

**500DA2Q-AESU Dual Unbalanced AES Audio Distribution Amplifier**

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## REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
1.0	Original Version	Mar 03
1.1	Updated Block Diagram, LED and Jumper information	Mar 03

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## 1. OVERVIEW

The 500DA2Q-AESU provides an economical method of distribution for your AES digital audio signals. The DA's feature two auto-equalized inputs with four re-clocked outputs each. The module can also be configured for one input with eight re-clocked outputs for applications where a larger numbers of outputs is required.

The 500DA2Q-AESU is housed in the 500FR **exponent** Frame that will hold up to 16 modules.

### Features:

- Supports SMPTE 276M standard for AES audio on 75  $\Omega$  coax
- 2 independent distribution amplifiers with 4 re-clocked outputs provides jitter reduction
- Can be configured as one 8 output distribution amplifier
- Automatic equalization provides extended cable length capabilities
- High impedance or 75 ohm termination on inputs (jumper selectable)
- Card edge indicators for AES present, reclocker rate, and AES validity bit
- Tally output of input error conditions

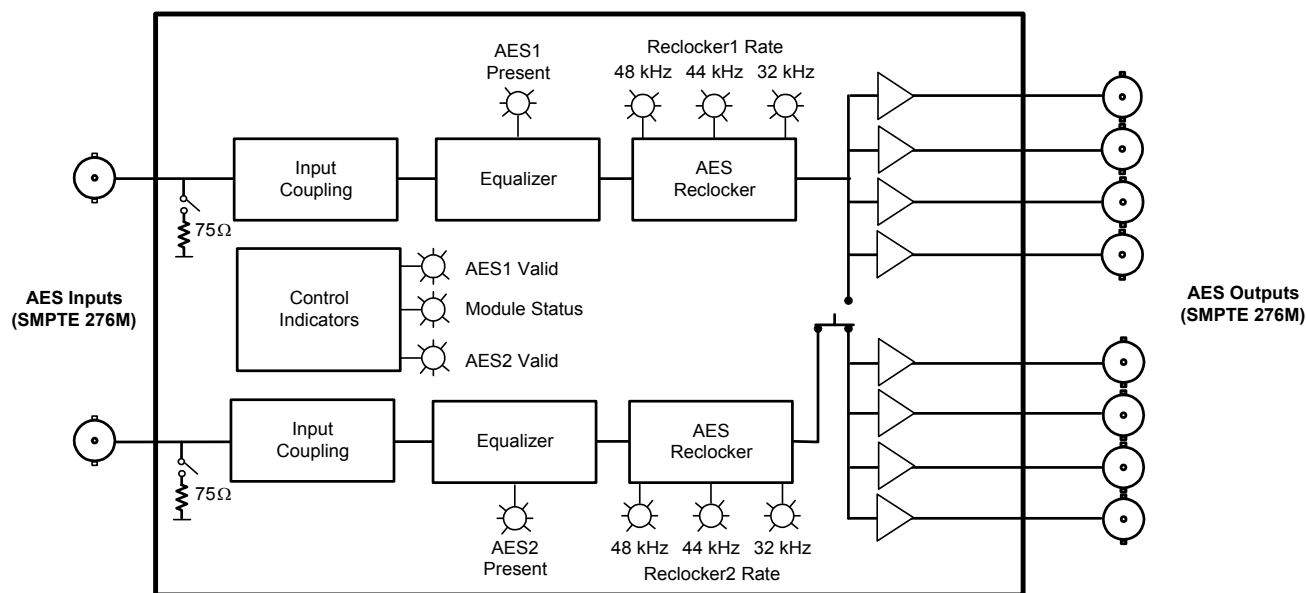
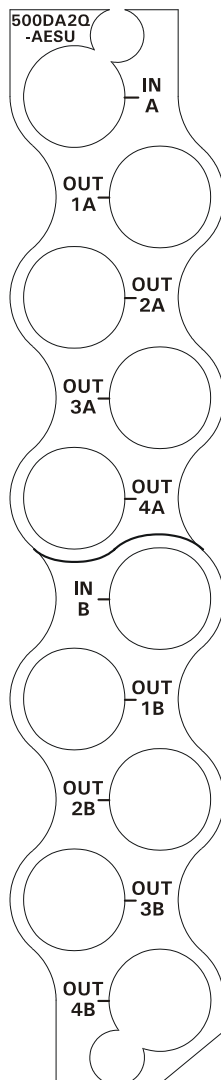


