

Audio Monitoring

Professional Audio Monitoring Solutions



WHETHER YOU WORK IN LIVE PRODUCTION, AT LARGE BROADCAST FACILITIES, OB BROADCAST REMOTES OR IN POST PRODUCTION STUDIO ENVIRONMENT, TSL PRODUCTS DELIVERS A RANGE OF SOLUTIONS THAT ALLOW YOU TO FOCUS ON MAKING GREAT CONTENT.

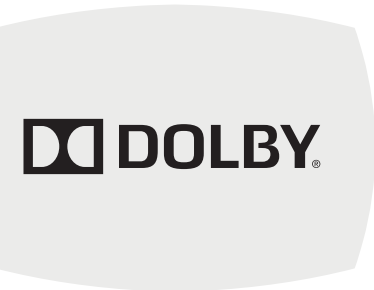




Why choose TSL Audio Products

TSL Products are world leaders. Our award winning Audio Monitoring range of products and applications are complimented by Broadcast Control and Power Management solutions. Our systems are in operation twenty four hours a day throughout the world.

- Innovative solutions
- High quality sound reproduction
- Dolby partner since 2006
- Compact, functional and easy to use products
- International standards support
- More than 30 years experience, operating globally
- ISO 9001 accredited



arqiva

Atos

BBC

abc

CANAL+

CBS

CCTV.

CNN

GEARHOUSE BROADCAST

LOBOSAT

M.net
Mein Netz

NBC

VISIONS
An NEP Broadcasting Company

SABC

STAR SPORTS

VER

TSL Products provides essential equipment for support throughout the broadcast chain



DID YOU KNOW?

TSL Products is also a market leader in Broadcast Control Systems.

AMU Symbols Key

3G SDI	DIGITAL	MADI	ANALOGUE	AUDIO VIDEO BRIDGING	DANTE	SMPTE 2022-6	SMPTE 2110	AES 67	SMPTE 2020	4K	DOLBY	LOUDNESS	MIXING	ASSIGN MATRIX	TOUCH SCREEN	VIDEO	WEB INTERFACE	VIDEO WAVEFORM	NETWORK

Precision Audio Monitor

Our flagship PAM Range is the leading multichannel audio and video monitoring tool. Whether you are working in traditional SDI infrastructure, transitioning to IP or building an all new-IP facility, the PAM Range is designed to maintain flexible and familiar operation and maximise efficiency.

PAM-IP: The world's first ST 2022-6 and ST 2110 audio and video monitoring unit



Designed to Future-Proof Your Infrastructure

The PAM-IP is built on an 'IP-Ready' chassis, and retains traditional I/O for traditional infrastructure to support a paced transition and future-proofing your investment.

Both the PAM2-IP and PAM1-IP retain the same features and operational experience as our proven PAM2-MK2 and PAM1-MK2 audio monitors.

This means that there is no need to invest in retraining operational staff, and that the PAM-IP will fit seamlessly into positions throughout the broadcast chain.

PAM-IP Features Include:

