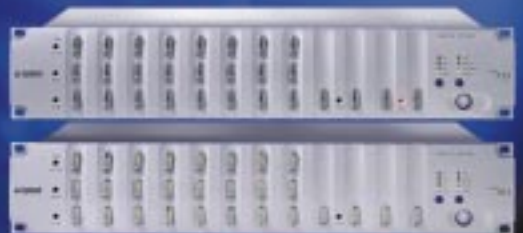


multi-channel audio converter products

AES/EBU to MADI



ANALOG to MADI



MADI to AES/EBU

ANALOG to AES/EBU

MADI to ANALOG



AES/EBU to ANALOG



AES/EBU Digital to Digital Converters



ANALOG MADI SNAKE

# Introducing...

*AD-26+2 – Analog to AES/EBU*



*DA-26+2 - AES/EBU to Analog*

Euphonix, manufacturer of high performance audio systems, presents a full line of Multi-Channel Audio Converters for Broadcast, Music and Post Production applications. These new products provide audio professionals with breakthrough solutions by reducing the cost and complexity of converting multi-channel audio signals between the various analog and digital formats.

As a leading supplier of large format audio consoles to the broadcast, music and post production industries, Euphonix responds to the increased demand for products by providing cost effective solutions for converting audio between various formats, many channels at a time. Euphonix offers a complete family of products for conversion to and from analog, AES/EBU and MADI at a variety of sample rates and bit resolutions up to 24-bit and 96K.

*AM713 - Analog to MADI*



*MA703 - MADI to Analog*

## Featuring

- high channel count with 26 channels plus 2 channels alternate format
- 44.1K, 48K, 88.2K and 96K sample rates
- 24-bit conversion depth
- dithered or noise shaped bit-depth conversion to 16 and 20 bits on each AES/EBU output (except D1/D2)
- ultra-low jitter internal sample clock
- external sample sync to AES/EBU or word clock with ultra-low jitter crystal-based PLL
- automatic sync source selection mode
- 0.1% pull-up and pull-down supported for external sync
- automatic sample-rate conversion on all AES/EBU inputs (except D1/D2)
- 4-segment signal metering on all inputs and outputs
- rugged, modular and compact rack mount enclosures
- high per-channel price performance

*DM714 - AES/EBU to MADI*



*MD704 - MADI to AES/EBU*



*DD-26+2 AES/EBU - Digital to Digital Converter*



*AA-26+2 - Analog MADI Snake*

# Analog to AES/EBU

# AES/EBU to Analog

## Applications

- Premium quality, multi-channel conversion for Recording and Mixing Consoles, Multi-Track Recorders, audio routers, and facility Patching Systems

## Audio Inputs and Outputs: AD-26+2 Analog to AES/EBU

- 26 balanced analog inputs on XLR connectors (channels 1-24, A1, A2)
- 4 analog input level trims (1-8, 9-16, 17-24, A1-A2) for 0dBFS from +27dBu to +6dBu in 3 dB steps
- stereo AES/EBU input on XLR connector with parallel S/PDIF input on RCA jack (channels D1, D2)
- 24 channels AES/EBU out on 12 XLR and 3 DB-25 connectors (Yamaha 02R, Sony PCM-800 pinout)
- 2 channels AES/EBU out on XLR with parallel S/PDIF out on RCA jack (channels D1, D2)
- 2 balanced analog outputs on XLR connectors (channels A1, A2)
- analog output level trim (A1-A2) for 0dBFS from +27dBu to +6dBu in 3 dB steps

## Audio Inputs and Outputs: DA-26+2 AES/EBU to Analog

- 24 channels AES/EBU input on 12 XLR connectors and 3 DB-25 connectors (Yamaha 02R, Sony PCM-800 pinout)
- 2 channels AES/EBU input on XLR with parallel S/PDIF input on RCA jack (channels D1, D2)
- 2 balanced analog inputs on XLR connectors (channels A1, A2)
- analog input level trim (A1-A2) for 0dBFS from +27dBu to +6dBu in 3 dB steps
- 26 balanced analog outputs on XLR connectors (channels 1-24, A1, A2)
- 4 analog output level trims (1-8, 9-16, 17-24, A1-A2) for 0dBFS from +27dBu to +6dBu in seven 3dB steps
- stereo AES/EBU output on XLR connector with parallel S/PDIF on RCA jack (channels D1, D2)