Figure 1: 500DA2Q-AESU Block Diagram

## 2. INSTALLATION

The 500DA2Q-AESU comes with a companion rear panel overlay that can be placed over the rear panel BNC connectors to identify their function. For information on inserting the module into the frame see the 500FR chapter section 3.



**Figure 2: 500DA2Q-AESU Rear Panel Overlay**

**IN 1, 2** Input BNC connectors for unbalanced AES audio signals compatible with the SMPTE 276M standard.

**OUT 1 to 4** These four BNC connectors are reclocked unbalanced AES outputs, compatible with the SMPTE 276M and are associated with input 1

**OUT 5 to 8** These four BNC connectors are reclocked unbalanced AES outputs, compatible with the SMPTE 276M and are normally associated with input 2. They can be configured as additional outputs associated with input 1.

### 3. SPECIFICATIONS

#### 3.1. AES AUDIO INPUTS

<b>Number of Inputs:</b>	2
<b>Standard:</b>	SMPTE 276M, single ended AES
<b>Connectors:</b>	BNC per IEC 169-8
<b>Coupling:</b>	Transformer
<b>Signal Level:</b>	1V p-p $\pm 0.1V$
<b>Equalization:</b>	Automatic 1500m @48KHz with Belden 1694A or equivalent cable
<b>Impedance:</b>	75 Ohms
<b>Return Loss:</b>	>25 dB 100 kHz to 6 MHz
<b>Sampling Rate:</b>	32 KHz, 44.1 kHz, 48 kHz and 96 kHz

#### 3.2. AES AUDIO OUTPUTS

<b>Number of Outputs:</b>	4 reclocked outputs per input (normal) 8 outputs from input 1 (jumper selectable)
<b>Standard:</b>	SMPTE 276M, single ended AES
<b>Connectors:</b>	BNC per IEC 169-8
<b>Signal Level:</b>	1V p-p $\pm 0.1V$
<b>Impedance:</b>	75 Ohms unbalanced
<b>Return Loss:</b>	>25 dB 100 kHz to 6 MHz

#### 3.3. ELECTRICAL

<b>Voltage:</b>	+ 12VDC
<b>Power:</b>	1.2 Watts.

#### 3.4. PHYSICAL

**Number of slots:** 1

### 4. STATUS LEDs

The 500DA2Q-AESU has twelve LED Status indicators on the front card edge to show operational status of the card at a glance. Figure 3 shows the location of the LEDs.

Two large LEDs on the front of the board indicate the general health of the module

**LOCAL FAULT:** This Red LED indicates poor module health and will be On during the absence of a valid input signal, or if a local input power fault exists (i.e.: a blown fuse). The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.

**MODULE OK:** This Green LED indicates good module health. It will be On when a valid input signal is present, and the board power is good.

There are five small LEDs for each input that indicate the status of the input AES audio.