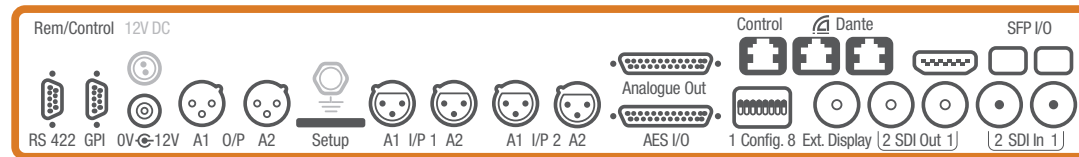
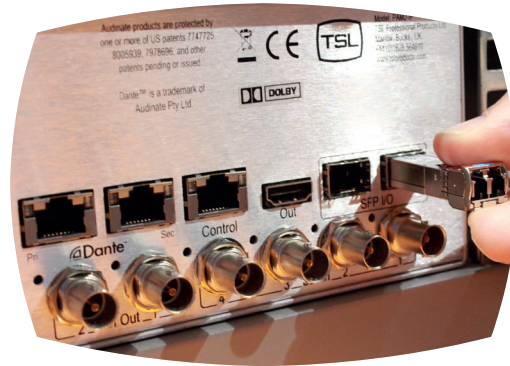
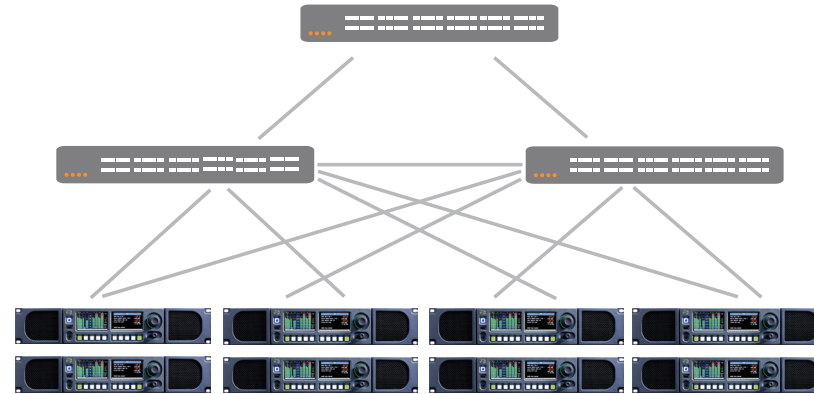
- Fully configurable multi-channel monitoring
- Loudness measurement
- Video confidence monitoring
- Control API, including Ember+
- SDI monitoring outputs included as standard
- Dante/AES67 audio monitoring and Dolby audio monitoring are available as options.



Seamless Integration in to IP Networks

The PAM-IP-3G has been developed specifically to address the requirements of customers needing to monitor uncompressed SMPTE 2022-6 and SMPTE 2110 sources, equipped with 2 x 10Gig/E interfaces for direct connection into COTS IP fabrics.

Engineers and Operators familiar with traditional Audio Monitoring unit operation can now monitor 2022-6 and 2110 uncompressed IP sources without having to re-train or understand IP networks.



DID YOU KNOW?

The PAM-IP can be connected to Dante audio networks as well as IP infrastructures carrying ST-2022-6 and ST-2110 sources.

The PAM Range – Common Features

Our flagship PAM Range is used by broadcasters worldwide, designed to maintain flexible and familiar operation and maximise efficiency.

In addition to the PAM-IP, the range also includes the PAM2-MK2 and PAM1-MK2, with common features that make these units ideal for 3G/HD/SD-SDI, AES and Analogue Audio infrastructures.

Loudness

Comprehensive monitoring for loudness compliance:

- Supports EBU and ATSC standards in addition to user configurable measurements
- Loudness logging can be viewed on the front panel as a value or a histogram

Ultimate multichannel monitoring tool

Fully configurable analogue and digital multichannel outputs:

- Route specific signals to any monitoring output
- Native 5.1 aware with Downmix function
- SMPTE 2020 support clearly displaying Dolby® metadata parameters in the HD-SDI ancillary data

Dolby® monitoring

Full support for Dolby E®, Dolby Digital® and Dolby Digital Plus®

- Bitstream monitoring via a clear and configurable user interface
- Dolby CRC error count and Dolby E line position
- Downmix monitoring via the Dolby CAT1100
- Ability to monitor in sync using the AV offset to cater for any inherent delay

Monitoring Output

- Pushes PAM data to the monitor wall
- User configurable quadrants
- HD-SDI output

Ease of use

- User defined pre-sets to switch I/O setup or loudness measurements at the push of a button

Streamline Your Workflow

- You can configure, monitor and control pre-sets via remote Web GUI, benefit from external control with Ember+ integration and even configure the units in-field via simple USB input



