SONY

Digital Audio Mixer

DMX-E2000

The DMX-E2000 Digital Audio Mixer has been introduced as a new and vital component in the complete range of Sony audio/video digital post production equipment.

Interfaced with up to four DVTRs and under the control of a video editing system, such as the Sony BVE-2000, the DMX-E2000 provides complete digital audio-follow-video editing facilities. Using advanced digital processing technologies developed by Sony, particularly those behind the success of the DMX-E3000, this new addition to the DMX range combines flexible signal routing with versatile editing features such as a fader learn function for automatic transitions, snapshot memories and comprehensive auxiliary inputs.

The optional DMA-2000 audio converter unit provides the DMX-E2000 with an analog capability. With microphone and line inputs, reverse talkback and analog monitoring outputs, the unit has all the facilities required in a voice-over booth.

Combining the DMX-E2000 with the cost advantages of Digital BETACAM™ VTRs means that affordable editing systems are now a reality for audio/video post production.

For Editing System

Editor Interface

The DMX-E2000 has both serial and parallel remote control interface connectors. The integral D-Sub 9-pin serial remote interface conforms to the ESAM II Extended protocol. Using the ESAM II Extended protocol, the DMX-E2000 can be controlled directly from Sony Video editing units BVE-2000 /BVE-910. The parallel remote interface allows external remote control of transition start, crossfader control and monitor level control functions.

Flexible Transition Control

The 2-channel bus structure of the DMX-E2000 mimics the PGM/PST architecture of a video switcher. Transitions between each of the two buses feeding an output channel can be initiated in manual mode or auto mode.
In the manual mode, the DMX-E2000 is capable of manual transition using its PGM/PST transition faders.
In the auto mode, a 'Fader Learn function' allows the fader curve generated from any possible manual movement of the PGM/PST faders to be memorized and recalled. Up to three settings can be memorized. This automatic transition can be controlled under the editing system.

Depth of Fade Control

A depth of fade control is incorporated into the level setting of each channel. For voice-over edits, this convenient fader control allows the operator to set the final depth of a fade control.

Signal Synchronization to a Video/Audio Reference

Signal processing can be synchronized to an NTSC/PAL video signal, either composite video or black burst. Alternatively, the DMX-E2000 can also be locked to a word sync reference signal. The sampling frequency can be selected to be either 48kHz or 44.1kHz. This flexibility means that the DMX-E2000 can thus be used in virtually any digital video/audio post production application.

Audio Delay Control

To match the signal delay in video switcher and effects units, individual audio offset delays can be adjusted easily and quickly for each input channel. The offset delay time can be adjusted over the range of 0 to 5.0 frames, in 0.1 frame steps.

Control Panel

Rear Panel

Unique and Convenient Functions

Channel Status Display

The DMX-E2000 reads the channel status of the AES/EBU digital signal format and this is displayed for each channel. This includes alphanumeric channel origin when the source equipment can provide this data. The operator can also input a channel or source name if necessary.

Up to 99 Snapshot Memories

Up to 99 snapshots, each containing a set of control panel static settings, can be stored in internal RAM for fast, random access. Each snapshot memorizes input fader gain settings, program bus assign settings, crossfade time for each crossfader, audio delay offset time settings and EQ/Filtering setups.

3-Band Equalizer and Filter

Each channel of the DMX-E2000 is equipped with a three band equalizer and selectable high pass/notch filter as standard. Control of these equalizers is from a set of assignable controls.