**AES PRESENT:** This LED will be On when there is an AES carrier present at the input to the module.

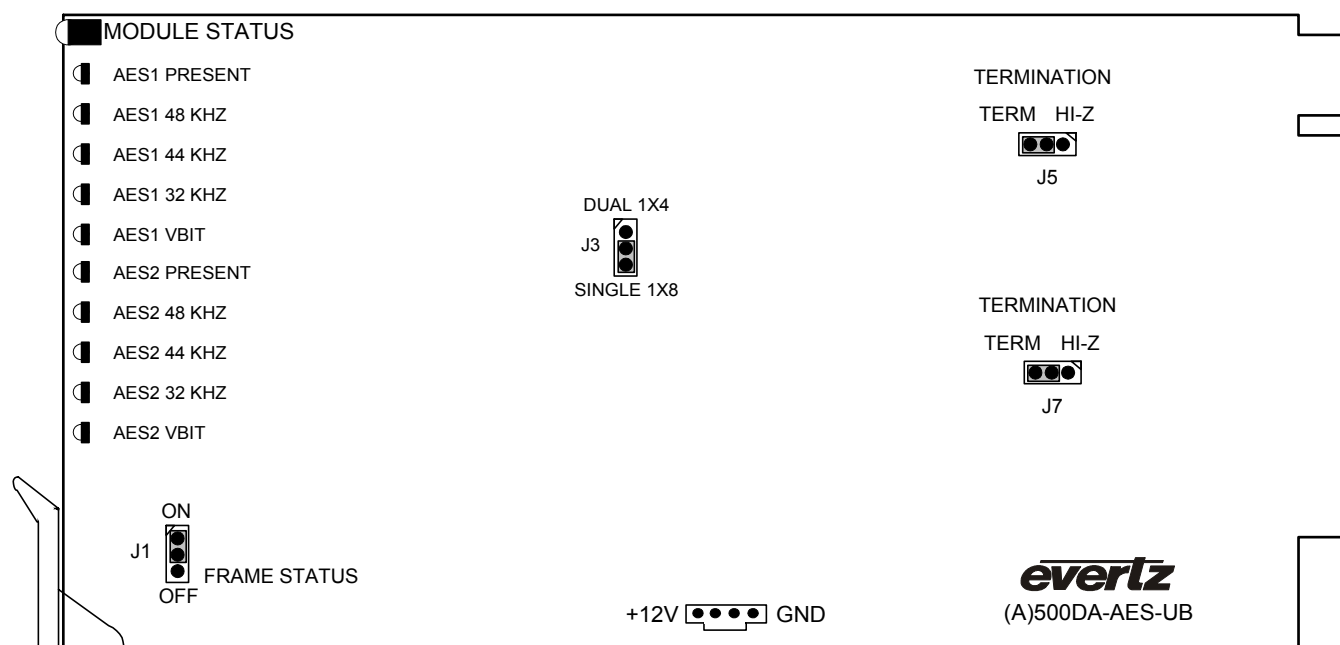
**48 kHz:** The reclocker is currently locked to 48 kHz

**44 kHz:** The reclocker is currently locked to 44.1 kHz

**32 kHz:** The reclocker is currently locked to 32 kHz

**AES VBIT** This LED indicates the status of the AES validity bit. When the LED is Off it indicates that the AES sample data is suitable for conversion to an analog audio signal. When the LED is On it indicates that the AES sample data is carrying data such as Dolby E and is not suitable for conversion to an analog audio signal.

## 5. JUMPERS AND USER ADJUSTMENTS



**Figure 3: LED and Jumper Locations**

### 5.1. SELECTING THE DA CONFIGURATION

**DA CONFIG:** To configure the 500DA2Q-AESU for four outputs from Input 1 and four outputs from Input 2, move the jumper J3 to the DUAL 1x4 position.

To configure the 500DA2Q-AESU for eight outputs from Input 1, move the jumper J3 to the SINGLE 1x8 position.

## 5.2. INPUT TERMINATION JUMPERS

The TERMINATION jumpers J5 and J7, located at the rear of the module determines whether the input signals will be terminated or not. J5 is for input 1 and J7 is for input 2

**TERMINATION** When set in the "TERM" position, (default) the input impedance is set to 75 Ohms. Use this position when the cable stops at this card. It will provide the proper impedance to eliminate electrical reflections.

If set to "UNTERM", the input will be high impedance. Use this position when the signal does NOT stop at this card. Install a "T" connector on the INPUT BNC to "loop" the signal through this card.



**WARNING: Make sure that the final destination of the signal is terminated. Otherwise, reflections will occur affecting the signal throughout the cable.**

## 5.3. SELECTING WHETHER LOCAL FAULTS WILL BE MONITORED BY THE GLOBAL FRAME STATUS

The FRAME STATUS jumper J1, located at the front of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 500FR frame's global status bus.

**FRAME STATUS:** To monitor faults on this module with the frame status indicators (on the power supply's FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position.

When this jumper is installed in the Off position local faults on this module will not be monitored.

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