## Audio Conversion and Metering

- 24-bit, oversampled, noise-shaped, sigma-delta conversion method
- 44.1, 48, 88.2 and 96K internally clocked or externally synchronized sample rates
- dithered or noise shaped bit-depth conversion to 20 or 16 bits on each AES/EBU output (except D1/D2)
- 4-segment metering indicates: -42dBFS, -18dBFS, -6dBFS, Red -0.05dBFS

## Sample Clock Synchronization

- Ultra-low jitter, crystal-based, phase-locked sample clock (output on word clock BNC)
- 0.1% pull-up and pull-down supported for external sync
- automatic sync source selection mode (seek order: AES/EBU, Word Clock, Internal)
- AES/EBU and Word Clock external sync inputs with AES/EBU thru on XLR (electronically buffered, passes all bits)
- Word Clock output on BNC (outputs internally or externally derived sample clock)



converter units may be located separately for optimum signal management

# Analog to AES/EBU

# AES/EBU to Analog

## Analog Specifications

- Analog Inputs: electronically balanced, >20k ohms, > 50dB CMRR (20Hz to 20kHz), +27dBu max input
- Analog Outputs: electronically balanced, <100 ohms differential, +27dBu max output
- Dynamic Range: ADC > 105dB, DAC > 101dB (Signal to Noise Ratio from 0dBFS, 20Hz to 20kHz, unweighted)
- Total Harmonic Distortion: ADC < 0.0005%, DAC < 0.003% (20Hz to 20kHz)
- Frequency Response: ADC and DAC flatter than +/- 0.2 dB (20Hz to 20kHz)
- Crosstalk on analog inputs or outputs: < -100dB (20Hz to 20kHz)
- Group Delay: ADC = 44.7/Fs (931uS at 48KHz), DAC = 31.2/Fs (650uS at 48KHz), SRC off

## Digital Specifications

- AES/EBU Inputs and Outputs: XLR, transformer isolated and balanced, 110 ohms, 24-bit
- S/PDIF Inputs and Outputs: RCA, transformer isolated, 75 ohms, 24-bit (output jumper selectable Pro /Consumer)
- Sample Clock: +/- 10 ppm accuracy on internal sync
- External Sync input range: 44.1, 48, 88.2, 96 +/- 12.5% (optimum performance @ +/- 300ppm), 0.75Vp-p minimum WC
- Sample-Rate Conversion: DA-26+2 Inputs 1-24, auto-enabling to 54kHz, adds 700uS group delay, reduces to 20-bit
- Bit-Depth Conversion: AD-26+2 Outputs 1-24, rear panel switch: off/20/16, jumper select for 1st order noise shape or dither (both use TPDF method - Triangular Probability Density Function)

## General Specifications

- Power Requirements: ADC or DAC, 80 Watts, switch selectable for 100-120 or 220-240 VAC operation
- Dimensions: Width 17in/432mm (19in/483mm faceplate), Depth 17in/432mm, Height 7in/178mm (4U)
- Weight: 34lbs (15.4kg)
- Ambient Operating Temperature Range: 40 to 95 degrees F (5 to 35 degrees C)
- Complies with EN 60950 Electrical Safety Standards



# Analog to MADI

# MADI to Analog

## Applications

- Premium quality, multi-channel conversion for Recording and Mixing Consoles, Multi-Track Recorders, Audio Routers, and Facility Patching Systems

## Audio Inputs and Outputs: AM713

### Analog to MADI

- 26 balanced analog inputs on XLR connectors (channels 1-24, A1, A2)
- 4 analog input level trims (1-8, 9-16, 17-24, A1-A2) for 0dBFS from +27dBu to +6dBu in 3 dB steps
- stereo AES/EBU input on XLR connector with parallel S/PDIF input on RCA jack (channels D1, D2)
- MADI Output Channel Mapping: A1/A2 inputs to ch 25/26 outs, D1/D2 inputs to ch 27/28 outs

