



# **V1630**

## **AES-EBU DISTRIBUTION AMPLIFIER**

Applicable to Assy 130-1210 ISSUE B

### **INSTALLATION and OPERATION**

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# V1630 AES-EBU DISTRIBUTION AMPLIFIER

## INSTALLATION AND OPERATION

### 1. DESCRIPTION

The V1630 is a broadcast quality AES-EBU digital audio distribution amplifier which forms part of the Vistek V1600 range of interface products. It is a 3U high card which is fitted into either a V1601 or V1603 rack, from which it receives its power. A passive rear module with either BNC or screw terminal connections, is required for all signal interconnections.

The unit accepts two AES audio data streams of 32kHz, 44.1kHz, 48kHz or 96kHz and distributes reclocked and regenerated AES data streams to 4 AES outputs per channel. Modes whereby either one of the two AES inputs are distributed to 8 AES outputs is also available as a panel control option.

The V1630 can accommodate a piggyback expander card which expands both output groups from 4 to 8, providing for a maximum of 16 outputs. Consult Vistek sales for further details.

Two families of passive rear panel module are available:

- AES inputs and outputs to AES3-1992 (110 $\Omega$  balanced) with screw terminals. This rear panel provides for a 2:4 or 1:8 configuration.
- AES inputs and outputs to AES3id-1995 (75 $\Omega$  single ended) with BNC connectors. This rear panel provides for a (1:4 + 1:3) or 1:7 configuration, since only 9 BNC connectors can be accommodated on the rear panel.

The V1630 has a passive equaliser which is jumper selectable on each AES input and operation is guaranteed over cable lengths of up to 250 metres (at  $f_s \leq 48\text{kHz}$ ). Typically, much longer cable runs up to 1000 metres may be accommodated, but this is not guaranteed.

- Input cable length 0 - 100m: Equaliser out
- Input cable length 100m+: Equaliser in

Input impedance may be set to either 110/75  $\Omega$  or Hi-Z to facilitate daisy-chaining V1630 inputs within a V1600 rack.

The sampling rate of each channel is displayed by means of front panel LEDs and an ERROR LED is provided to indicate channel errors/no input. Front panel switches allow the card operating mode to be set and LEDs provide visual indication of the mode. The V1630 is compatible with the Vistek DART remote system, allowing card ID, status and mode to be read, and card mode to be written by a DART compatible rack controller.

**Note:** *This manual applies to V1630 Assy 130-1210 Issue B, which have different functionality and pinout connections to previous issues. They are not plug-in replaceable in the same Rear Panel assemblies used with previous issues.*

## 2. INSTALLATION

### 2.1 REAR PANEL CONNECTIONS

The 3U BNC and 3U Screw terminal rear panels are shown below. Grounds/screens are connected to chassis on all outputs and inputs. 1U panels are similarly marked and details for the standard rear panel options are given in Table 2.1.1. The V1630 may also be ordered with a rear panel having D-type connectors. The pinout of the D-connectors are shown in Table 2.1.3.

