

~ Real-Time High Quality HDTV Content Transmission ~

IP-9500

The IP-9500 is an IP-based audio/video codec that uses state-of-the-art MPEG-4 AVC (H.264) video encoding to perform live transmission of high-quality HDTV at low bit-rates over broadband networks.

The super low latency is realized with IP-9500/IP-9500D decoder and used in the delay-sensitive contribution and distribution applications, especially ENG/SNG live coverage.



HDMI
HIGH DEFINITION MULTIMEDIA INTERFACE

Features

■ Best-in-Class Picture Quality

Applying the latest MPEG-4 AVC (H.264) compression tools and image processing algorithms, it provides best-in-class picture quality. High Profile @ Level 4 encoding provides high picture quality to 6Mb/s for use in broadcast contribution and distribution networks.

■ HDTV Transmission over IP and DVB-ASI environment

MPEG-4 AVC (H.264) reduces the bit rate by more than half compared to MPEG-2 for equivalent image quality. This enables transmission of HDTV content over inexpensive broadband networks thereby radically reducing network costs.

■ Standard and low latency modes

Low latency is significantly required in the contribution use for live broadcast such as news gathering, sports and so on. The IP-9500 realizes 500ms latency for IP and 300ms for DVB-ASI interface (low latency mode).

■ Robust error correction (FEC/ARQ)

IP-9500 performs the robust error correction tolerance using FEC (Forward Error Correction) and ARQ (Automatic Repeat Request) over IP network.

■ Compact 1RU and Half Depth

It's compact (1RU and 350mmD) and rugged construction allow it's use in remote sites that demand HDTV image quality.

■ Optional DVB-S/S2 Modulator

The optional DVB-S/S2 modulator card provides the direct interoperability with SNG systems. IP-9500 is the smallest HD SNG encoder with this card (1RU, less than 400mm Depth).

■ HD/SD Hybrid Platform

IP-9500 provides the same platform for HD and SD encoder. In addition, the simulcasting is available.

■ Encoder/Decoder Switchable

IP-9500 transforms from/to encoder and decoder by operation mode selection (software switchable). It enables the change of transmission direction easily and reduces the facility cost.

■ Archiving, File Transfer

Encoded MPEG data can be recorded in encoder, then downloaded remotely from the network operation center when needed.

- 4 or 8GB internal storage (option)

■ Ancillary functions

- IP-9500 supports a variety of ancillary features;
- Simulcasting (HD and SD encoding)
 - Intercom
 - Down converter (HD to SD analog conversion)
 - RS-232C

Applications:

News Gathering (SNG/ENG)
Broadcast Contribution Feeds
Broadcast Distribution Feeds
Live Sports Backhaul

Specifications*

VIDEO	Input		1 x HD-SDI (SMPTE 292M) or SD-SDI (SMPTE 259M), 1 x HDMI
	GENLOCK Input		1 x NTSC/PAL Black Burst or HD Tri-level Sync
	Output		1 x HD-SDI (SMPTE 292M) or SD-SDI (SMPTE 259M), 1 x HDMI 1 x NTSC/PAL (Down-converted)
Audio Input/Output			4 x AES Pairs embedded in SDI (SMPTE 299M/272M), 1 x HDMI 1 x Analog Stereo Pair (Balanced)
Network Interface			10BASE-T/100BASE-TX/1000BASE-T, DVB-ASI, DVB-S/S2 (IF-Band, L-Band)
Video	Resolution	HD	1920/1440/960 x 1080i (59.94/50Hz), 1280/960/640 x 720p (59.94/50Hz)
		SD	720 x 480i (59.94Hz), 720 x 576i (50Hz)
	Coding		ITU-T H.264/MPEG-4 AVC (ISO/IEC 14496-10) HP, MP@L4, HP, MP@L3 4:2:2 Coding
	Bit Rate		HD: 3 ~ 38 Mbps, SD: 1.3 ~ 10 Mbps
Latency	IP	Low / Standard	Max. 500ms / Max. 1.56s
	DVB	Low / Standard	Max. 300ms / Max. 1.38s
Audio	Coding		MPEG-1 L2 (ISO/IEC 11172-3), MPEG-2 AAC (ISO/IEC 13818-7) Dolby -E Pass Thru, SMPTE302M Pass Thru, AC-3/ATSC or DVB Pass Thru
	IP Intercom		G.711
Error Correction / Encyprion			Fujitsu FEC and ARQ, Pro-MPEG FEC / BISS-1 and E
Size			425 x 350 x 42 mm (1RU)
Power Supply			100 ~ 240 VAC
Operating Temperature			-10 ~ 55 deg.C

Description

The Fujitsu IP-9500 is an audio/video codec that utilizes advanced MPEG-4 AVC (H.264) encoding to perform real-time transmission of HDTV at low bit rates over DVB and broadband IP networks. Powerful error correction functions ensure high quality of service over IP networks by preventing the distortion of decoded images, even when network packet losses occur. With its compact size and rugged construction, the IP-9500 reduces the cost of transmission from remote locations that demand HDTV image quality.

Applying the latest MPEG-4 AVC (H.264) High Profile at Level 4 image processing algorithms, the IP-9500 provides best-of-class video quality for use in Electronic News Gathering (ENG) as well as broadcast contribution and distribution networks. By utilizing sophisticated MPEG-4 AVC (H.264) compression algorithms, the streaming bit rate is reduced by more than half compared to MPEG-2 encoding, while still achieving the same video quality. As a result, HDTV content can now be transmitted at lower bandwidths over existing DVB satellite or low-cost broadband IP networks.

The IP-9500 utilizes auto-sensing 10T/100T/1G Ethernet for IP connectivity as well as ASI I/O ports for connecting to DVB networks. The unit also provides industry standard HD-SDI and HDMI I/Os. Encoder latency is selectable between standard and low-latency modes allowing the IP-9500 to be used in delay-sensitive contribution and distribution applications, especially ENG/SNG live coverage. A bi-directional voice intercom capability is provided across broadband IP networks for interactive communications. Utilizing the optional 4 or 8GB* internal storage function, the IP-9500 can also be used for non real-time file transfers across IP networks. Encoded data can be stored in the encoder, then downloaded remotely. Data can therefore be transferred even when network bandwidth is too low to support real-time transmissions.



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