## Audio Inputs and Outputs: MA703

### MADI to Analog

- MADI Input Channel Mapping: ch25/26 inputs to A1/A2, ch27/28 inputs to D1/D2
- 26 balanced analog outputs on XLR connectors (channels 1-24, A1, A2)
- 4 analog output level trims (1-8, 9-16, 17-24, A1-A2) for 0dBFS from +27dBu to +6dBu in seven 3dB steps
- stereo AES/EBU output on XLR connector with parallel S/PDIF on RCA jack (channels D1, D2)

### Audio Conversion and Metering

- 24-bit, oversampled, noise-shaped, sigma-delta conversion method
- 44.1, 48, 88.2 and 96K internally clocked or externally synchronized sample rates
- 4-segment metering indicates: -42dBFS, -18dBFS, -6dBFS, Red -0.05dBFS

## Sample Clock Synchronization

- Ultra-low jitter, crystal-based, phase-locked sample clock (output on word clock BNC)
- 0.1% pull-up and pull-down supported for external sync
- automatic sync source selection mode (seek order: AES/EBU, Word Clock, Internal)
- AES/EBU and Word Clock external sync inputs with AES/EBU thru on XLR (electronically buffered, passes all bits)
- Word Clock output on BNC (outputs internally or externally derived sample clock)



# Analog to MADI

# MADI to Analog

## Analog Specifications

- Analog Inputs: electronically balanced, >20k ohms, > 50dB CMRR (20Hz to 20kHz), +27dBu max input
- Analog Outputs: electronically balanced, <100 ohms differential, +27dBu max output
- Dynamic Range: ADC > 105dB, DAC > 101dB (Signal to Noise Ratio from 0dBFS, 20Hz to 20kHz, unweighted)
- Total Harmonic Distortion: ADC < 0.0005%, DAC < 0.003% (20Hz to 20kHz)
- Frequency Response: ADC and DAC flatter than +/- 0.2 dB (20Hz to 20kHz)
- Crosstalk on analog inputs or outputs: < -100dB (20Hz to 20kHz)
- Group Delay: ADC =  $41.7/F_s$  (869uS at 48KHz), DAC =  $28.2/F_s$  (588uS at 48KHz)

## Digital Specifications

- AES/EBU Inputs and Outputs: XLR, transformer isolated and balanced, 110 ohms, 24-bit
- S/PDIF Inputs and Outputs: RCA, transformer isolated, 75 ohms, 24-bit (output jumper selectable Pro /Consumer)
- Sample Clock: +/- 10 ppm accuracy on internal sync
- External Sync input range: 44.1, 48, 88.2, 96 +/- 12.5% (optimum performance @ +/- 300ppm), 0.75Vp-p minimum WC
- MADI Input/Output: BNC, 75ohms, AES-10 specification, 24-bit, 56 channel @ 44.1 to 48kHz, 28 channel @ 88.2 to 96kHz, channels 29-56 inactive, maximum cable length = 50m/164ft

## General Specifications

- Power Requirements: ADC or DAC, 40 Watts, switch selectable for 100-120 or 220-240 VAC operation
- Dimensions: Width 17in/432mm (19in/483mm faceplate), Depth 17in/432mm, Height 3.5in/89mm (2U)
- Weight: 17lbs (7.7kg)
- Ambient Operating Temperature Range: 40 to 95 degrees F (5 to 35 degrees C)
- Complies with EN 60950 Electrical Safety Standards



## AES/EBU to MADI

## MADI to AES/EBU

### Applications

- Premium quality, multi-channel conversion for Recording and Mixing Consoles, Multi-Track Recorders, Audio Routers, and Facility Patching Systems

### Audio Inputs and Outputs: DM714 AES/EBU to MADI

- 24 channels AES/EBU input on 12 XLR connectors and 3 DB-25 connectors (Yamaha 02R, Sony PCM-800 pinout)
- 2 channels AES/EBU input on XLR with parallel S/PDIF input on RCA jack (channels D1, D2)
- 2 balanced analog inputs on XLR connectors (channels A1, A2)
- analog input level trim (A1-A2) for 0dBFS from +27dBu to +6dBu in 3 dB steps
- MADI Output Channel Mapping: A1/A2 inputs to ch 25/26 outs, D1/D2 inputs to ch 27/28 outs

