

AC491xxx High Density Voice over Packet Processor Family



- No need for external memory
- Low per-channel cost, power and footprint
- Field-proven reference designs
- Proprietary evaluation & development tools
- Lead-free available

The **AC491xxx** family of DSPs is an ideal solution for high density, carrier class Voice over IP gateways. Featuring high channel density (up to 240 channels of non-compressed voice, or 120 channels of compressed voice), low power consumption (less than 5 mW/ch for non-compressed voice), and low footprint (16x16 mm) with no external memory required, the AC491xxx provides an excellent building block for high density gateways. The AC491xxx is based on VolPerfect™ architecture, AudioCodes' underlying, best-of-breed, core media gateway technology for all of its products. Field-proven, feature rich software and reference design enables the rapid development and fast time-to-market of the complete solution.

DELIVER FEATURE-RICH TECHNOLOGIES

The AC491xxx voice over packet processor combines up to 120 channels of toll quality low bit rate (LBR) voice compression or 240 G.711 channels, which are processed with an improved G.168-2002 compliant echo canceller (configurable tail length of up to 128 msec). Other voice quality enhancers include Adaptive Voice Activity Detection, Comfort Noise Generation and Adaptive Jitter Buffer. Field-proven G3 Fax Relay, compliant with the T.38 ASN.1 standard, is a major enhancement to the AC491xxx offering. The Fax Relay, that can withstand delays of up to 10 seconds in the network, has passed several interoperability tests with major OEMs in the world, and was tested with numerous fax machines. The Fax Relay functionality does not alter the channel density.

ENHANCE SYSTEM SOLUTIONS

The AC491xxx also provides RTP/RTCP Packetization and DTMF relay, or AAL2 Packetization. This feature offloads the Packet Processor from such tasks. RTP Packets may be optionally encrypted according to state of the art encryption algorithm AES. The AC491xxx also offers a new set of media processing technologies, such as fast/slow voice playback, automatic gain control, energy detector, and packet to packet Transcoding (LBR to PCM in one channel). These features enable developers of Media Server Platforms to exploit AudioCodes' vast experience in the voice over packet market for significantly shortening their time-to-market.

FIELD-PROVEN REFERENCE DESIGN

By using the AC491xxx in its other high density applications, AudioCodes has the unique capability to offer its VoP Processor customers field-proven reference designs, which are used and tested by customers throughout the world. The AC491xxx offers an easy to integrate Utopia Level 2 interface for media packets, which is suitable for many popular Network Processors. For control packets, an Enhanced HPI interface is used. Suitable drivers are supplied with the AC491xxx for fast software integration.

AC491xxx FEATURES

- Wireline, wireless & cable low bit rate Voice Coders
- G.168-2002 compliant Echo Canceller
- T.38 compliant Fax Relay (does not reduce LBR density)
- In-Band Signaling, international caller ID support
- IPmedia™ features
- PacketCable media encryption (AES)
- Adaptive Jitter Buffer
- RTP/RTCP/SRTP Packetization inside

AudioCodes Enabling Technology Products

AC491xxx

SOFTWARE SPECIFICATIONS

Channel Density

	AC491064	AC491102
Uncompressed 64 kbps Voice	128	192+
Compressed Voice	64	102

Voice Functions

Voice Coders	<ul style="list-style-type: none"> • G.711 PCM (A/μ-law) at 64 kbps • G.726 ADPCM at 16-40 kbps • G.727 E-ADPCM at 16-40 kbps • G.729AB CS-ACELP at 8 kbps • G.723.1 MP-MLQ at 6.3 kbps 	<ul style="list-style-type: none"> • G.723.1 ACELP at 5.3 kbps • GSM 6.10 Full Rate at 13.2 kbps • G.729E at 11.8 kbps • AMR at 4.75-12.2 kbps • iLBC at 13.33 & 15.2 kbps
Other Voice Coders* (upon request)	<ul style="list-style-type: none"> • NetCoder[®] at 6.4-9.6 kbps • G.728 LD-CELP 16 kbps • EVRC Up to 8.55 kbps 	<ul style="list-style-type: none"> • QCELP 8 Up to 8.55 kbps • QCELP 13 Up to 13.3 kbps • G.722.2 WB-AMR
Echo Cancellor	G.168-2002 compliant with programmable echo tail of up to 128 msec	
3 Way Conferencing	Conferencing of 3 participants from PSTN or IP	
Quality Enhancement	<ul style="list-style-type: none"> • Voice Activity Detection (VAD) • Packet Loss Concealment (PLC) • Comfort Noise Generation (CNG) • Adaptive Jitter Buffer (up to 300 msec) 	
IPmedia™ Features	<ul style="list-style-type: none"> • Fast/slow voice playback and announcements* • Energy and Answer detectors* • Automatic Gain Control • Packet to Packet Transcoding 	

Data Functions

Voice/Fax/Data	Automatic detection and switching
Fax Support	T.38 compliant G3 Fax Relay, 2.4-14.4 kbps or PCM bypass
Modem Support	Automatic switch to PCM for up to V.92 rates

Signaling

In-band Signaling	<ul style="list-style-type: none"> • DTMF TIA 464B • MF R1, R2
Detection and Generation	<ul style="list-style-type: none"> • User Defined and Call Progress tones
Out-of-band Signaling	CAS ABCD (From Standard Framers)
Caller ID Detection and Generation	<ul style="list-style-type: none"> • Telcordia (Bellcore) On Hook and Off Hook Service (Type 1 & 2) • ETSI On Hook and Off Hook Service (Type 1 & 2) • NTT Number Display (Type 1), Name Display

Packetization

RTP/RTCP	Per RFC 3550 (formerly 1889), 3551 (formerly 1890), 2198
DTMF Relay	Per RFC 2833
AAL2 Encapsulation	Per I.366.2 and AF-VMOA-0145.00

Encryption

SRTP	Per RFC 3711, 128 bit AES, Authentication: HMAC SHA1, MMH
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Host Services

HDLC Framing	For CCS signaling (ISDN, V5.2)
SS7 Signaling	MTP2 per Q.703

HARDWARE SPECIFICATIONS

PCM Interface	8.192 up to 32.768 Mbps, A/μ-Law
Host Post Interface (control and status, optional media)	16 bit Bidirectional
Utopia Interface (media)	Utopia level 2, 16 bit, 50 MHz
Power Supply	+1.2V (core), +3.3V (I/O)
Power Consumption	1200 mW (typ)
Operational Case Temperature Range	0°C - 85°C
Package	284 pin MicroStar BGA , 0.8 mil

* Please contact AudioCodes representative for specific software availability

APPLICATIONS

- Carrier Class Voice over IP Gateways
- Class 4 and Class 5 Switches Replacements
- Trunking & Access Gateways
- Wireless (UMTS, CDMA, GSM) and Cable High Density Gateway Applications
- Large PBXs

ABOUT AUDIOCODES

AudioCodes Ltd. (NASDAQ: AUDC) enables the new voice infrastructure by providing innovative, reliable and cost-effective Voice over Packet technology and Voice Network products to OEMs, network equipment providers and system integrators. AudioCodes provides its customers and partners with a diverse range of flexible, comprehensive media gateway and media processing technologies, based on VolPerfect™ – AudioCodes' underlying, best-of-breed, core media gateway architecture. The company is a market leader in voice compression technology and is a key originator of the ITU G.723.1 standard for the emerging Voice over IP market. AudioCodes voice network products feature media gateway and media server platforms for packet-based applications in the converged, wireline, wireless, broadband access, and enhanced voice services markets. AudioCodes enabling technology products include VoIP and CTI communication boards, 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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