PAM1-MK2

Usb port
for saving/loading presets

Menu/home button

5 configurable preset buttons

Dual 2.4" LCD display
for audio, video, metadata, loudness

Selector and scroll encoder

Volume encoder.
Push to mute



High quality, full range internal
loudspeakers system

Headphone jack

Shortcut button for quick
access to key features

Back button

PAM2-MK2

Usb port
for saving/loading presets

Home button

Large dual display
for audio metering, video, loudness, metadata

Large volume encoder
with LED indication. Press for mute



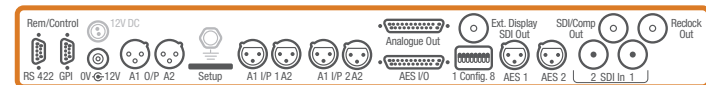
High quality, full range internal
loudspeakers system

Headphone jack

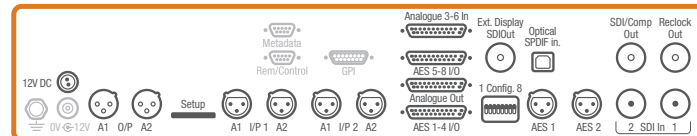
**Configurable labelled
preset buttons**

Selector and scroll encoder

PAM1 MK2



PAM2 MK2



DID YOU KNOW?

A dedicated SDI output allows you to display PAM metadata on your monitor wall.



MPA – Monitor Plus Audio family

The MPA product family has been designed for ease of use with Solo and Mix options. Supporting established I/O workflows such as SDI, MADi and analogue, in addition to Dante / AES-67 support for audio over IP.

Solo

Simple, intuitive scroll and listen to easily monitor multiple feeds.

Accurate Peak Metering
Ideal for tone line up

Channel Select
Scroll through the available inputs, switching between mono or stereo by simply pressing the button.



Phone charging point
Fed up looking for somewhere to charge your phone?

High quality, full range internal **loud speakers.**

Mix

Simple, intuitive mix and listen with nine mix pallets.

Mute/Solo
Press for Mute, press and hold for Solo

Average Level - greater than 90dB at 1m
Peak Level - greater than 100dB at 1m
Frequency Response - 200Hz-20KHZ



Labels
Enter them manually, read them automatically from a networked audio stream or grab them from your audio router.

Level
Create the perfect mix with eight individual level controls

Built in 240 / 110v auto range power supply (rear).

Key Features

3G/HD/SD-SDI, Dante, MADI, AES and Analog audio interfaces are all catered for by the MPA1 Range of Audio Monitoring Products. Whilst MPA1 SOLO products provide the simplest of audio monitoring solutions, MPA1 MIX products allow users to define their own monitor mix by allowing multiple audio sources to be mixed together.

Compact and Lightweight – All MPA 1 products share the same 1RU form factor at only 100mm deep and are ideally suited for those environments where space and weight is a premium, such as OB Trucks, Flyaways, SNG and ENG Trucks.

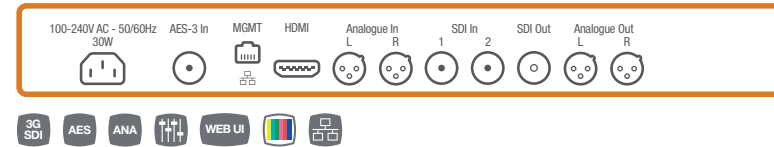
TSL ‘DNA’ – All MPA 1 products benefit from TSL’s significant history and experience in developing professional audio monitoring products for use in the most demanding of broadcast environments.

Ease of Use – Offering both simple and intuitive control, the MPA 1 range of products have been designed to enable the smoothest of workflows for operators and engineers working in high pressure environments such as live production.

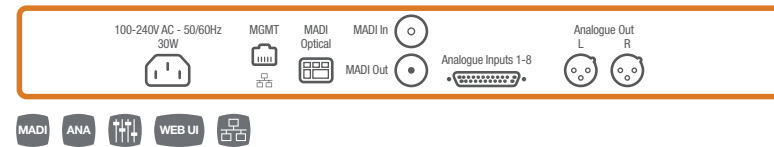
Web GUI - All MPA 1 products can be configured, controlled and monitored via a web interface. Facility wide management of all MPA 1 products is now possible from a single desktop PC.