### Audio Inputs and Outputs: DA-26+2 AES/EBU to Analog

- MADI Input Channel Mapping: ch25/26 inputs to A1/A2, ch27/28 inputs to D1/D2
- 24 channels AES/EBU out on 12 XLR and 3 DB-25 connectors (Yamaha 02R, Sony PCM-800 pinout)
- 2 channels AES/EBU out on XLR with parallel S/PDIF out on RCA jack (channels D1, D2)
- 2 balanced analog outputs on XLR connectors (channels A1, A2)
- analog output level trim (A1-A2) for 0dBFS from +27dBu to +6dBu in 3 dB steps

### Audio Conversion and Metering

- 24-bit, oversampled, noise-shaped, sigma-delta conversion method (A1/A2 channels)
- 44.1, 48, 88.2 and 96K internally clocked or externally synchronized sample rates
- dithered or noise shaped bit-depth conversion to 20 or 16 bits on each MD704 AES/EBU output (except D1/D2)
- 4-segment metering indicates: -42dBFS, -18dBFS, -6dBFS, Red -0.05dBFS

### Sample Clock Synchronization

- Ultra-low jitter, crystal-based, phase-locked sample clock (output on word clock BNC)
- 0.1% pull-up and pull-down supported for external sync
- automatic sync source selection mode (seek order: AES/EBU, Word Clock, Internal)
- AES/EBU and Word Clock external sync inputs with AES/EBU thru on XLR (electronically buffered, passes all bits)
- Word Clock output on BNC (outputs internally or externally derived sample clock)



# AES/EBU to MADI

# MADI to AES/EBU

## Digital Specifications

- AES/EBU Inputs and Outputs: XLR, transformer isolated and balanced, 110 ohms, 24-bit
- S/PDIF Inputs and Outputs: RCA, transformer isolated, 75 ohms, 24-bit (output jumper selectable Pro /Consumer)
- Sample Clock: +/- 10 ppm accuracy on internal sync
- External Sync input range: 44.1, 48, 88.2, 96 +/- 12.5% (optimum performance @ +/- 300ppm), 0.75Vp-p minimum WC
- Sample-Rate Conversion: DA-26+2 Inputs 1-24, auto-enabling to 54kHz, adds 700uS group delay, reduces to 20-bit
- Bit-Depth Conversion: AD-26+2 Outputs 1-24, rear panel switch: off/20/16, jumper select for 1st order noise shape or dither (both use TPDF method - Triangular Probability Density Function)
- MADI Input/Output: BNC, 75ohms, AES-10 specification, 24-bit, 56 channel @ 44.1 to 48kHz, 28 channel @ 88.2 to 96kHz, channels 29-56 inactive, maximum cable length = 50m/164ft

## Analog Specifications

- Analog Inputs: electronically balanced, >20k ohms, > 50dB CMRR (20Hz to 20kHz), +27dBu max input
- Analog Outputs: electronically balanced, <100 ohms differential, +27dBu max output
- Dynamic Range: ADC > 105dB, DAC > 101dB (Signal to Noise Ratio from 0dBFS, 20Hz to 20kHz, unweighted)
- Total Harmonic Distortion: ADC < 0.0005%, DAC < 0.003% (20Hz to 20kHz)
- Frequency Response: ADC and DAC flatter than +/- 0.2 dB (20Hz to 20kHz)
- Crosstalk on analog inputs or outputs: < -100dB (20Hz to 20kHz)
- Group Delay: ADC = 44.7/Fs (931uS at 48KHz), DAC = 31.2/Fs (650uS at 48KHz), SRC off

## General Specifications

- Power Requirements: ADC or DAC, 40 Watts, switch selectable for 100-120 or 220-240 VAC operation
- Dimensions: Width 17in/432mm (19in/483mm faceplate), Depth 17in/432mm, Height 3.5in/89mm (2U)
- Weight: 17lbs (7.7kg)
- Ambient Operating Temperature Range: 40 to 95 degrees F (5 to 35 degrees C)
- Complies with EN 60950 Electrical Safety Standards



