The FMeXtra™ X1 Encoder from VuCast Media, Inc., combines an industrial grade 2U height rackmount PC server with professional digital audio hardware and VuCast’s innovative award-winning FMeXtra hardware and software to provide a complete multicasting digital radio broadcasting system. Simply connect your digital audio sources to the X1 Encoder via the built-in AES/EBU digital audio interface and connect the analog SCA output to the existing SCA input of your FM exciter, and you are on the air! System configuration is accomplished entirely by software control.

The X1 Encoder is responsible for combining all input data sources and generating the FM subcarrier (SCA) signal. The occupied bandwidth, peak injection, and data throughput characteristics of the generated SCA signal are determined by a user-created descriptor file. Data sources may include uncompressed AES/EBU digital audio, pre-encoded digital audio streams, and generic packet data. The X1 Encoder accepts all sources and schedules bits depending upon the SCA spectrum bandwidth occupancy.

The X1 Encoder features built-in multi-instance digital audio compression using state-of-the-art aacPlus™ also known as MPEG-4 HE AAC including parametric stereo enhancement audio compression software. The number of simultaneous audio streams is limited only by server CPU and SCA throughput. For pre-encoded digital audio streams, the X1 Encoder accepts RTSP/RTP MPEG-4 HE client streams. Unlike digital radio systems based on closed, proprietary algorithms, the use of open MPEG algorithms in FMeXtra permits audio encoding at any point in the audio generation and transmission chain. We simply call it "encode anything, anywhere!" With the X1 Encoder, it is finally possible to eliminate transcoding and transfer high quality low bit rate compressed digital audio from anywhere in the world directly to the X1 encoder using the Internet and over-the-air to FMeXtra-compatible receivers. For subscription and conditional access applications, the X1 Encoder implements AES128 SRTP encryption and individual receiver content addressability.

The X1 Encoder is designed to maximize user flexibility. The digital audio input interface accepts any standard input sampling frequency and word length at professional or line input levels. Digital audio streams may be configured to operate at different sampling rates, stereo configurations and encoded bit rates; even supporting different compression algorithms!

The X1 Encoder makes efficient use of the available SCA spectrum. The generated FMeXtra SCA signal can be configured to use combinations of the lower subcarrier spectrum 53-76kHz, the upper subcarrier spectrum 77-99kHz, and even the stereo spectrum 20-53kHz when the main channel is operated in mono audio, all under software-control.
FMeXtra X1 Encoder
MULTI-CHANNEL DIGITAL PROGRAMMING FM SUBCARRIER SYSTEM

Internal SCA Generator Characteristics:
External Connector: BNC-F (analog)
Bandwidth: user selectable partitions, software-controlled
20-53 kHz, 54-76 kHz, 77-99 kHz
RDS/RBDS protection optional
Bit rates: depends on bandwidth-occupancy, 32 kbit/s - 160+ kbit/s
Injection: user-selectable, software controlled 0-30%*
Analog Output voltage: 15Vpp maximum, 10Vpp usable
Analog Load Impedance: 600 or 10K ohm
* limited by Vpp(max), end-use exciter characteristics, and current FCC regulations

Internal Digital Audio Compression:
Algorithms: AAC, aacPlus™ and aacPlus™ v2 from Coding Technologies™, AMRWB+™ from VoiceAge, Inc.
Bit rates: 8-384 kbit/sec**
Channels: mono, stereo, parametric stereo, dual mono

Sample Frequencies:
8, 12, 16, 22.05, 24, 32, 44.1, 48, 64, 88.2, 96 kHz**
**not all combinations of bit rates and sample frequencies are possible

Internal Digital Audio Interface:
Marian Digital Audio Electronics TRACE D4 SRC Multichannel Digital Audio Interface PCI card

External Audio Compression Streaming Interface
RTSP/RTP MPEG-4 HE AAC client (e.g. Orban Opticodec-PC)
using Internet streaming standards RFC 2326 and RFC 3016

External Audio Compression Streaming Interface
RTSP/RTP MPEG-4 HE AAC client (e.g. Orban Opticodec-PC)
using Internet streaming standards RFC 2326 and RFC 3016

Server Characteristics:
Chassis: 2 U rack height (3.46"H x 19.0"W x 17.d"D with bezel), 18 lbs
(88mmH x 482mmW x 450mmD), 10.2Kg
Processor: 2.13 GHz Intel Core 2 Duo , 2MB Cache, 800MHz FSB
Memory: 1GB DDR-667MHz Graphics: on-board VGA
Operating Systems: Windows XP Professional SP3 English
Internal Storage: 8GB SATA SSD
SLIM COMBO 8X24X24 IDE DRIVE
Network Interface: on-board Gigabit NIC
Ports:
Front: 2 USB Ports,1 PS/2 keyboard
Rear: 1 PS/2 mouse,1 PS/2 keyboard, VGA connector, 9pin serial connector, 4x USB, NICI connector, BNC subcarrier output, PortB - 26 pin XLR cable connector
Power Supply: 1x300W (non-redundant), 110/220V auto-ranging
Operating Temperature: 32º F to 104º F (0º C to 40º C)
Operating Altitude: -50 ft to 10,000 ft
Operating Humidity: 10% to 85% (non-condensing), gradient: 10% per hour
Compliance: CE compliant, UL / cUL approved

Authorized Dealer
1045 Tenth Avenue – San Diego, CA 92101 U.S.A.
619-239-8462 – Fax: 619-239-8474
http://www.bext.com - E-mail:bext@bext.com