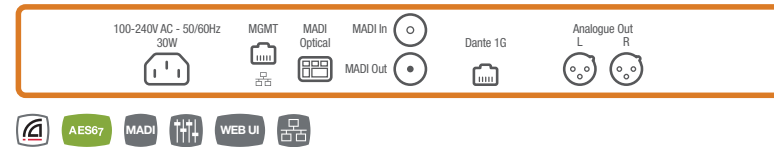
MPA1-Mix/Solo-SDI



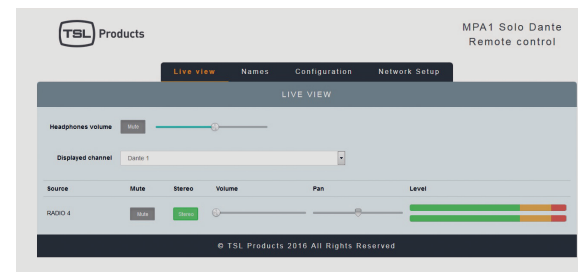
MPA1-Mix/Solo-MADI



MPA1-Mix/Solo-DANTE



MPA1-Solo/Mix-8



DID YOU KNOW?

All MPA units support SNMP, making them ideal for integration into a wider control and monitoring solution such as Tallyman.

See www.tslproducts.com for more information.



Audio at your fingertips

The Studio Audio Monitoring range (SAM) has been named the ‘swiss army knife’ for the audio engineer. It provides broadcasters and content producers with flexible and intuitive tools for the dynamic TV production environment by allowing custom mix of any audio input - with 3G-SDI, AES, MADI or Analogue.

Applications

SAM1 is a mid-range audio monitoring solution where fast, intuitive monitoring is needed from multiple sources with SDI, AES, Analogue and MADI. **T-MIX** takes the SAM1 functionality, adding an extra I/O, a touchscreen display and discrete 5.1 mixing. Any input can be routed to the front panel, providing unrivalled flexibility.

Broadcast facilities – SAM is used to check that the language tracks match the correct channel order before final TX.

Outside Broadcasts – SAM allows operators to monitor MADI via a coax or fibre input to quickly check the integrity of the signal.

Fast turnaround events – SAM allows operators working in any environment to create a well balanced custom mix from various input sources.