Tone Generator

The DMX-E2000 has an internal digital tone generator which is switchable to 400Hz, 1kHz, 8kHz or 12kHz.
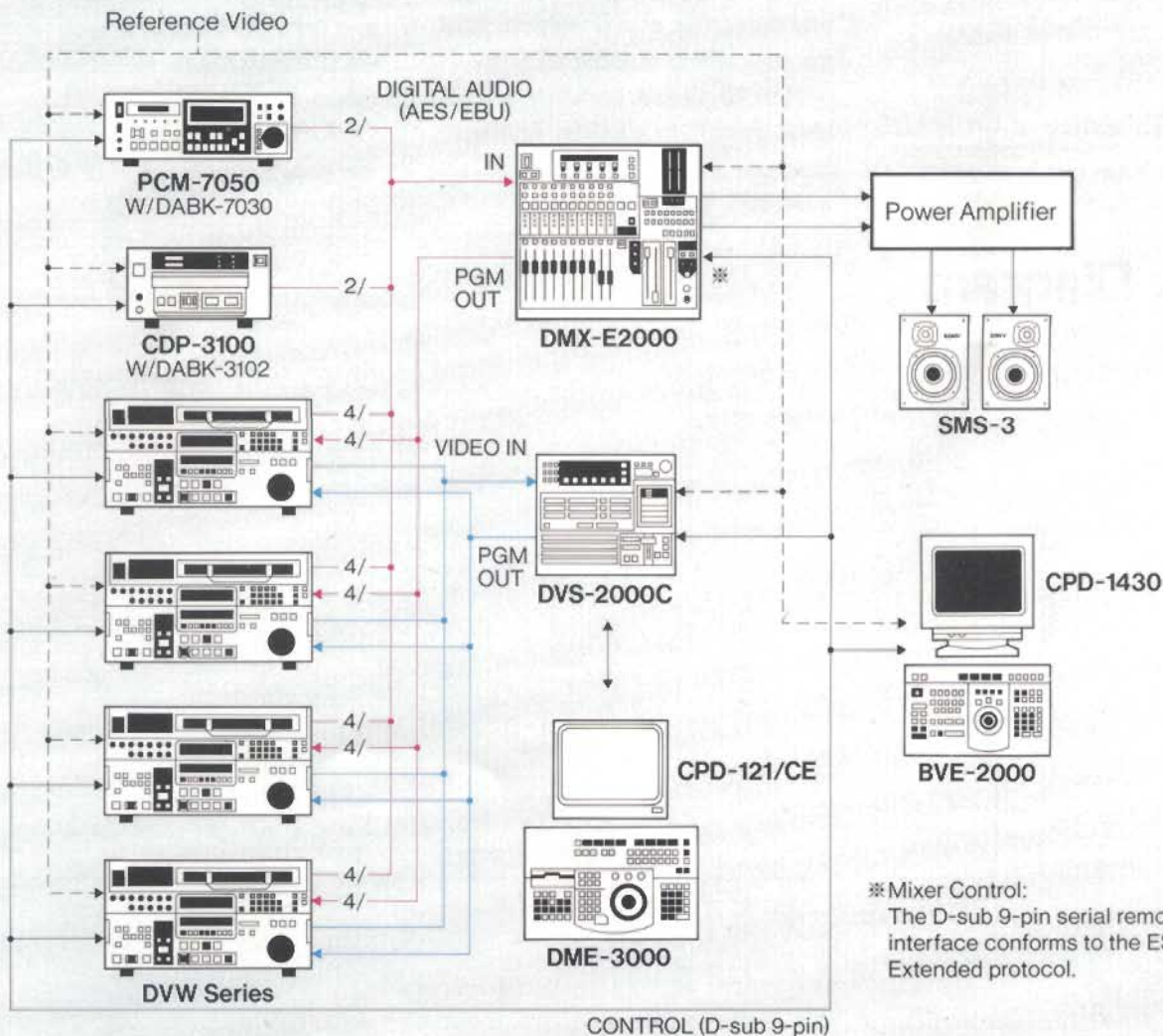
All-in-One Unit 19-inch Width

Phase Reverse Function

Pan/Balance Control

DIM and MUTE

Self-Diagnostic Function for Maintenance

System Diagram

※Mixer Control:
The D-sub 9-pin serial remote interface conforms to the ESAM II Extended protocol.

Inputs/Outputs

20 Inputs Capability

The DMX-E2000 has 20 inputs. 16 of these inputs conform to the AES/EBU format, allowing the connection of four Digital BETACAM™ VTRs or other digital equipment. The remaining four, designated as AUX inputs, also confirm to the AES/EBU standard but additionally will accept unbalanced IEC-958 format signals. These four channels are fitted with sample rate converters, operating on frequencies of 44.1kHz +12.5% and 48 kHz +12.5%, to allow the direct connection of non-professional CD players and DAT recorders. The DMX-E2000 also has 20 processing channels which are under the control of 10 assignable faders via a SHIFT function. Faders can be assigned to provide either mono or stereo control.

2 × 4 PGM Matrix Outputs

The DMX-E2000 has two mixer buses which feed a 2 × 4 PGM matrix switcher to provide four output channels. Eight AES/EBU output connectors provide a total of four sets of PGM buffered outputs to enable the DMX-E2000 to supply PGM outputs for up to four digital VTRs. This output configuration supports 'free recorder assignment' as external distribution amplifiers are not required to provide VTR record feeds.

