

Audio Monitoring



WITH EXPERTISE SPANNING AUDIO MONITORING, CONTROL SYSTEMS AND POWER MANAGEMENT, TSL PRODUCTS HELPS YOU KEEP PACE WITH EVER CHANGING CUSTOMER DEMANDS, WHATEVER THE APPLICATION.





Focused On Technical Excellence

At TSL's core lies our passion for technical excellence, coupled with the desire to provide our customers with solutions of the highest quality to help them make their workflows more efficient.

Advances in technology enable the creation of ever more exciting content, as well as multiple possibilities for content delivery. Comprehensive audio monitoring tools are simply a 'must have' in order to help guarantee content quality and quality of service. Multichannel audio level meter displays, audio loudness measurement and audio metadata monitoring are at the very the foundation of what we do. However, as technologies evolve, TSL continues to work closely with our customers, developing audio solutions that not only meet their technical challenges but also serve to improve their workflows.

TSL's audio monitoring solutions:

- Bring confidence when monitoring both IP and traditional infrastructures.
- Improve efficiency when integrated as part of a larger control and monitoring solution.
- Enable new ways of working through providing an intuitive control interface for remote operation.
- Reduce errors, helping to guarantee both content quality and quality of service.

In Partnership With:



Trusted By:



Audio Monitoring Across Applications



OB TRUCKS & REMOTE PRODUCTION

A fast-paced 'life on the road', with a highly demanding and unique production process.

- Measure audio levels.
- Check channel assignments.
- Monitor multiple audio mixes.
- Check both video and audio circuits.
- Remote engineering management
- For operational positions.
- Within the racks.
- Right on the tailboard.



STUDIO PRODUCTION

Where requirements for operators and engineers can vary from show to show.

- Monitor audio from a diverse range of devices - e.g. routers & playback servers.
- Listen to talent and communication systems.
- Highly adaptable.
- Quick and easy to use.
- Instantaneous re-configuration via a control system for continuous programme use.



SATELLITE NEWS GATHERING

A 24/7 business for which there is no 'dress rehearsal'. Engineers and operators must adapt to changing news events quickly and often 'on the fly'.

- Ensure news output remains technically compliant.
- Access to monitor presenters, pre-hear and comms circuits.
- Ensure loud and clear location reports from the field.



MASTER CONTROL INGEST & QC

Often the most technically complex area of any broadcast facility that relies on quality.

- Check and verify audio downmixes.
- Measure program loudness.
- Check audio/video synchronisation.
- Check audio levels and audio channel configurations.
- Conduct analysis, regardless of the audio format presented.
- Guarantee a QoS.
- Help maintain high quality.



PLAYOUT & TRANSMISSION

Operators need integrated tools as part of playout and transmission control.

- Manage and monitor an increasing number of channels.
- Monitoring multiple languages or audio mixes.
- Ease workload and reduce errors.
- Maintain the high QoS expected by channel subscribers.

Precision Audio Monitoring

With the growing adoption of IP infrastructures, customers can monitor ST-2110, ST-2022-6 and Dante AoIP, alongside SDI, AES and Analogue sources, all from a single unit. Meet the PAM-IP.

Customers looking to monitor IP video and audio sources require an intuitive and familiar user interface along with a straightforward method of operation.

PAM-IP - Addressing the Challenges of IP

Developed specifically to address the requirements of customers monitoring uncompressed SMPTE 2022-6 and SMPTE 2110 sources, the PAM-IP features 2 x 10Gig/E interfaces, enabling direct connection to redundant IP networks.

The PAM-IP also features Primary and Secondary Dante ports, SDI, AES and Analogue connections for use with traditional infrastructures.

- **Video Confidence Monitoring** - view ST-2022-6, ST-2110-20 and SDI video content directly on the front panel of the PAM-IP or via its dedicated SDI output router.
- **Comprehensive Loudness Monitoring** - check loudness levels for ST-2022-6, 2110-30, SDI, AES and Analogue audio sources.
- **Dolby Decode** - monitor Dolby E®, Dolby Digital® and Dolby Digital Plus® audio sources, complete with comprehensive Metadata analysis.