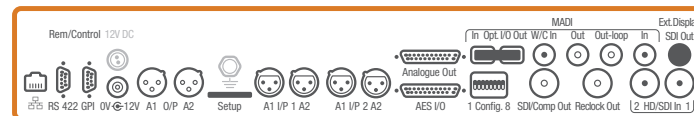


SAM1 Scroll and listen

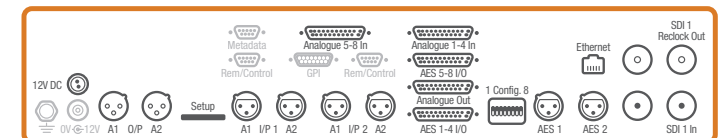


T-MIX Touch and listen

SAM1-MADI



T-MIX

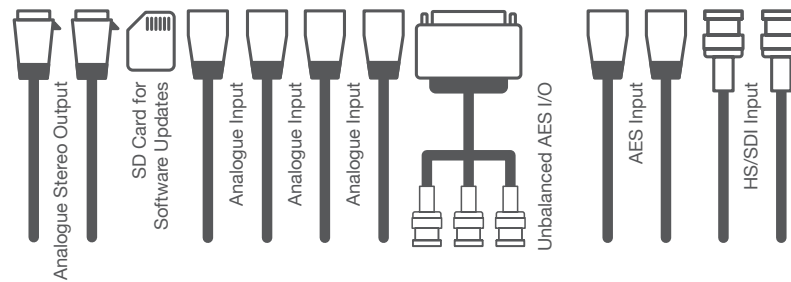
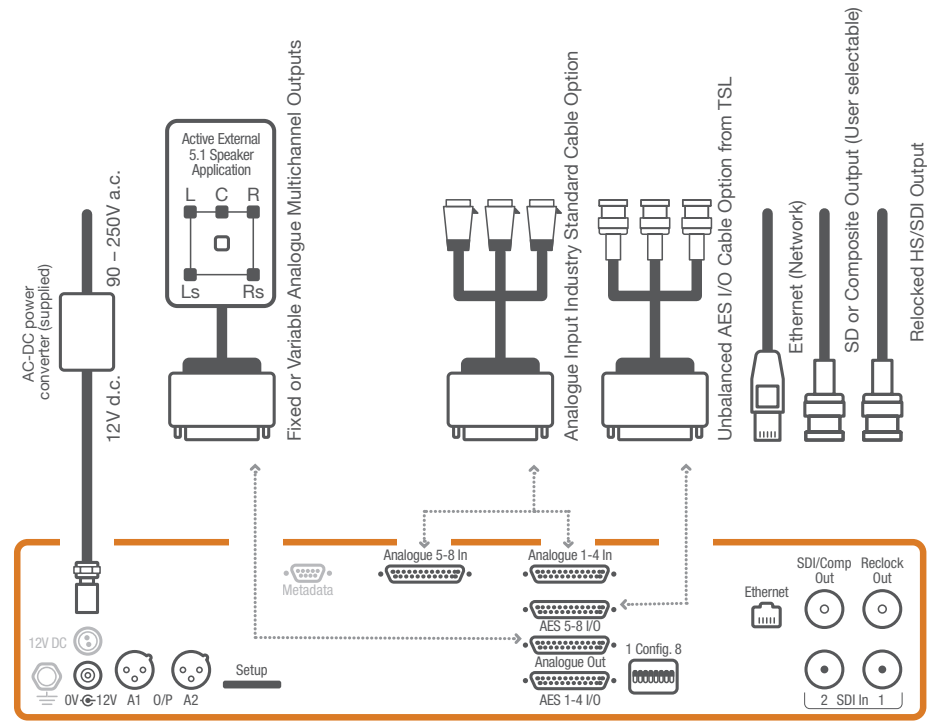


SAM 1 Key Features

- Available in 3G-SDI and MADI versions
- Support for Mono, Stereo and 5.1
- Flexible input monitoring
- Discrete 5.1 audio down mixing
- Custom monitoring mix
- MADI test tone generator
- Analogue, AES

T-MIX Main Features

- Touchscreen control
- Custom mix
- Multiple I/O
- XY router control
- Surround mixing in 5.1
- Position a mono source in a 5.1 mix
- Position a mono signal across the LCR sound stage
- 2 x SDI switchable AES, Analogue



DID YOU KNOW?

T-MIX can be used to create a 5.1 mix.

Audio and Loudness meters

PAM PiCo Range

PAM PiCo is compact and comprehensively equipped Audio and Loudness meter featuring the revolutionary StarFish™ display. It is designed to be used wherever a visual snapshot of audio metering is needed. Experience an upgraded user interface with the PAM PiCo Touch and Touch Media versions, featuring a 7" screen with multi-touch capability and enhanced capabilities such as video waveform monitoring.

Key Features

- Loudness measurement to many international standards – including EBU, ITU and ATSC
- Range of I/O available
- International scale options including BBC, EBU Digital, EBU PPM, DIN, Nordic and VU
- Moving Coil meter emulation
- LKFS or LUFS
- Video Preview (Touch, Touch Media and PiCo 5 only)
- Phase indication bargraph
- StarFish™ display (Surround Sound Applications)
- Numerical indication of Loudness and range (LRA)
- Variable gate settings
- True Peak display
- Online upgrade and update via PC
- Desk or rack mount
- FFT spectrum analyser
- Loudness Logging Application
- Rackmount version also available for Touch and Touch Media.

