

SystemBase

IP Codecs

KEY FEATURES

- **DSP Architecture**
24Bit Digital Audio
32Bit Signal Processing
Selectable Headroom
(+12dBm or +18dBm)
- **Ethernet Support**
Web Server
Remote Management
SMTP Email Alerts
Backup User Settings
Restore User Settings
Firmware Updates
SNMP Management
- **Audio Over IP**
Linear, APTX, G.722
FS 8KHz to 48KHz
Forward Error Control
Digital Clock Recovery
10/100 Base-T
Unicast, Simulcast
- **Multi-Algorithm**
G.711 (Telephone)
G.722
APTX (384Kbps)
Linear
- **User Interface**
24x2 Character VFD
Full VU Metering

PRODUCTS

- **C510ip**
IP: Linear, APTX, G722
ISDN: APTX,G722,G711
ISDN: 128Kbps
X21: APTX to 384Kbps
9600bps Aux Data
ISDN Backup/Restore
Alarm Contacts
External Trigger Dial
12 ISDN Standards
Backup User Settings
Restore User Settings
SMTP Email Alerts
Firmware Updates
SNMP Management
AES3 on XLR
DHCP
- **C530ip**
IP: Linear, APTX, G722
X21: APTX to 384Kbps
9600bps Aux Data
Alarm Contacts
SMTP Email Alerts
Firmware Updates
SNMP Management
AES3 on XLR
DHCP

C500ip Series

SYSTEMBASE C510ip
REL 001 0200-001



PROFESSIONAL QUALITY AUDIO

The Systembase C500ip range of digital audio codecs have been designed and manufactured to deliver unparalleled performance and reliability for professional real-time audio applications. Both models incorporate the fast apt-X Sub Band ADPCM compression system with a coding delay of only 2.8ms at a sampling rate of 48KHz, as well as Linear PCM and G.722. The C510ip ISDN model also supports G.711 coding algorithm to provide compatibility with other codecs.

Additional design features include 24 Bit analogue and AES audio interfaces. The analogue interface is electronically balanced resulting in a high Common Mode Rejection Ratio (CMRR) for a significant improvement in performance.



WORLD-WIDE OPERATION

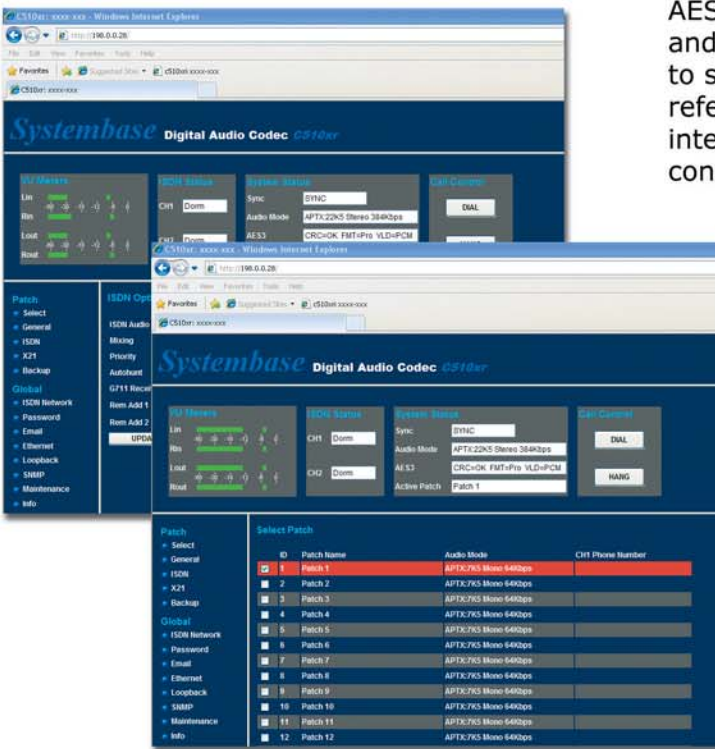
Systembase codecs interface directly to the ISDN network via standard RJ45 sockets. To facilitate world-wide operation, 12 international ISDN standards are supported, and can be selected by the user from either the front panel or the Web Server interface.

BACKUP SETTINGS

The WEB Server interface enables users to save the entire codec configuration to the hard disk of a computer. Once saved, the user can optionally edit the settings and restore them back to a codec at a later time.

DIGITAL AUDIO INTERFACE

AES3 digital audio interface is provided on both models, and is equipped with automatic sample rate conversion to simplify the problems of connecting between a studio reference clock and the ISDN network clock. The AES3 interface is supported via two transformer isolated XLR connectors located on the rear panel.



