



AVMU2-BHD+/3G
Audio monitoring
Unit

Handbook

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SAFETY

Installation.

Unless otherwise stated TSL equipment may be installed at any angle or position within an operating temperature range of 5° - 30° C .

All TSL equipment conforms to the EC Low Voltage Directive:

EC Low Voltage Directive (73/23/EEC)(OJ L76 26.3.73)(LVD). Amendment: (93/68/EEC) (OJ L220 30.8.93).

In all cases, the frame of the equipment must be earthed on installation.

The earth pin on the IEC mains inlet connector is connected to the metal frame of the equipment, to 0 volts on the internal DC PSU and to signal ground, unless otherwise stated. All metal panels are bonded together.

Due consideration for cooling requirements must be given when mounting the equipment. Ideally 1RU of rack space should be left above and below the unit.

Check that the fuse rating is correct for the local power (mains) supply. Replacement fuses must be of the same rating and type for continued protection against fire risk.

Do not switch on until all connections are made.

WARRANTY, MAINTENANCE AND REPAIR

All TSL equipment is guaranteed for one year from the date of delivery to the customer's premises. If the equipment is to be stored for a significant period, please contact TSL concerning a possible extended warranty period.

Failure during warranty

If any TSL product should fail or become faulty within the warranty period, first please check the PSU fuses.

All maintenance work must be carried out by trained and competent personnel.

Technical support information

E-Mail address: support@televisionssystemsltd.uk

Telephone Support Number for the UK and Europe: +44 (0) 1628 676200

Telephone Support Number for the USA only: 1 877 591 2108

TSL Returns Procedure

Please telephone +44 (0)1628 676200 (Fax: +44 (0)1682 676299) and ask for Sales who will provide a Returns Number. This will enable us to track the unit effectively and will provide some information prior to the unit arriving.

For each item, this unique Returns Number must be included with the Fault Report sent with the unit.

A contact name and telephone number are also required with the Fault Report sent with the unit.

Fault report details required.

- Company:
- Name:
- Address:
- Contact Name:
- Telephone No:
- Returns Number:
- Symptoms of the fault (to include switch setting positions, input signals etc):

Packing

Please ensure that the unit is well packed as all mechanical damage is chargeable. TSL recommends that you insure your equipment for transit damage.

The original packaging, when available, should always be used when returning equipment..

If returned equipment is received in a damaged condition, the damage should be reported both to TSL and the carrier immediately.

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AVMU2-BHD+/3G AUDIO MONITORING UNIT

1.0 Introduction

The AVMU2-BHD+/3G is a full rack 2RU x 280mm deep Audio Visual Monitoring Unit with two TSL Bargraphs.

The following features are standard:

- Two HD/SDV auto sensing input.
- Two composite video inputs.
- Two AES/EBU inputs.
- One quad analogue input (with associated composite video input)
- Twin vertical 53 segment LED bargraph for 4 channel monitoring with phase correlation on each.
- Phase correlation on each bargraph.
- Re clocked output of either HD or SD.
- Composite output from selected source
- Down converted SDI output (Video only)
- AES outputs from selected sources including analogue
- Headphone outputs with LS muting.
- Fixed and variable stereo line outputs.
- 4.5" 16:9 LCD TFT screen. (PAL/NTSC auto switching.)
- Built in speakers.

2.0 Front Panel Controls

2.1 Input and Meter Selection Rotary Switches

Audio Input

AnI Quad analogue I/P. A1 (Channel 1) is fed to the left bargraph of the first pair bargraph and A2 (Channel 2) is fed to the right hand bargraph of the first pair. A3 (Channel 3) is fed to the left bargraph of the second pair and A4 (Channel 4) is fed to the right hand bargraph of the second pair.

AES Selects the AES inputs to the bargraphs. AES selects Ext. Video 2 and Analogue selects Ext. Video 1.

H/SDV 1 & 2 Selects Group 1, Group 2, Group 3 and Group 4 from either H/SDV 1 or 2. The de-embedded HD or SD is fed to the bargraphs.
N.B. The video output monitoring from Input 2 is only valid in AUTO mode.