Available in three formats

PiCo One

- Master Stereo Meter
- 4 channel bargraph display
- 2 x AES inputs (4 audio channels)
- 1 analogue pair and USB power

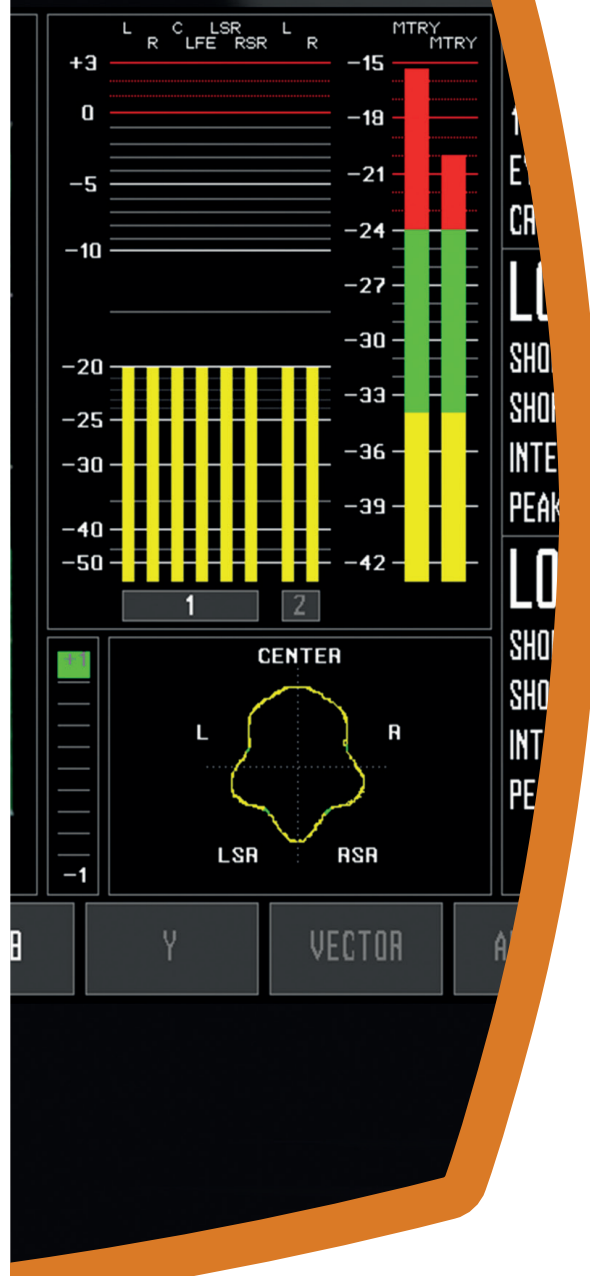
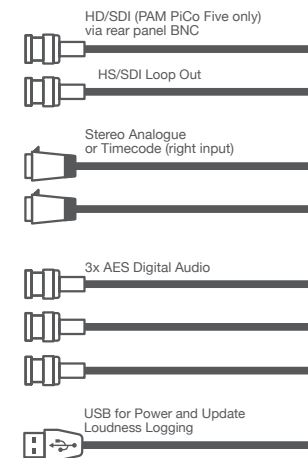
PiCo Two

- Master 5.1 Surround Meter
- 8 channel bargraph display
- 3 x AES inputs (6 audio channels)
- 1 analogue pair and USB power

PiCo Five

- Master 5.1 Surround Meter
- 16 channel bargraph display
- 3G HD SDI (auto sensing with loop through)
- 3 x AES inputs (6 audio channels)
- 1 analogue pair and USB power
- PSU and universal mounting supplied

PAM PiCo Five



PAM PiCo Touch and Touch Media

The PAM PiCo Touch and Touch Media build on the PAM PiCo range and offer an upgraded user interface experience based around a 7" screen with multi-touch capability as well as enhanced capabilities such as video waveform monitoring.

