



**AMUT-2MHD**  
**Audio monitoring**  
**Unit**

***Handbook***

**Television Systems Limited.**  
Vanwall Road, Maidenhead, Berkshire, SL6 4UB  
Telephone +44 (0)1628 676200, FAX +44 (0)1628 676299

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## SAFETY

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### **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).
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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.

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## WARRANTY, MAINTENANCE AND REPAIR

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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 670000

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

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### **TSL Returns Procedure**

Please telephone +44 (0)1628 676200 (Fax: +44 (0)1682 676299) and ask for Customer Support 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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## Contents

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- 1.0 Introduction
- 2.0 Front Panel Controls
  - 2.1 Input and Meter Selection Buttons
  - 2.2 Output Switching
- 3.0 Pin-out Details
  - 3.1 Analogue XLR Connectors
  - 3.2 AES/EBU XLR Connectors
  - 3.3 Audio Input/Output Connector – D37 Plug/Socket Pinout
  - 3.4 Control Connector - D9 Socket
  - 3.5 External Connector - D15 Plug
- 4.0 LS Output
- 5.0 General Notes
- 6.0 Specification

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## AMUT-2MHD AUDIO MONITORING UNIT

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### 1.0 Introduction

The AMUT-2MHD is a half rack 3RU x 400mm deep Audio Monitoring Unit with two Sifam type 22AF meters.

The following features are standard:

- Four switch selectable stereo analogue inputs.
- PPM or VU scales
- Two AES/EBU inputs.
- One HD/SDV auto sensing input.
- Audio-present indication.
- Phase reverse switch.
- Out-of-phase error indication.
- Re clocked output of either HD or SDV
- Decoded PAL/NTSC composite
- Optional additive output switch selection.
- Additional SDV output if SDV is used on input
- Headphone outputs with LS muting.
- Fixed and variable stereo line outputs.

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## **2.0 Front Panel Controls**

### **2.1 Input and Meter Selection Buttons**

<b>1 – 4</b>	Analogue I/Ps. A1 (Left Channel) is fed to the top bargraph and A2 (Right Channel) is fed to the bottom bargraph.
<b>AES1/2 (3 &amp; 4 N/U)</b>	Selects one of two AES signals to the bargraph.
<b>S/HD Pair 1, 2</b>	Selects A1/A2 or A3/A4 from the de-embedded HD or SD to the meters.
<b>Group Select</b>	Toggles to decode the required group within the embedded audio signal.
<b>Letterbox</b>	Shows the composite output as 16:9 aspect ratio. (HD only)
<b>Ø Rev (Function)</b>	Momentary phase reverse between A1 and A2. N.B. This functions on the variable and loudspeaker outputs only and not on the meters.

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## 2.2 Output Switching

### A1/A2

These buttons select either:

- the Analogue Left or Right signals of the metered Input,
- the AES/EBU Input 1 Left or Right signals or
- the selected SDV group A1 & A2 decoded outputs to the Left or Right Output Channels.

The buttons toggle. Additive mixing is possible if two or more buttons are selected together.

### A3/A4

These buttons select either:

- Analogue Left or Right I/P 8 signals,
- the AES/EBU Left or Right signals of Input 2 or,
- the selected SDV group A3 & A4 decoded outputs to the Left or Right Output Channels.

The buttons toggle. Additive mixing is possible if two or more buttons are selected together.

### DIM

Approximately 16dB of attenuation is switched into the audio path

### CUT/MUTE

The front panel button **CUT**(s) the signal to all O/Ps.

Remote Mute of either or both of the LS O/Ps and Variable Line O/Ps are possible via a rear connector. A ground is required on the appropriate pin to activate the **MUTE** condition.

### VOLUME

The Headphones O/P and the Variable Line O/P may be varied.



