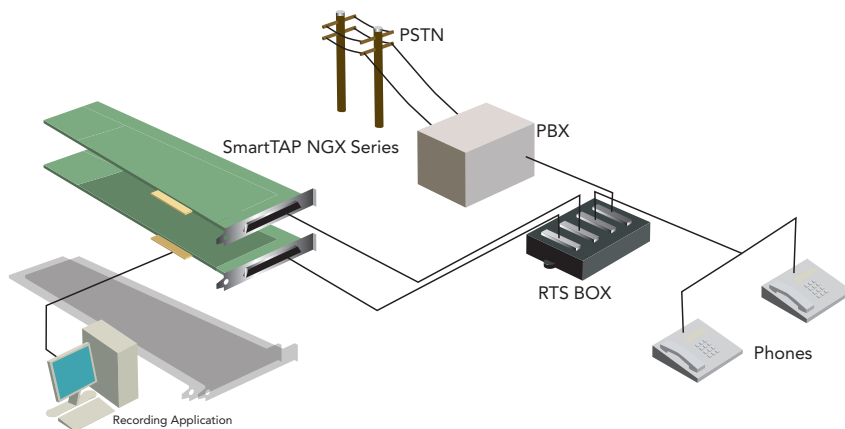
- Provides both voice and D-channel data for:
 - Avaya INDeX
 - Mitel SX200/SX2000
 - Siemens Rolm 9751
- Breaks out full-duplex signal into 2 half-duplex signals
- Passive device - No power supply required

SPECIFICATIONS

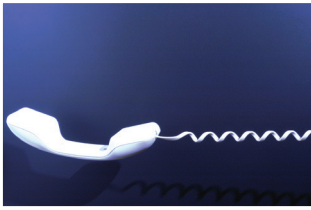
Order Information

RTSBOX

910-2013-001



RTSBOX Application Model



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An AudioCodes Company

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