The DAP-1781 is a high quality, 8 channel (4 AES) digital audio processor which performs signal processing and synchronizing, as well as Dolby E and Dolby Digital (AC-3) encoding and decoding with Metadata support. It can be used as a stand alone audio processor for discrete audio signals, or it can be combined with a wide range of SD and HD video processor modules.

When working with a video processor, the DAP-1781 can be used for dynamic processing, up/down mixing, and embedding of discreet audio channels into a video signal. It can also process Dolby E and Dolby Digital (AC-3) signals for encoding or decoding. Two audio processing cards can be combined together to process a total of 16 discreet audio channels. When combining any two cards together, all audio channels are synchronous, phased and delay matched to ensure proper alignment. A ribbon connector is used to carry audio, timing signals and Metadata between cards.

The audio processor features two distinct processing blocks for input and output. The input processing includes gain, video tracking delay, additional fixed delay (up to 2 seconds per channel) and phase correction. The output processing block includes mixing, an additional gain/attenuation stage, and full channel shuffling. The 2 or 4* channel mixing block allows each output channel to be composed of a mix of any 2 or 4 audio channels. This provides the capability for stereo to mono down mixes, voice-overs, Descriptive mixing, and custom-mix operations.

Dynamic processing is available as an option, and this offers 16 channels of audio compressor / limiter / expander that can be adjusted as individual or grouped channels. With this integrated dynamic processing, there is no need to add external dedicated devices and cumbersome wiring.

Up mixing and down mixing are also optional. The Up mixing function allows a 5.1 audio to be created from a stereo source. The Up mix offers 3 preset configurations (speech, music and movie) as well as custom configurations. The Down mixing function will create a Lt Rt, Lo Ro, custom Lt Rt or Lo Ro from a 5.1 audio.

Dolby E and Dolby Digital decoding, Dolby E encoding, and Dolby Digital encoding (AC-3) are all options.

### Key Features and Benefits

- 8 channels of audio processing with 4 AES inputs and outputs
- Works as stand-alone audio processor or alongside video processing cards
- Audio processing functions include gain (-96 to +12 dBu), phase, shuffling and mixing
- Fixed and video tracking delay
- 2 and 4 channel mix downs and summing
- Locks to video, URS frame reference or AES2
- Provides audio level meters streamed over IP
- Dolby E compliant

- Metadata input and output (RS-485)
- Optional Down-mix (5.1>2.0), Up-mix (2.0>5.1)
- Optional dynamic processing with compressor, limiter, expander
- Dolby E / AC-3 decoder option
- Dolby E encoder option
- Dolby Digital (AC-3) encoder option

*Dolby Metadata process 4 channel mixing/ summing on even output channel mixers
Technical Specifications

**Inputs**

- **Digital Inputs (4)**
  - **Sampling Frequency:** 32 to 192 kHz
  - **Quantization:** 16 to 24 bits

- **AES3**
  - **Level:** 0.2 to 7 Vpp
  - **Input Impedance:** 110 Ω balanced

- **AES3-ID**
  - **Level:** 0.2 to 2 Vpp
  - **Input Impedance:** 75 Ω
  - **Return Loss:** 18 dB @ 12 MHz

**Outputs**

- **Digital Outputs (4)**
  - **Sampling Frequency:** 48 kHz
  - **Intrinsic Jitter:** 5 mUI (700 Hz to 100 kHz)

- **AES3**
  - **Level:** 3.7 Vp-p
  - **Impedance:** 110 Ω balanced

**AES3-ID**

- **Level:** 1.0 Vpp
- **Impedance:** 75 Ω
- **Return Loss:** 15 dB @ 6 MHz

**Processing Performances**

- **Sampling Frequency:** 48 kHz
- **Quantization:** 24 bits
- **Frequency Response:** ± 0.02 dB (20 Hz to 20 kHz)
- **SNR:** 123 dB (A weighted)
- **THD+N:** -130 dB (20 Hz to 10 kHz)
- **Crosstalk:** -120 dB (20 Hz to 20 kHz)
- **Audio Group Delay:** 2.2 ms @ 48 kHz ISR
- **Data Group Delay:** 0.47 ms @ 48 kHz ISR

**Metadata Input/Output**

- **RS-485:** Asynchronous serial format
- **115.2 Kbps**

**Miscellaneous**

- **Tone Generator:** 1 kHz sine wave interrupted on left channel (250 ms / 3 s) EBU R49.
- **Signal Presence Threshold:** from –72 to –54 dBFS (6 dB steps)
- **No Signal Delay:** From 0 to 255 s (1 s steps)
- **Fixed Delay:** 1 ms (coarse), 1 sample (fine)

**Power**

- **DAP-1781-XXXXX-SRP:** < 5 W
- **DAP-1781-XXXXX-DRP:** < 10 W

**Ordering Information**

- **DAP-1781** 8 Channel Digital Audio Processor
  - **Options:**
    - **DAP-1781-OPT-DP:** Dynamic Processing option (Compressor/limiter/expander)
    - **DAP-1781-OPT-UD:** Down & Up mix option
    - **DAP-1781-OPT-ENC-E:** Dolby E encoder option
    - **DAP-1781-OPT-ENC-D:** Dolby Digital (AC-3) encoder option
    - **DAP-1781-OPT-DEC:** Dolby E & Digital (AC-3) decoder option

- **Rears:**
  - **DAP-1781-110-DRP:** 110 ohms double rear module
  - **DAP-1781-75-DRP:** 75 ohms double rear module
  - **DAP-1781-DEC-110-SRP:** 110 ohms single rear for Dolby decoding
  - **DAP-1781-DEC-75-SRP:** 75 ohms single rear for Dolby decoding
  - **DAP-1781-ENC-110-SRP:** 110 ohms single rear for Dolby encoding
  - **DAP-1781-ENC-75-SRP:** 75 ohms single rear for Dolby encoding

- **Related Products:**

- **Housing Frame:** Densité, Densité2

- **Remote Control:** iControl, iControl Solo, RCP-100

- **RS-485:** Receiver

- **SUM / MIX:** AES

- **AES:** TX

- **8 Ch.**

- **ALM:** 2 Ch.

- **MSB:**

- **DAP-1781 Functional Block Diagram**