Features

- Bargraphs or Moving Coil – Your choice of metering tool
- JellyFish™ & StarFish™ Inter-channel relationships – Phase Security
- Loudness and True Peak Logging - Document, Report & Analyse
- Clear Loudness metering & readout – Instantaneous Loudness conformity
- Real time True Peak PPM – Optimized level with no hidden ‘overs’
- Compliant with major loudness standards – Always hit your target
- FFT Analysis – See and secure your audio from any angle
- SDI 3G I/O, AES/EBU (8ch. I/O), Analogue (2 ch. In)
- Flexible and User definable setup – Personalized to fit your workflow
- SMPTE Reader – Readout and Log against Timecode
- HDMI screen and Audio output (1024x600)
- Headphone Output
- USB and Ethernet Control – Logging and System Management
- Multi Touch screen User interface

Touch Lite

- 7 inch multi-touch display
- Master stereo display
- 2 analogue inputs
- 1 AES input
- Simultaneous peak and loudness metering

Pam PiCo Touch

- Master 5.1 Surround Meter
- 16 channel bargraph display
- 3G HD SDI (auto sensing with loop through)
- 3 x AES inputs (6 audio channels)
- 1 analogue pair and USB power
- PSU and universal mounting supplied
- Full 7" multi-touch display
- HDMI output
- Available in rack-mount
- Headphone jack
- Picture preview

Touch media

- User definable Gamut error setting
- Vectorscope
- G, R, B, Y, Cb, RGB & Luminance display
- AVB Overlay & AVB Parade display
- Master 5.1 Surround Meter
- 16 channel bargraph display
- 3G HD SDI (auto sensing with loop through)
- 3 x AES inputs (6 audio channels)
- 1 analogue pair and USB power
- PSU and universal mounting supplied
- 7 inch multi-touch display
- HDMI output
- Available in rack-mount
- Headphone jack
- Picture view



DID YOU KNOW?

You can now measure Lip Sync with the PiCo Touch.

X-1 Processor

Combined Upmix/Downmix Processor – surround to stereo and back, all in one box. The X-1 provides a flexible, transparent interoperability between 5.1 and stereo audio all in one unit which is easily controllable from any PC.

Designed for the rigours of on-air use, the X-1 is fitted with a redundant power supply, and can be implemented as a 'set and forget' processor, or as a fully adjustable real-time upmixer and downmixer. A software control application allows full control and configuration of the unit via an easy-to-use graphical user interface. The control app may be run on a laptop or PC connected to the X-1 via Ethernet, or the USB socket on the front. GPIO capable consoles and control systems can recall presets on the X-1 via a rear-panel D-Sub connector.

The X-1 can upmix and downmix simultaneously and the auto-detect algorithm allows it to identify the format of the incoming audio, and act accordingly, upmixing or downmixing as necessary.

Features of the X-1

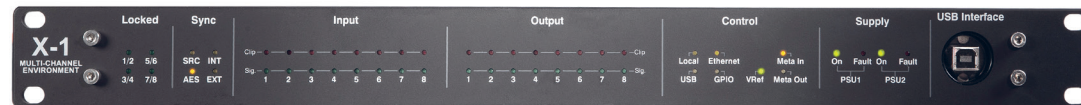
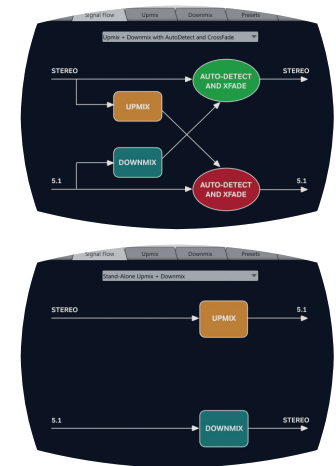
- Simultaneous Upmixing and Downmixing
- Extra low latency making the X1 ideal for live production
- Auto 5.1 and Stereo input detect
- Redundant Power Supply
- Eight Channel input with thru outputs (AES 75Ω BNC)
- Dual eight channel outputs (AES 75Ω BNC)
- Ethernet and USB Connectivity
- Wordclock I/O (75Ω BNC)
- Stand Alone PC Control App (TSL Remote App)
- GPIO Port (9-pin D-Sub)

Master Control Room (MCR)

The X-1 can deliver a constant 5.1 and stereo output regardless of the input. Upmixing or downmixing as appropriate or passing the 5.1 and stereo straight through when available.