2ch Analog Monitor Outputs and Talkback

A built-in 2 × 2 monitor matrix switcher provides customized monitor source selection. The matrix input sources can be individually switched to the associated PGM bus, PFL bus or SEND bus. Any combination of monitor outputs can be selected, and these two matrix outputs feed the monitoring outputs through built-in 20-bit D/A converters via a level control. In addition, analog talkback outputs are also available. These functions provides high quality and flexible monitoring.

2ch SEND Outputs

The DMX-E2000 is equipped with a 2-channel SEND output which conforms to the AES/EBU digital format. This is provided from a post or pre-fader send point as a mix of the 20 input channels.

Optional Audio Converter Unit

So that the DMX-E2000 can accept analog signals, the optional DMA-2000 audio converter unit is available. This rack mounting unit has two channels with 20-bit A/D and D/A converters. Each Channel has both a microphone and a line input, with individual gain controls. The DMA-2000 also accepts digital SEND signals from the DMX-E2000 and converts them to analog format via D/A converters. Reverse talkback is also available. The DMA-2000 is 1U high and has a low power consumption of 30W.

Block Diagram
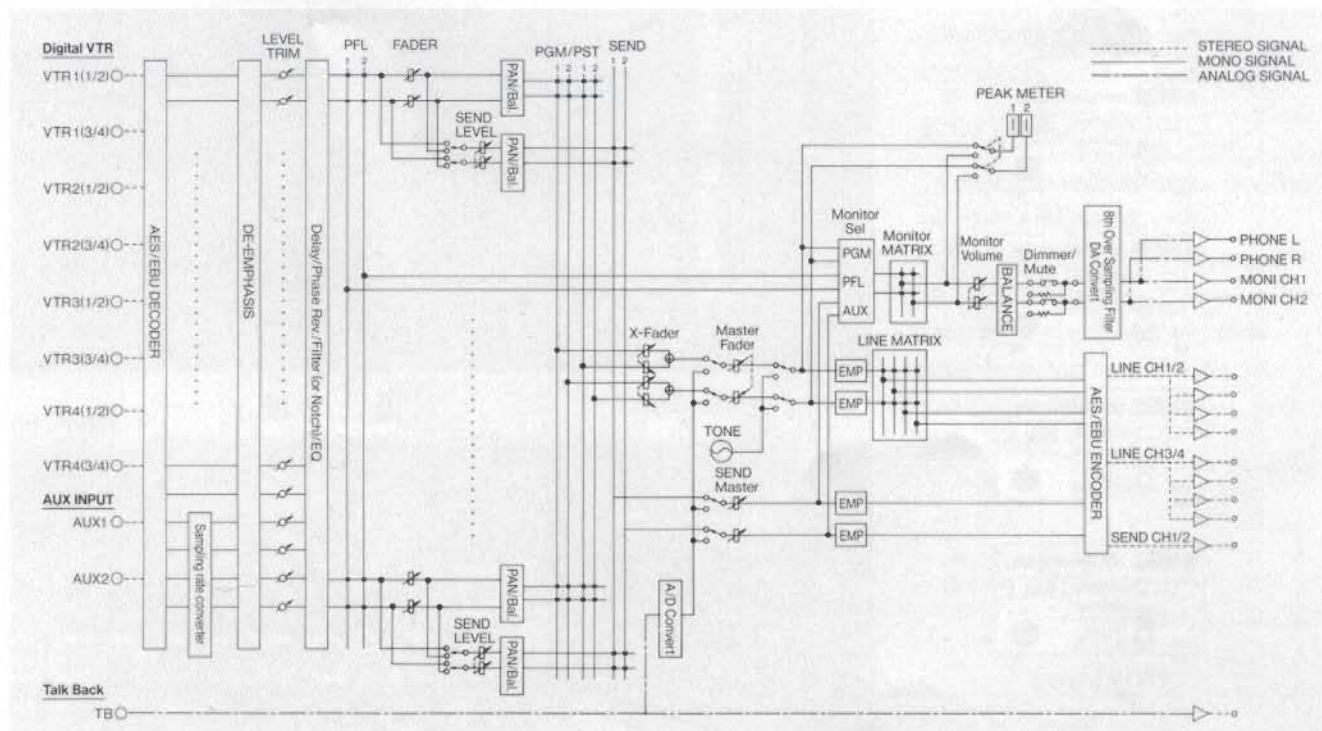
Specifications

Inputs

Digital Audio:	16ch, AES/EBU, XLR-3-31 type (× 8)
Aux:	4ch, AES/EBU, XLR-3-31 type (× 2) or 4ch, IEC-958, Phono type (× 2)