DID YOU KNOW?

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

Remote Status Monitoring Webpage

PTP Status
Monitor PTP lock status and the MAC address of your PTP sources.

Senders
Wide, Narrow and Narrow Linear senders can all be monitored by the PAM-IP.

Packet Counters
Rule out potential network issues when subscribing to ST-2022-6 and/or ST-2110 sources using the PAM-IP on-board packet counter.

Status Monitoring
Customers can remotely monitor PAM-IP status, including the multi-cast addresses of all currently subscribed sources.

Type	2110-42.5
IOC	1.0.1
DHCP	0
IP Address	192.168.28.45
Subnet Mask	255.255.255.0
Gateway	0.0.0.0
PTP	File locked
PTP ID	0002C34F4E287655
PTP Domain	10
Resolution	1080i
Frame Rate	30
Color Space	YCbCr444
Sender Type	Narrow
Multicast Filtering	IP and Port
Temperature	44 °C
Packet Count	0

Type	2022-6v3.4
IOC	1.0.1
DHCP	0
IP Address	192.168.28.45
Subnet Mask	255.255.255.0
Gateway	0.0.0.0
Temperature	33 °C
Packet Count	0

Flow	IP Address	Port
Video (2110-20)	239.163.1.124	50020
Audio (2110-30)	239.163.1.24	50030
Audio (2110-30)	229.1.2.7	0
Audio (2110-30)	239.0.1.8	30000
Audio (2110-30)	239.0.1.10	10000
Auxiliary (2110-40)	239.1.2.8	20008

External Control Protocols

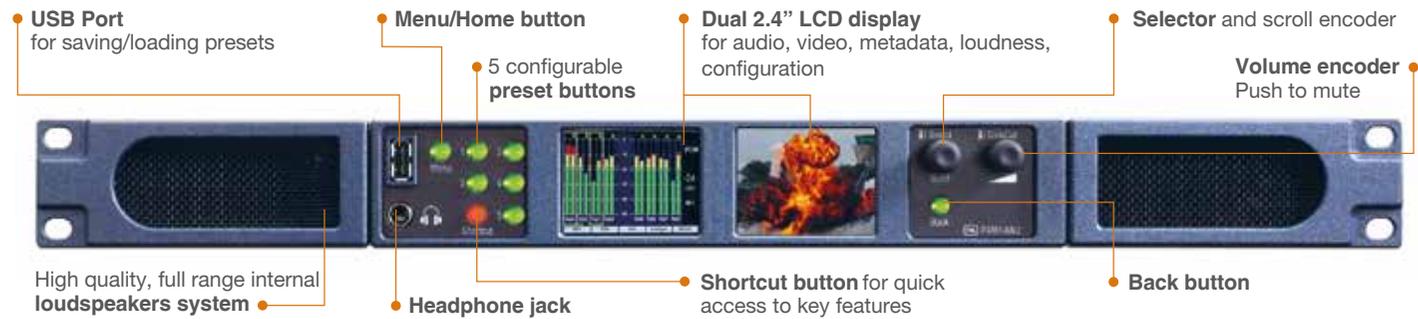
Customers can manage PAM-IP ST-2022-6 and ST-2110 subscriptions using In-Band or Out-of-Band control protocols.