Video Input

Auto In Auto position, the video follows the audio input selection. H/SDV selects the video from the H/SDV signal for Pr.1 & Pr.2.

H/SDV Selects the video input separately from the Audio. Selected Video Output follows the video Input selection, with the H/SDV signal being converted to composite video.

EXT 1 Selects external video input 1.

EXT 2 Selects external video input 2.

2.2 Output Monitoring Rotary Switch

A1/A2	This switch selects: <ul style="list-style-type: none">- the Analogue Left and Right signals of the metered Input,- the AES/EBU Input 1 Left and Right signals or- the selected SDV group A1 & A2 decoded outputs to the Left and Right Output Channels.
A3/A4	This position selects: <ul style="list-style-type: none">- Analogue Left and Right I/P signals,- the AES/EBU Left and Right signals or,- the selected SDV A3 & A4 decoded outputs to the Left and Right Output Channels and are available on the D25 output connector.
A1 to A4	In this position the audio in each position is fed to both speakers.
Mix	Mixes A1 & A2 and A3 & A4 to both speakers.
Dim	Approximately 16dB of attenuation is switched into the audio path and functions on the loudspeaker outputs only, the line outputs are unaffected.
Cut	The front panel button cuts the signal to the loudspeaker outputs only, the line outputs are unaffected.
Volume	The Headphones O/P and the Variable Line O/P may be varied.

3.0 Pin-out Details

3.1 Analogue XLR Connectors

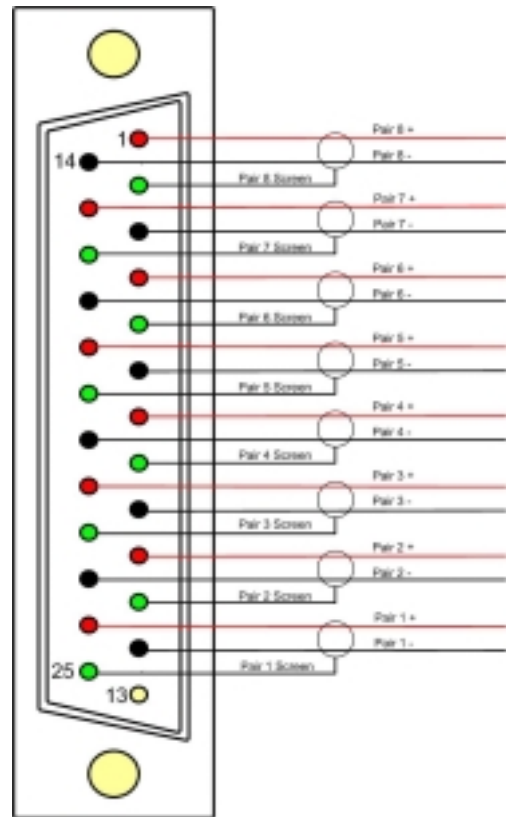
XLRS	PIN	FUNCTION
ANALOGUE 1	1	GND
ANALOGUE 1	2	1 IN+
ANALOGUE 1	3	1 IN-
ANALOGUE 2	1	GND
ANALOGUE 2	2	2 IN+
ANALOGUE 2	3	2 IN-