# AES/EBU Digital to Digital Converter

## Sample-Rate Converter, Bit-Depth Converter, MADI Snake

### Applications

- 24 channels of sample-rate and/or bit-depth conversion (to 20 or 16 bit) for AES/EBU or MADI systems
- 2 additional stereo pairs of Analog and AES/EBU or S/PDIF provide either:
  1. additional stereo analog and AES/EBU or S/PDIF paths
  2. stereo ADC & DAC paths
- Extend 26 channels of AES/EBU and 2 channels of analog to 50m/164ft in production facilities or auditoriums

### Audio Inputs and Outputs

- 24 channels AES/EBU input on 12 XLR connectors and 3 DB-25 connectors (Yamaha 02R, Sony PCM-800 pinout)
- 2 channels AES/EBU input on XLR with parallel S/PDIF input on RCA jack (channels D1, D2)
- 2 balanced analog inputs on XLR connectors (channels A1, A2)
- analog input level trim (A1-A2) for 0dBFS from +27dBu to +6dBu in 3 dB steps
- 24 channels AES/EBU out on 12 XLR and 3 DB-25 connectors (Yamaha 02R, Sony PCM-800 pinout)

- 2 channels AES/EBU out on XLR with parallel S/PDIF out on RCA jack (channels D1, D2)
- 2 balanced analog outputs on XLR connectors (channels A1, A2)
- analog output level trim (A1-A2) for 0dBFS from +27dBu to +6dBu in 3 dB steps

### Audio Conversion and Metering

- 24-bit, oversampled, noise-shaped, sigma-delta conversion method on A1/A2
- 44.1, 48, 88.2 and 96K internally clocked or externally synchronized sample rates
- dithered or noise shaped bit-depth conversion to 20 or 16 bits on each AES/EBU output (except D1/D2)
- 4-segment metering indicates: -42dBFS, -18dBFS, -6dBFS, Red -0.05dBFS

### Sample Clock Synchronization

- Ultra-low jitter, crystal-based, phase-locked sample clock (output on word clock BNC)
- 0.1% pull-up and pull-down supported for external sync
- automatic sync source selection mode (seek order: AES/EBU, Word Clock, Internal)
- AES/EBU and Word Clock external sync inputs with AES/EBU thru on XLR (electronically buffered, passes all bits)
- Word Clock output on BNC (outputs internally or externally derived sample clock)



*converter units may be located separately for optimum signal management*

# AES/EBU Digital to Digital Converter

## Sample-Rate Converter, Bit-Depth Converter, MADI Snake

### Digital Specifications

- AES/EBU Inputs and Outputs: XLR, transformer isolated and balanced, 110 ohms, 24-bit
- S/PDIF Inputs and Outputs: RCA, transformer isolated, 75 ohms, 24-bit (output jumper selectable Pro /Consumer)
- Sample Clock: +/- 10 ppm accuracy on internal sync
- External Sync input range: 44.1, 48, 88.2, 96 +/- 12.5% (optimum performance @ +/- 300ppm), 0.75Vp-p minimum WC
- Sample-Rate Conversion: DA-26+2 Inputs 1-24, auto-enabling to 54kHz, adds 700uS group delay, reduces to 20-bit
- Bit-Depth Conversion: AD-26+2 Outputs 1-24, rear panel switch: off/20/16, jumper select for 1st order noise shape or dither (both use TPDF method – Triangular Probability Density Function)

### Analog Specifications (A1/A2)

- Analog Inputs: electronically balanced, >20k ohms, > 50dB CMRR (20Hz to 20kHz), +27dBu max input
- Analog Outputs: electronically balanced, <100 ohms differential, +27dBu max output
- Dynamic Range: ADC > 105dB, DAC > 101dB (Signal to Noise Ratio from 0dBFS, 20Hz to 20kHz, unweighted)
- Total Harmonic Distortion: ADC < 0.0005%, DAC < 0.003% (20Hz to 20kHz)
- Frequency Response: ADC and DAC flatter than +/- 0.2 dB (20Hz to 20kHz)
- Crosstalk on analog inputs or outputs: < -100dB (20Hz to 20kHz)
- Group Delay: ADC =  $44.7/F_s$  (931uS at 48KHz), DAC =  $31.2/F_s$  (650uS at 48KHz), SRC off