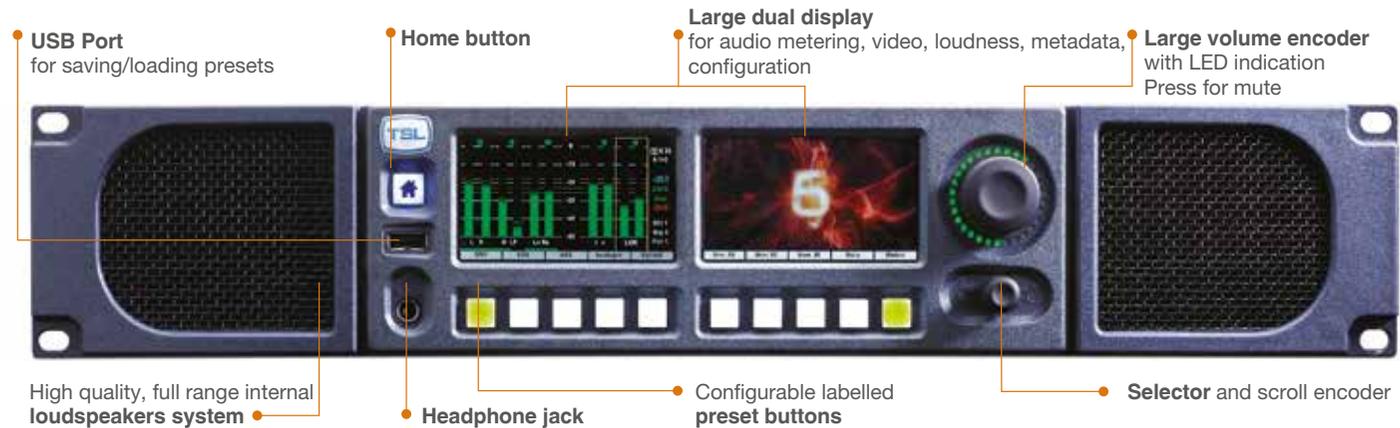


For customers working with traditional infrastructures, the PAM MK2 audio monitors provide the same interface and operational experience as the PAM-IP, including comprehensive loudness monitoring and Dolby Decoding capability.

PAM1-IP and PAM1-MK2



PAM2-IP and PAM2-MK2



DID YOU KNOW?

All TSL audio monitoring units are supported by free and regular software updates.

Dolby® Monitoring

- Full support for Dolby E®, Dolby Digital® and Dolby Digital Plus®
- Monitor Dolby E line position and Dolby CRC error.
- SMPTE 2020 support.
- Audio delay.

Loudness

Comprehensive loudness monitoring:

- EBU and ATSC standards.
- Loudness Histogram display.

Ultimate multichannel monitoring tool

Fully configurable analogue and digital multichannel outputs:

- Route any audio channel to any monitoring output.
- Native 5.1 aware with Downmix function.

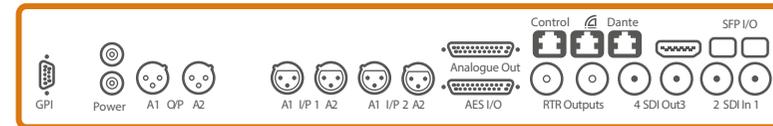
Monitoring Output

- Configurable SDI Output with quadrant display.
- 2 dedicated SDI Monitoring Outputs allow SDI, ST-2022-6 and ST-2110 sources to be monitored externally (PAM-IP Only).

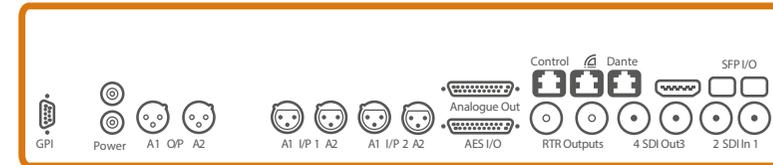
Manual Failover

- Switch between redundant networks with a single button push (PAM-IP Only).