3.2 AES/EBU XLR Connectors

XLRS	PIN	AES FUNCTION
AES	1	AES GND
AES	2	AES 1 IN+
AES	3	AES 1 IN-

3.3 Analogue Output Connector – D25 Socket Pinout

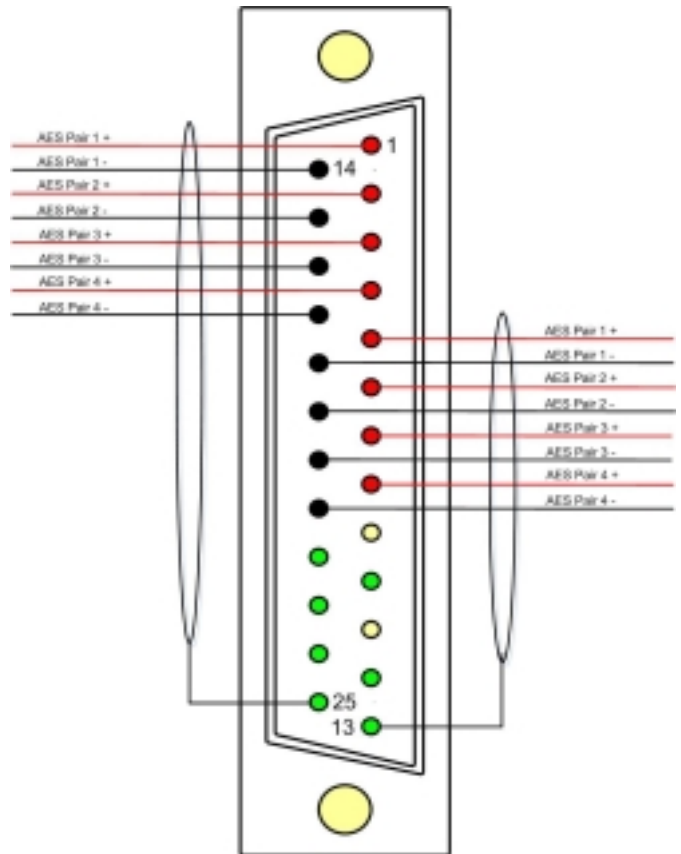
D 25 PLUG ON AMU	AUDIO OUTPUTS
PIN NO	FUNCTION
1	N/C
14	N/C
2	Ground
15	N/C
3	N/C
16	Ground
4	N/C
17	N/C
5	Ground
18	N/C
6	N/C
19	Ground
7	N/C
20	N/C
8	Ground
21	N/C
9	N/C
22	Ground
10	A2+
23	A2-
11	Ground
24	A1+
12	A1-
25	Ground
13	N/C



(N.B. These are analogue outputs of digital inputs)

3.4 AES Input/Output Connector – D25 Socket Pinout

D 25 PLUG ON AMU	AES INPUTS/OUTPUTS
PIN NO	FUNCTION
1	Ch1&2 Input 1+
14	Ch1&2 Input 1-
2	Ch3&4 Input 2+
15	Ch3&4 Input 2-
3	N/C
16	N/C
4	N/C
17	N/C
5	Ch1&2 Output 1+
18	Ch1&2 Output 1-
6	Ch3&4 Output 2+
19	Ch3&4 Output 2-
7	N/C
20	N/C
8	N/C
21	N/C
9	N/C
22	Ground
10	Ground
23	Ground
11	N/C
24	Ground
12	Ground
25	Ground
13	Ground



AES Outputs are a de-embedded AES output from the HD/SDI input of whichever group is selected.

3.5 RS 422 - D9 Socket

This is wired for RS422.

D9	CONTROL
1	0V
6	0V
2	TX-
7	TX+
3	RX+
8	RX-
4	0V
9	0V
5	N/C

3.6 Configuration Switch Functions (Z01 FPGA/ Z03.hex/ACI 6.06.hex) N.B. Subject to change

SWITCH SECTION	FUNCTION
1 N/A	PPM – Up/ EBU Digital – Down
2 N/A	Peak Hold OFF-Up
3	Internal speaker Mute- Up
4	Calibration Level – see below
5	Calibration Level – see below
6	Calibration Level – see below
7 N/A	Stereo Mix Lo Ro – Up/Lt Rt Down
8	Composite out-Up/SDI \Down

The level configuration switches on the HDC2 board operates in a “2’s complement” manner the relationship between the dBfs level setting in the digital domain and the dBm level setting in the analogue domain. The “zero” position with all switches in the down position is designed to give 0dBm out for a level of -18dBfs in digital space. See below for configuration

SW4	SW5	SW6	FUNCTION
UP	UP	DN	-24dBFS
DN	UP	DN	-22dBFS
UP	DN	DN	-20dBFS
DN	DN	DN	-18dBFS
UP	UP	UP	-15dBFS
DN	UP	UP	TBD
UP	DN	UP	TBD
DN	DN	UP	TBD

4.0 Notes

0 dBu = 0.775V rms = PPM 4.