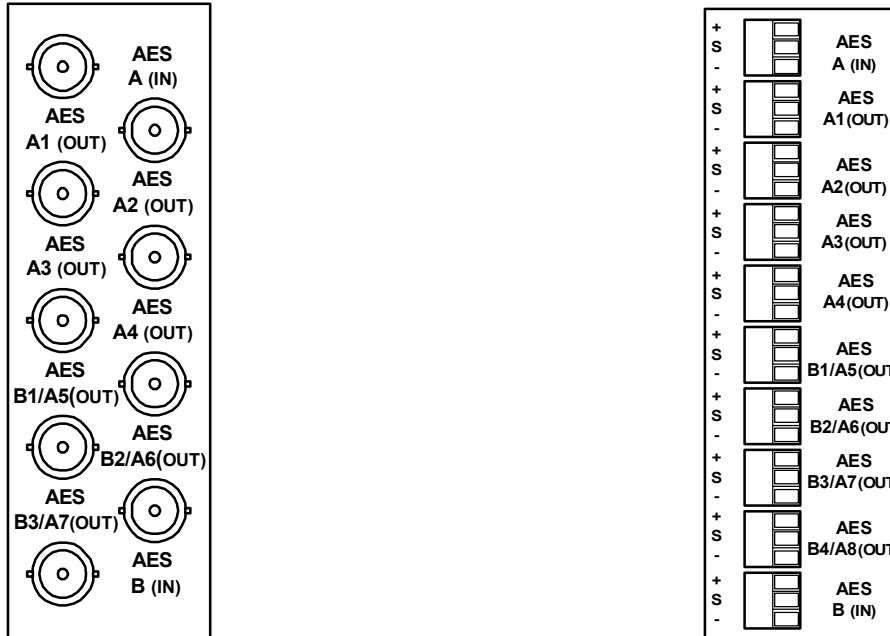


Table 2.1.2

Description of V1630 rear panel connections for standard rear panel assemblies

SIGNAL	SOURCE	COMMENTS
POWER DART bus	Rack PWR Header Rack DART header	+15V at 170mA (2.55W max) Vistek DART Rack controller
AES A(IN)	AES external source	Ch. A input: sourcing cable length up to 250m 75Ω single ended on BNC rear panel 110Ω balanced on screw terminal rear panel Sourcing cable length up to 250m 75Ω single ended on BNC rear panel 110Ω balanced on screw terminal rear panel
AES A1 (OUT)	V1630 DA	Ch. A outputs (all modes) Driving cable length up to 250m 75Ω single ended on BNC rear panel 110Ω balanced on screw terminal rear panel
AES A2 (OUT)		
AES A3 (OUT)		
AES A4 (OUT)		
AES B(IN)	AES external source	Ch. B input sourcing cable length up to 250m 75Ω single ended on BNC rear panel 110Ω balanced on screw terminal rear panel Sourcing cable length up to 250m 75Ω single ended on BNC rear panel 110Ω balanced on screw terminal rear panel
AES B1/A5 (OUT)	V1630	1:8 mode: Ch A o/p. 2:4 mode: Ch B o/p Driving cable length up to 250m 75Ω single ended on BNC rear panel 110Ω balanced on screw terminal rear panel
AES B2/A6 (OUT)		
AES B3/A7 (OUT)		
AES B4/A8 (OUT)		

**Table 2.1.2**  
**Description of V1630 rear panel connections for standard rear panel assemblies**

<b>D25F Output connector</b>			
<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	AES A1 out -		
2	GND	14	AES A1 out +
3	AES A2 out -	15	GND
4	AES A3 out -	16	AES A2 out +
5	AES A4 out -	17	AES A3 out +
6	GND	18	AES A4 out +
7	GND	19	GND
8	AES B1 out -	20	GND
9	AES B2 out -	21	AES B1 out +
10	AES B3 out -	22	AES B2 out +
11	AES B4 out -	23	AES B3 out +
12	GND	24	AES B4 out +
13	GND	25	GND

<b>D15F Input connector</b>			
<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	AES A in -		
2	GND	9	AES A in +
3	GND	10	GND
4	GND	11	GND
5	GND	12	GND
6	GND	13	GND
7	AESBin -	14	GND
8	GND	15	AES B in +

## 2.2 INPUT IMPEDANCE SELECTION

The input impedance of the A Channel and B Channel AES receivers may be set to either 110/75 ohms, or high impedance ( $\geq 10k\Omega$ ) by means of jumpers LK3 and LK5. The high impedance function may be used when it desired to daisy-chain the inputs of a number of V1630 DA's in a rack, without cascading them. In this case one of the V1630s is set for 110/75 ohms and the others are set to high input impedance. Two cautions are advised:

- The V1630 with 110/75 impedance should be the V1630 physically farthest from the feeding source.
- The daisy chaining is intended to be used within a rack or cabinet. Long cable runs into high impedance are NOT recommended. When daisy chaining V1630s, source cable length should not be more than a couple of meters.

<b>Impedance option</b>	<b>Jumpers</b>
Channel A 110/75 $\Omega$	LK3 CLOSED
Channel A Hi-Z	LK3 OPEN
Channel B 110/75 $\Omega$	LK5 CLOSED
Channel B Hi-Z	LK5 OPEN

## 2.3 INPUT EQUALISATION

The input equalisers on the V1630 should be used whenever the source cable length is greater than 90-100m. The two input channels (A and B) have independent equalisers, each of which is associated with two jumpers as shown in the table and the figure below. Jumper combinations other than those shown should not be used.

Equaliser	Jumpers
Channel A equaliser OFF	LK1 and LK2 CLOSED
Channel A equaliser ON	LK1 and LK2 OPEN
Channel B equaliser OFF	LK4 and LK6 CLOSED
Channel B equaliser ON	LK4 and LK6 OPEN

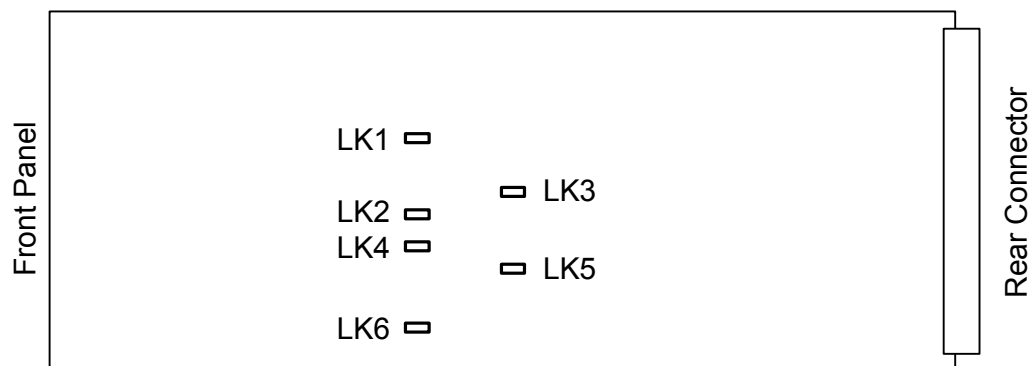
## 2.4 DA MODE

The V1630 DA has 4 modes of operation, controlled by DART or front panel switches. When the **REM/LOCAL** switch is set to **LOCAL**, control is by panel switches. Four possible modes, namely two 2:4 modes and two 1:8 modes as follows:

- **Aout switch** sources the 4 Channel A outputs from either the Channel A input or the Channel B input.
- **Bout switch** sources the 4 Channel B outputs from either the Channel A input or the Channel B input.