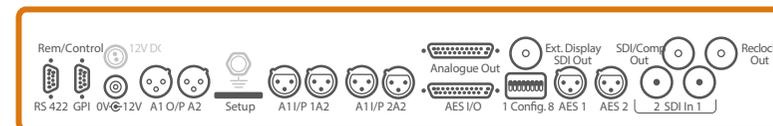
PAM1-IP



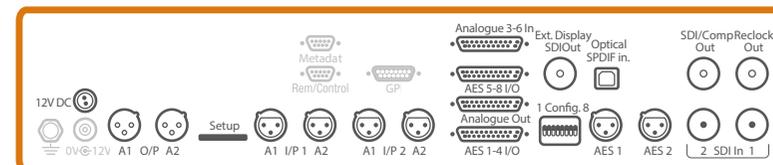
PAM2-IP



PAM1-MK2



PAM2-MK2



SAM-Q Platform

Audio monitoring tools with the ability to adapt, based on application, skillset or personal preference can address the ever-changing audio monitoring requirements.

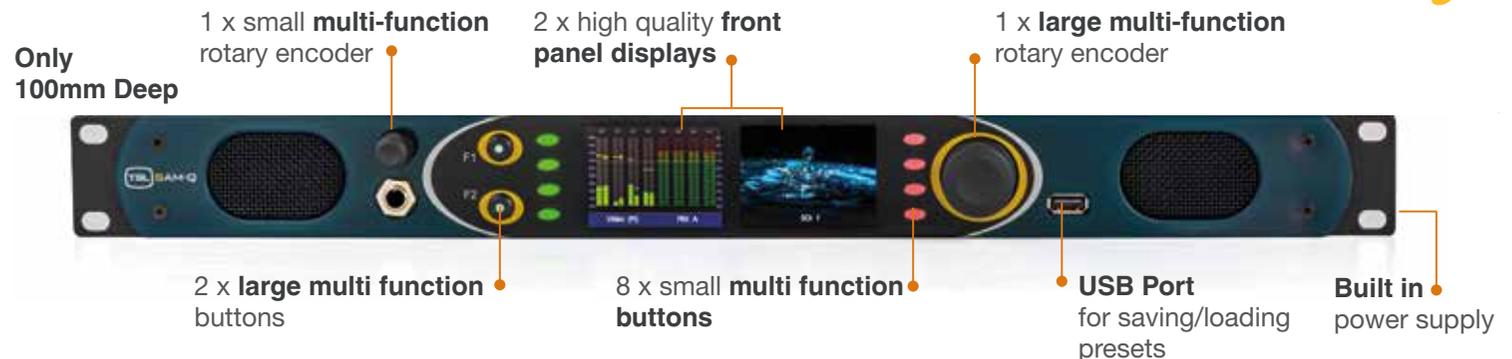
A new approach to audio monitoring

- **Customisable Configurations:** The only audio monitor that can be configured specifically to address the needs of different applications, skillsets and workflows.
- **Protected Configurations:** Engineers and supervisors can restrict sources, modes and front panel functions to streamline operation and reduce user error.
- **Optional Licenses:** A flexible and powerful audio monitoring platform whose feature set can change with your requirements, including optional MADI support or Loudness Monitoring.

Due to its agile design, the SAM-Q is equally at home in all manner of use cases, from OB Trucks and Studios to Playout and Distribution.

SAM-Q-SDI

Bringing the freedom to monitor SDI, AES and Analogue audio sources with maximum operational efficiency.



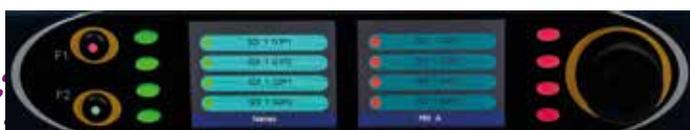
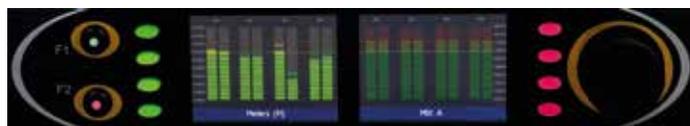
THINK
OUTSIDE
THE BOX

DID YOU KNOW?

With no extra hardware required, SAM-Q-SDI customers can purchase 1 or 2 optional MADI Input license options at any time providing monitoring and mixing of up to 128 MADI sources.