SNMP

The C500ip Codecs provide support for SNMP (Simple Network Management Protocol). SNMP allows the codec to be managed by industry standard, third party applications that are capable of monitoring and controlling equipment over LAN and WAN environments.

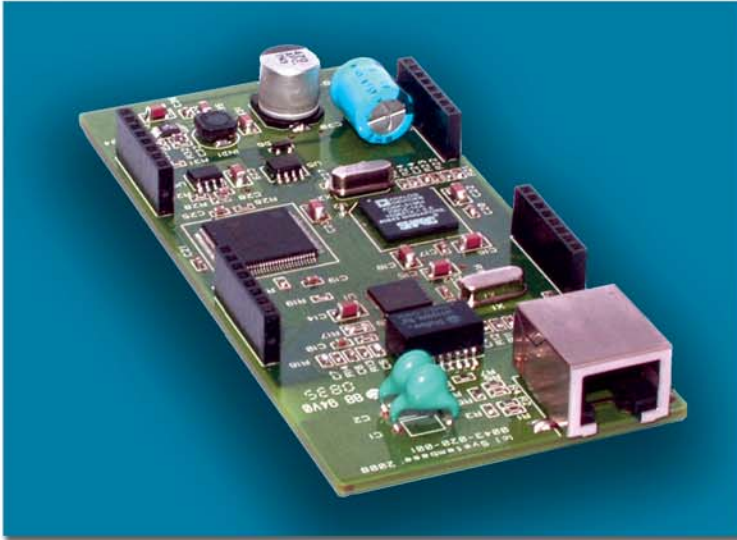
WEB SERVER

The C500ip codecs feature a dedicated Ethernet connection specifically for remote management. This ethernet connection maybe configured with either a static or DHCP allocated IP address, allowing access from a standard Windows web browser for remote management purposes.



IP MODULE

The C500ip Codecs integral IP Module has been 100% developed in-house by Systembase. The IP Module has been optimised for Audio Streaming and utilises Forward Error Control (FEC), connection security and digital clock recovery to give maximum operational reliability.



Multiple Connections

The IP Module has been designed to enable two simultaneous connections. A connection can be made or broken without disrupting other connections that may already exist. When making a connection to a remote codec, the user can specify the audio to be duplex, receive only or transmit only. If the receiving codec is not able to implement the requested audio mode due to a conflict with an existing connection, Automatic Negotiation will take place to provide a suitable operating mode.

Automatic Negotiation

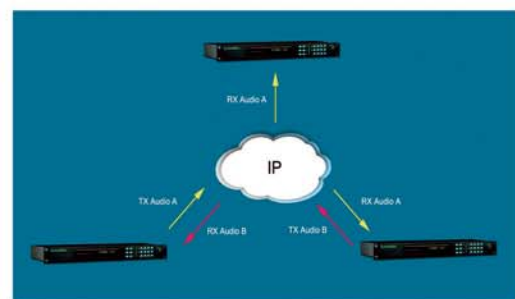
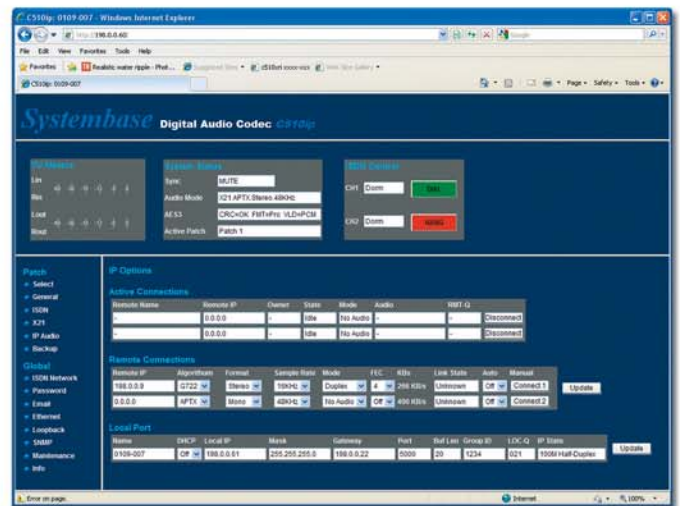
This feature enables a C500ip Codec to automatically adopt the mode of operation requested by an incoming IP connection. If the resources requested by the incoming IP connection are already in use by an existing connection, then the new incoming connection will automatically adapt to find a suitable operating mode. Automatic Negotiation allows the remote codec to connect without any prior knowledge of the local codec's connection status.

Group Security ID

The Group Security ID feature provides a very useful mechanism for securing a group of IP codecs. This feature is enabled by entering the same 8 digit ID code into all participating codecs. The ID code is then used by the codec to automatically reject all packets that do not have a matching code.