Outputs

PGM (2 × 4 Matrix):	4ch × 4 (buffered out), AES/EBU, XLR-3-32 type (× 8)
AUX SEND:	2ch, AES/EBU, XLR-3-32 type (× 1)
Monitor (Analog):	2ch, XLR-3-32 type (× 2),+4dBu (+24dBu Max.),600 Ω, balanced at 1kHz

Reference

Video Reference Input
No. of channel:	1ch, BNC type (× 2), loop-through
Video signal:	25Hz (PAL), 29.97Hz (NTSC), 30Hz (EIA Black and White)
Sync signal:	Composite sync, black burst or composite video
Termination:	75Ω

Word Reference Input
No. of channels:	1ch, BNC type (× 1)
Input level:	TTL level (at 75Ω termination)

Word Reference Output (buffered)
No. of channels:	1ch, BNC type (× 1)
Output level:	TTL level (at 75Ω termination)

Remote I/O

Serial REMOTE:	ESAM II Extended, D-Sub 9-pin
Parallel REMOTE:	D-Sub 25-pin
RS-232C:	D-Sub 25-pin

Audio

Sampling Frequency:	48kHz/44.1kHz

Monitor Output Characteristics

A/D Converter:	20bits/samples
Frequency Response:	20Hz to 20kHz within +0.2dB/-0.5dB
Total Harmonic Distortion:	Less than 0.02%
Dynamic Range:	More than 105dB
Cross Talk:	Less than 90dB

Equalizer

High Frequency (shelving type)
Frequency range:	1kHz to 16kHz
Gain range:	±15dB (in 1dB steps)
Q:	0.7 fixed

Mid Frequency
Frequency range:	200Hz to 3.2kHz
Gain range:	±15dB (in 1dB steps)
Q:	0.7 fixed

Low Frequency
Frequency range:	20Hz to 320Hz
Gain range:	±15dB (in 1dB steps)
Q:	0.7 fixed

Filter (Selectable)

High Pass Filter
Cut-off frequency:	21Hz to 330Hz
Roll-off characteristics:	12dB/oct

Notch Filter
Notch frequency:	50/60/100/120/150/180Hz selectable

General

Built-in Oscillator
Frequency:	400Hz/1kHz/8kHz/12kHz
Output level:	-10dB to -24dB, variable

Meter
Level meters:	101segment LED bargraphs (× 2)
Power Requirements:	AC100/120/220/240V, 50/60Hz
Power Consumption:	50W
Dimensions:	424 (W) × 130 (H) × 400 (D) mm (16 3/4 ×5 1/8 × 15 3/4 inches)
Weight:	15kg (33 lb 1 oz)

Supplied Accessories

AC Power Cable
Rack Mount Bracket
Video Reference Input Termination
Operation/Maintenance Manual

Peripheral Equipment

Front

Rear

DMA-2000:	Audio Converter Unit
No. of channels:	2ch

A/D Converter
Quantization:	20bits/sample

Frequency Response
MIC:	30Hz to 20kHz within +0dB/-0.5dB
LINE:	20Hz to 20kHz within +0dB/-0.5dB

Total Harmonic Distortion
MIC:	Less than 0.3% at -60dBu input
LINE:	Less than 0.1% at +4dBu input
Cross Talk:	More than 70dB (at 8kHz)

Equivalent Input Noise
MIC:	More than 126dBu
LINE:	More than 80dBu

General
Power Requirements:	AC 100/120/220/240V, 50/60Hz
Power Consumption:	30W
Dimensions:	424 (W) × 43.6 (H) × 350 (D) mm (16 3/4 ×1 3/4 × 13 7/8 inches)
Weight:	7kg (15 lb 7oz)

Supplied Accessories
AC Power Cable
Rack Mount Bracket
Operation/Maintenance Manual

*0dBu = 0.775V r.m.s.
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* Design and specifications subject to change without notice.

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