Live Production

OB vehicles will often need to down-mix 5.1 to stereo in real-time for transmission to legacy broadcasters or networks. At the same time, there is a constant need to upmix from stereo to 5.1 to incorporate archive clips, music or library material in stereo. The X-1 can handle both requirements simultaneously, treating upmix and downmix inputs and outputs completely independently as required.



Product Table

Audio Monitoring	Page No	Display			Inputs						Outputs					Features				
		Video	Moving Coil Meter	Bargraph Meter	3G SDI	SMPTE 2022-6	MADI	AES (Pair)	Analogue (Pair)	Dante AES 67	Analogue fixed / variable	AES fixed / variable	Reclocked HD / SDI	HDMI	MADI	Dolby	Discrete Multi-channel Audio	Loudness	Audio Delay	Web UI
MPA	MPA1-BD	-		2			2	2												
	MPA1-Solo-SDI	-		16			8	8		F+V			Y						Y	
	MPA1-Mix-SDI	-		16			8	8		F+V			Y						Y	
	MPA1-Solo-MADI	8&9		2			Y	4		F+V				Y					Y	
	MPA1-Mix-MADI	8&9		16			Y	4		F+V				Y					Y	Y
	MPA1-Solo-DANTE	8&9		2			Y		Dante / AES67	F+V				Y					Y	
	MPA1-Mix-DANTE	8&9		16			Y		Dante / AES67	F+V				Y					Y	Y
	MPA1-Solo-8	8&9		2			8	8		F+V									Y	
	MPA1-Mix-8	8&9		16			8	8		F+V									Y	Y
AMU	AMU1-3G	-		2	2		4	2		F+V	F	Y			Opt					
	AMU1-CHD+	14		2	2		4	2		F+V	F	Y								
	AMU2-2BHD+	14		4	2		4	2		F+V	F	Y				Y	Y			
AVMU	AVMU2-3G	14	Y	4	2		2	2		F+V	F	Y				Y				
SAM	SAM1-3GM	10&11		22	2		4	2		F+V	F+V	Y				Y				Y
	SAM1-MADI	10&11		22	2		Y	4	2	F+V	F+V	Y		Y		Y				Y
	T-MIX	10&11		22	2		8	8		F+V	F+V	Y				Y				Y
PAM	PAM1-IP-3G	6&7	Y	16	2	2 (Opt)	4	2	Dante / AES67 Opt	F+V	F+V	Y			Opt	Y	Y	Y	Y	Y
	PAM2-IP-3G	6&7	Y	16	2	2 (Opt)	4	2	Dante / AES67 Opt	F+V	F+V	Y			Opt	Y	Y	Y	Y	Y
	PAM1-MK2	4&5	Y	16	2		4	2		F+V	F+V	Y			Opt	Y	Y	Y	Y	
	PAM1-MK2-ND	4&5	Y	16	2		4	2		F+V	F+V	Y				Y	Y	Y	Y	
	PAM2-MK2	4&5	Y	16	2		8	6		F+V	F+V	Y			Opt	Y	Y	Y	Y	
	PAM2-MK2-ND	-	Y	16	2		8	6		F+V	F+V	Y				Y	Y	Y	Y	
	PAM1-AVB	-	Y	16	2		4	2		F+V	F+V	Y				Y	Y	Y	Y	
	PAM2-AVB	4&5	Y	16	2		4	2		F+V	F+V	Y				Y	Y	Y	Y	
	PAM PiCo One	12		Y	4		3	1					Loop						Y	
	PAM PiCo Two	12		Y	8		3	1					Loop			Y	Y			
	PAM PiCo Five	12	Y	Y	16	1	3	1					Loop			Y	Y			
	PAM PiCo Touch	13	Y	Y	16	1	4	1					Loop			Y	Y			
	PAM PiCo Touch Media	13	Y	Y	16	1	4	1					Loop			Y	Y			

DID YOU KNOW?

Our full range of AMU products and much more can be found on our website.

Visit www.tslproducts.com for more information.

Contact our international team

TSL Products operates globally



For further details about our product range and where to buy please visit:

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