### General Specifications

- Power Requirements: ADC or DAC, 80 Watts, switch selectable for 100-120 or 220-240 VAC operation
- Dimensions: Width 17in/432mm (19in/483mm faceplate), Depth 17in/432mm, Height 7in/178mm (4U)
- Weight: 34lbs (15.4kg)
- Ambient Operating Temperature Range: 40 to 95 degrees F (5 to 35 degrees C)
- Complies with EN 60950 Electrical Safety Standards



# Analog MADI Snake

## Applications

- Extend 24 channels of analog audio to 50m/164ft in production facilities or auditoriums
- 2 additional stereo pairs of Analog and AES/EBU or S/PDIF provide either:
  1. additional stereo analog and AES/EBU or S/PDIF paths
  2. stereo ADC & DAC paths

## Audio Inputs and Outputs: AD-26+2 Analog to AES/EBU

- 26 balanced analog inputs on XLR connectors (channels 1-24, A1, A2)
- 4 analog input level trims (1-8, 9-16, 17-24, A1-A2) for 0dBFS from +27dBu to +6dBu in 3 dB steps
- stereo AES/EBU input on XLR connector with parallel S/PDIF input on RCA jack (channels D1, D2)
- 26 balanced analog outputs on XLR connectors (channels 1-24, A1, A2)
- 4 analog output level trims (1-8, 9-16, 17-24, A1-A2) for 0dBFS from +27dBu to +6dBu in seven 3dB steps
- stereo AES/EBU output on XLR connector with parallel S/PDIF on RCA jack (channels D1, D2)

## Audio Conversion and Metering

- 24-bit, oversampled, noise-shaped, sigma-delta conversion method
- 44.1, 48, 88.2 and 96K internally clocked or externally synchronized sample rates
- 4-segment metering indicates: -42dBFS, -18dBFS, -6dBFS, Red -0.05dBFS

## Sample Clock Synchronization

- Ultra-low jitter, crystal-based, phase-locked sample clock (output on word clock BNC)
- 0.1% pull-up and pull-down supported for external sync
- automatic sync source selection mode (seek order: AES/EBU, Word Clock, Internal)
- AES/EBU and Word Clock external sync inputs with AES/EBU thru on XLR (electronically buffered, passes all bits)
- Word Clock output on BNC (outputs internally or externally derived sample clock)

## Analog Specifications

- Analog Inputs: electronically balanced, >20k ohms, > 50dB CMRR (20Hz to 20kHz), +27dBu max input
- Analog Outputs: electronically balanced, <100 ohms differential, +27dBu max output
- Dynamic Range: ADC > 105dB, DAC > 101dB (Signal to Noise Ratio from 0dBFS, 20Hz to 20kHz, unweighted)
- Total Harmonic Distortion: ADC < 0.0005%, DAC < 0.003% (20Hz to 20kHz)
- Frequency Response: ADC and DAC flatter than +/- 0.2 dB (20Hz to 20kHz)
- Crosstalk on analog inputs or outputs: < -100dB (20Hz to 20kHz)
- Group Delay: ADC = 44.7/Fs (931uS at 48KHz), DAC = 31.2/Fs (650uS at 48KHz), SRC off

## Digital Specifications

- AES/EBU Inputs and Outputs: XLR, transformer isolated and balanced, 110 ohms, 24-bit
- S/PDIF Inputs and Outputs: RCA, transformer isolated, 75 ohms, 24-bit (output jumper selectable Pro /Consumer)
- Sample Clock: +/- 10 ppm accuracy on internal sync
- External Sync input range: 44.1, 48, 88.2, 96 +/- 12.5% (optimum performance @ +/- 300ppm), 0.75Vp-p minimum WC

## General Specifications

(each converter)

- Power Requirements: ADC or DAC, 40 Watts, switch selectable for 100-120 or 220-240 VAC operation
- Dimensions: Width 17in/432mm (19in/483mm faceplate), Depth 17in/432mm, Height 3.5in/89mm (2U)
- Weight: 17lbs (7.7kg)
- Ambient Operating Temperature Range: 40 to 95 degrees F (5 to 35 degrees C)
- Complies with EN 60950 Electrical Safety Standards