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### 3.0 Pin-out Details

#### 3.1 Analogue XLR Connectors

<b>XLRS</b>	<b>PIN</b>	<b>FUNCTION</b>
ANALOG 1	1	GND
ANALOG 1	2	1 IN+
ANALOG 1	3	1 IN-
ANALOG 2	1	GND
ANALOG 2	2	2 IN+
ANALOG 2	3	2 IN-

#### 3.2 AES/EBU XLR Connectors

<b>XLRS</b>	<b>PIN</b>	<b>AES FUNCTION</b>
AES 1	1	AES GND
AES 1	2	AES 1 IN+
AES 1	3	AES 1 IN-
AES 2	1	AES GND
AES 2	2	AES 2 IN+
AES 2	3	AES 2 IN-

### 3.3 D37 Socket, Input connector (lower)

D 37 CONNECTOR ON AMU			AUDIO INPUTS	FUNCTION
PIN NO	PIN NO			
HOT +	COLD -			
1	20		1	A1L (A1)
2	21		1	A1R (A2)
3	22		2	A2L (A3)
4	23		2	A2R (A4)
5	24		3	A3L (A5)
6	25		3	A3R (A6)
7	26		4	A4L (A7)
8	27		4	A4R (A8)
9	28			
10	29			
11	30			
12	31			
19			Screen	A Ground

### D37 Socket, Output connector (Upper)

D 37 CONNECTOR ON AMU			AUDIO OUTPUTS	FUNCTION
PIN NO	PIN NO			
HOT +	COLD -			
1	20		A1	VAR MON O/P
2	21		A2	VAR MON O/P
3	22		A1	FIXED MON O/P
4	23		A2	FIXED MON O/P
5	24	(AES pairs1/2 or SD/HD pairs 1/2)	A1	Sel. Digital ch
6	25	(AES pairs1/2 or SD/HD pairs 1/2)	A2	Sel. Digital ch
7	26	(AES2 or SD/HD pair 2)	A3	Sel. Digital ch
8	27	(AES2 or SD/HD pair 2)	A4	Sel. Digital ch
9	28			
10	29			
11	30			
12	31			
19			Screen	A Ground

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### 3.4 Control Connector - 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

### 3.5 External Connector – D15 Plug (This connector is not activated)

D15 PIN	EXTERNAL FUNCTION
1	GPI
2	GPI
3	GPI
4	GPI
5	GPI
6	GPI
7	N/C
8	N/C
9	N/C
10	N/C
11	N/C
12	N/C
13	N/C
14	+5V
15	0V

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#### **4.0 LS Output**

This is a single ended amplifier therefore one side may be connected to ground.

#### **5.0 Notes**

0 dBm = 0.775V into 600Ω i.e. 1mW power dissipation.

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 is factory Set.

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

**TSL product is wired to the European standard**

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## 6.0 **AMUT-2MHD Technical Specifications**

### **Power Supply**

Supply Voltage	90 -250V AC @ 50Hz/60Hz +/- 10%
Power Consumption	150 VA Max.

### **Physical Dimensions**

Height	132mm (3RU)
Width	225mm
Depth	426mm
Weight	3700gm

### **Inputs 1.**

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 $\Omega$

### **Inputs 1 – 4**

Connector Type	D37 (XLR Input 1, in parallel)
Signal	Balanced line level audio.
Frequency Response	30Hz to 25kHz $\pm$ 1dB
Impedance	>20k $\Omega$

### **Inputs AES 1 & AES2.**

Connector Type	XLR (F) 3 pin. Pin 1 Gnd, Pin 2 hot, Pin 3 cold
Standard	AES3 (1994) 32, 44.1, 48, 96 KHz
Impedance	Balanced 110 Ohm. (BNC unbalanced 75 Ohm option)

### **Input, HDV/SDV (auto sensing)**

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

### **Down converted Output**

Return Loss	$\geq$ 8bit processing. <-16.5dB to 1.5GHz
Connector	BNC Note: Video monitoring point only. If SDV is used on input, this connector Also gives a re clocked output.

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**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	50Ω
Output Levels	Through level control with 0dB gain.
Connector	D37
Impedance	>20kΩ
Output Levels	Fixed (+ or – 1dB) and Variable

**Noise**

Better than -70dB (22Hz to 22 KHz)

**Headphone Output.**

Connector	Stereo Jack socket type A
Impedance	50Ω
Output Levels	Through level control with 0dB gain.

**Loudspeaker Outputs.**

Connectors	4mm Binding Posts
Output rating	Max 15W RMS /Ch into 4Ω,

**HD Standards Supported**

1080i/50  
1080i/59.94  
1080i/60  
720p/50  
720p/59.94  
720p/60