Operational Modes

- **Meter Modes** - A traditional audio meter mode, displaying 16 Audio Level Meters view with single and multiple audio channel selection.
- **Video Modes** - 16 Audio Level Meters with single and multiple channel selection complete with video confidence display.
- **Mix Mode** - A graphical representation showing the relative mix levels of up to 16 channels of audio, complete with Mix channel selection.
- **Names Mode** - Displays the source names of 8 audio pairs, with audio presence displays, complete with multiple channel monitoring selection.
- **Loudness Monitoring Mode** - 8 independent loudness probes, providing Short-Term, Momentary and Loudness Monitoring.





Confidence Monitoring

The MPA1 product family provides quick and simple operation, with each model available as a Solo or Mix variant.

Supporting a wide range of established I/O:     

MPA1 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 pinputs, switching between mono or stereo by simply pressing the button



High quality, full range internals **loud speakers**

MPA1 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 - 200 Hz - 20 Hz



Labels

Enter them manually, read them automatically from a networked audio stream or grab them from your audio route

Level

create the perfect mix with eight individual level controls

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

DID YOU KNOW?

All MPA1 units support SNMP, making them ideal for integration into a wider control and monitoring solution such as TallyMan.

Key Features

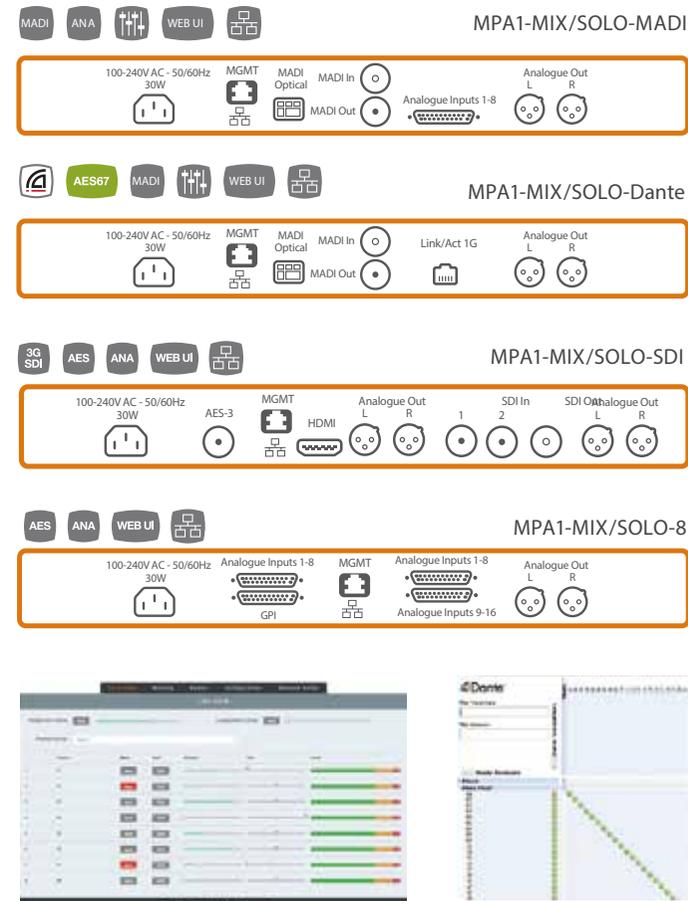
3G/HD/SD-SDI, Dante, MADI, AES and Analogue audio interfaces are all catered for by the MPA1 Range of Audio Monitoring Products. Whilst MPA1 SOLO products provide the simplest of audio monitoring solutions, MPA1 MIX products allow users to define their own monitor mix by allowing multiple audio sources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

Compact and Lightweight – All MPA1 monitors share the same 1RU form factor at only 100mm deep, with a built in power supply and are ideally suited for where space and weight is a premium, such as OB Trucks, Flyaways, SNG and ENG Trucks.