Nominally, -18 dB ref 0FS = 0 dBu output.

European line up: -18 dBu

American lineup: -20 dBu

All audio monitoring Calibration procedures are factory Set.

4.1 Please note that some American equipment has the function of the XLR pins 2 & 3 reversed.

TSL product is wired to the European standard

5.0 AVMU2-3G Technical Specifications

Power Supply

Supply Voltage	12 Volts DC
Power Consumption	35 watts Max.

Physical Dimensions

Height	88mm (2RU)
Width	483mm
Depth	280mm
Weight	3.5Kg

Analogue Input

Connector Type	XLR 3 pin. Pin 1 Gnd, Pin 2 hot, Pin 3 cold.
Signal	Balanced line level audio.
Frequency Response	30Hz to 25kHz
Impedance	>20k Ω

Inputs AES 1 & 2

Connector Type	XLR Female 3 pin. Pin 1 Gnd, Pin 2 hot, Pin 3 cold.
Standard	AES3 (1994) at 48kHz, 44.1kHz or 32kHz
Impedance	110 ohm (balanced.)

Input, HDV/SDV 1 & 2 (auto sensing)

Connector Type	BNC.
Standard	SMPTE 259M 4:2:2 component 525/60 or 625/50 with embedded 48kHz audio. HDSDI (SMPTE 292M) – 720P & 1080i @ 50, 59.94 & 60Hz
Impedance	75ohm
Return Loss	<-20dB to 1.5GHz

Re clocked Output

Return Loss	< -15dB up to 1.5GHz
Connector	BNC

Line Output.

Connector	XLR 3 pin Male (variable line out A1 &A2)
Impedance	50 Ω
Output Levels	Through level control with 0dB gain.
Connector	D25
Impedance	>20k Ω

Video Screen

4.75" 16:9 Colour TFT LCD

Input Signal

PAL and NTSC (auto switch)
Composite video signal 1Vp-p / 75 ohm.

AES Output

Connector
Impedance
Output

AES I/O, 25 way D type (See section 3.4 for details)
110 Ohm
Selected SDI group.

Noise

Better than -60dB (22Hz to 22 KHz)

Headphone Output.

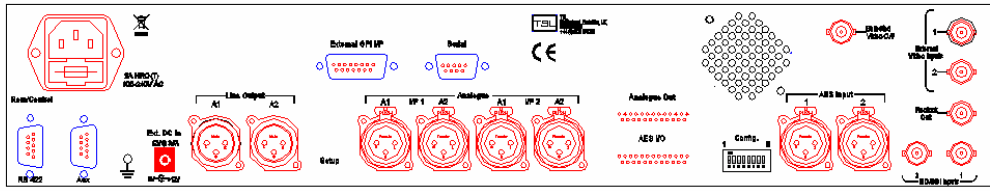
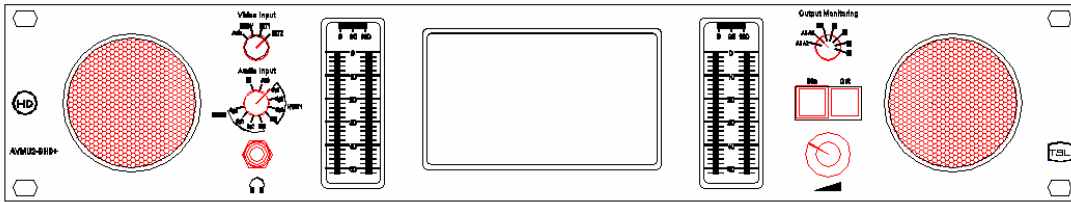
Connector
Impedance
Output Levels

Stereo Jack socket type A
50Ω
Through level control with 0dB gain.

HD Standards Supported

1080p/60 (3G units only)
1080p/59.94 (3G units only)
1080p/50 (3G units only)
1080i/50
1080i/59.94
1080i/60
720p/50
720p/59.94
720p/60

6.0 Front and rear views



7.0 Block Schematic