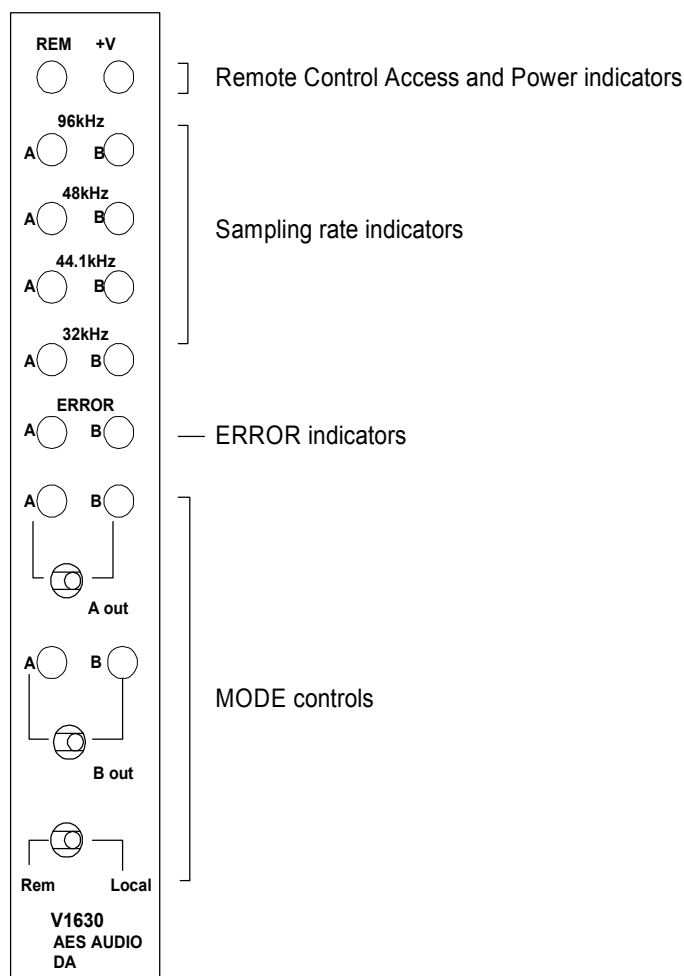
The source channel for each of the Aout and Bout switches is indicated by an **A** or **B** LED above the switch. The LEDs indicate the source channel selection in force, set either by DART (**Rem/Local = Rem**) or by the **Aout** and **Bout** switches (**Rem/Local = Local**). If the **Rem/Local** switch is set to **Rem**, the settings of the **Aout** and **Bout** switches are ignored.

The figure below the V1630 and the location of all the jumpers referred to in Section 2.1..2.3.



### 3. OPERATION

#### 3.1 FRONT PANEL



#### 3.2 LED INDICATIONS

The V1630 has front panel indicators as shown above. Each channel has a set of four yellow LEDs for sample rate indication. The sample rate must be within 4% of the nominal for the indicators to function correctly. The V1630 can support non-standard sample rates in the range 32kHz - 96kHz, but the LED indicators will not be lit at other than the indicated rates.

A red **ERROR** LED for each channel indicates no input, PLL unlocked, parity error or biphas coding violation on the AES input. The LEDs flash for 0.8 seconds on detection of individual errors, or burn continuously if errors occur more frequently than 0.8s apart.

The **REM** LED flashes to indicate a DARTbus access is in progress.

The green **V+** LED is lit whenever power is applied and the V1630's internal power supply is operating correctly.

The LEDs **A** and **B** above the **Aout** and **Bout** switches indicate the source channel for each of the output blocks Aout and Bout, selected by either the **Aout** and **Bout** switches, or by DART..

### 3.3 MODE CONTROLS

The V1630 has two AES input channels Ain and Bin and two groups of four output channels Aout and Bout. The mode controls **Aout** and **Bout** allow each of the two groups of four output channels to receive signal from either the Ain or Bin inputs. The Aout and Bout mode controls are only effective if the **Rem/Local** switch is set to **Local**. If the **Rem/Local** switch is set to **Rem**, the Aout and Bout groups have their sourcing controlled by DART. The switches may be changed at any time and the table below shows the possible combinations:

Aout switch	Bout switch	MODE
A	A	1:8 mode: Aout = Ain, Bout = Ain
A	B	2:4 mode: Aout = Ain, Bout = Bin
B	A	2:4 mode: Aout = Bin, Bout = Ain
B	B	1:8 mode: Aout = Bin, Bout = Bin

### 3.4 DART INTERFACE

The V1630 is a Class 4 DART module with a serial EEPROM for reading and writing card details through the DARTbus. In addition the unit presents two bytes of status information to the DART system and the DART system can write one byte of control data to the V1630. Full details of the bit allocations may be found in document number **scsm1630.doc**.

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