Forward Error Control

IP connections are not always 100% error free and occasionally the IP network will lose a packet of data. In the case of a typical broadband ADSL connection packet loss can be fairly frequent. Forward Error Control (FEC) facilitates the transmission of additional information that allows the receive codec to automatically re-create the missing packet from data contained within the neighbouring packets.



Active Connections

The active connections window shown below, displays details of all current IP connections to the codec. The user can use the associated disconnect buttons to selectively terminate connections. This window will also display the name, status and IP address of the codec that is currently connected.

Technical Specifications

	C510ip	C530ip
AUDIO PERFORMANCE		
Coding Standards	G.711,G.722,APTX-100, Linear PCM	G.711,G.722,APTX-100, Linear PCM
Analogue S/N Ratio	>102dB	>102dB
Headroom	+12dBu Max or +18dBu Max	+12dBu Max or +18dBu Max
Input Impedance	>10K ohms	>10K ohms
Output Impedance	<100 ohms	<100 ohms
Physical Connectors	XLR	XLR
Sample Rate / Resolution	48KHz / 24Bit	48KHz / 24Bit
AES3		
Physical Connectors	XLR	XLR
Sample Rate / Resolution	48KHz / 24Bit	48KHz / 24Bit
ETHERNET		
Web Server Management	yes	yes
Backup/Restore Settings	yes	no
SMTP Email Alerts	yes	no
Firmware Flash Updates	yes	yes
SNMP	yes	yes
DHCP	yes	yes
ISDN FACILITY		
Standards	12 User Selectable	no
Sub Addressing	yes	no
Multiplexing	2B (128KBps)	no
ISDN Backup/Restore	yes	no
X21 AUDIO MODES		
APTX: 8/16/32/48 FS	Mono/Stereo (64-384KBps)	Mono/Stereo (64-384KBps)
AUDIO OVER IP		
Linear PCM: 16/32/48 FS	Mono/Stereo	Mono/Stereo
APTX: 8/16/32/48 FS	Mono/Stereo	Mono/Stereo
G.722: 16 FS	Mono/Stereo	Mono/Stereo
FEC (Forward Error Control)	User Selectable	User Selectable
Unicast / Simulcast	yes	yes
Digital Clock Recovery	yes	yes
Recovery Buffer	User Adjustable	User Adjustable
DHCP	yes	yes
ISDN AUDIO MODES		
G.711: 3K2	Mono (64KBps)	n/a
G.722: 7K5	Mono (64KBps)	n/a
APTX: 8/16/32 FS	Mono/Stereo (64-128KBps)	n/a
POWER		
Voltage	80-260VAC 50/60Hz	80-260VAC 50/60Hz
Connector	IEC Mains Plug	IEC Mains Plug
Consumption	20W	20W
PHYSICAL		
Weight	2.5Kg	2.5Kg
Height	45mm (1U)	45mm (1U)
Width	480mm(19")	480mm(19")
Depth	200mm	200mm

Typical IP Bandwidth Figures

	Packet Interval (ms)	Average Bit Rate		Audio-to-Audio Delay
		FEC (off)	FEC (1:4)	
LINEAR PCM				
48KHz Stereo	4 ms	2080 Kbps	2600 Kbps	23 ms
48KHz Mono	4 ms	1120 Kbps	1400 Kbps	23 ms
32KHz Stereo	6 ms	1386 Kbps	1733 Kbps	33 ms
32KHz Mono	6 ms	746 Kbps	933 Kbps	33 ms
16KHz Stereo	12 ms	693 Kbps	866 Kbps	58 ms
16KHz Mono	12 ms	373 Kbps	466 Kbps	58 ms
8KHz Stereo	24 ms	346 Kbps	433 Kbps	112 ms
8KHz Mono	24 ms	186 Kbps	233 Kbps	112 ms
APTX				
48KHz Stereo	4 ms	640 Kbps	800 Kbps	30 ms
48KHz Mono	4 ms	400 Kbps	500 Kbps	27 ms
32KHz Stereo	6 ms	426 Kbps	533 Kbps	40 ms
32KHz Mono	6 ms	266 Kbps	333 Kbps	38 ms
16KHz Stereo	12 ms	213 Kbps	266 Kbps	68 ms
16KHz Mono	12 ms	133 Kbps	166 Kbps	66 ms
8KHz Stereo	24 ms	106 Kbps	133 Kbps	128 ms
8KHz Mono	24 ms	66 Kbps	83 Kbps	128 ms
G.722				
16KHz Stereo	12 ms	213 Kbps	266 Kbps	61 ms
16KHz Mono	12 ms	133 Kbps	166 Kbps	60 ms

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