TSL 'DNA' – All MPA1 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 MPA1 range has been designed to enable the smoothest of workflows for operators and engineers working under high pressure such as with live production.

Web GUI - All MPA1 range can be configured, controlled and monitored via a web interface. Facility wide management of all the MPA1 is now possible from a single desktop PC.



Audio At Your Fingertips

Broadcasters and content producers need flexible and intuitive tools for dynamic TV production environments which allow custom mix of any audio input for 3G-SDI, AES, MADI or Analogue.

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 – check that the language tracks match the correct channel order before final TX.

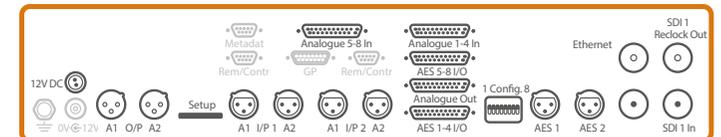
Outside Broadcasts – allows operators to monitor MADI via a coax or fibre input to quickly check the integrity of the signal.

Fast Turnaround Events – 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



Desk Top Loudness Monitoring

PAM PiCo is a compact and comprehensively equipped Audio and Loudness meter featuring the revolutionary StarFish™ display. As a portable device the PAM PiCo is ideal for sound engineers on the move.

Loudness is the single biggest topic of viewer complaints, affecting everything from traditional broadcast through to OTT and podcasts.

PAM PiCo 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
- FTT spectrum analyser
- Loudness Logging Application



DID YOU KNOW?

The SAM-Q platform can simultaneously measure loudness from SDI, MADI, AES and Analogue sources.

X-1 Processor

Combined Upmix/Downmix Processor – Upmix Stereo sources to 5.1 surround to and back to Stereo, all in one box. The X-1 provides flexible, transparent interoperability between 5.1 and Stereo audio all in one unit, all under the control of your PC.

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.

- 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 75-ohm BNC)
- Dual eight channel outputs (AES 750-ohm BNC)
- Ethernet and USB Connectivity
- Wordclock I/O (75-ohm BNC)
- Stand Alone PC Control App (TSL Remote App)
- GPIO Port (9-pin D-Sub)



Product Table

Product Name	Display			Inputs							Outputs					Features				
	Video	Moving Coil Meter	Bargraph Meter	3G SDI	SMPTE 2110 / 2022-6	MADI	AES (Pair)	Analogue (Pair)	Dante / AES-67	Analogue Fixed / Variable	AES Fixed / Variables	Reclocked HD / SDI	HDMI	MADI	Dolby	Discrete Multi-Channel Audio	Audio Delay	Loudness	Web UI	Mixer
PAM Range																				
PAM1-IP-3G	Y		16	2	2 (Opt)		4	2	Opt	F&V	F&V	Y			Opt	Y	Y	Y	Y	
PAM2-IP-3G	Y		16	2	2 (Opt)		4	2	Opt	F&V	F&V	Y			Opt	Y	Y	Y	Y	
PAM1-MK2	Y		16	2			4	2		F&V	F&V	Y			Opt	Y	Y	Y		
PAM1-MK2-ND	Y		16	2			4	2		F&V	F&V	Y				Y	Y	Y		
PAM2-MK2	Y		16	2			8	6		F&V	F&V	Y			Opt	Y	Y	Y		
PAM2-MK2-ND	Y		16	2	2 (Opt)		8	6		F&V	F&V	Y				Y	Y	Y		
SAM-Q Platform																				
SAM-Q-SDI	Y		16	2		Opt														Opt
MPA1 Range																				
MPA1-Solo-SDI			16	2			1	1		F&V			Y							Y
MPA1-Mix-SDI			16	2			1	1		F&V			Y							Y
MPA1-Solo-MADI			2			Y		4		F&V				Y						Y
MPA1-Mix-MADI			16			Y		4		F&V				Y						Y
MPA1-Solo-DANTE			2			Y			Y	F&V				Y						Y
MPA1-Mix-DANTE			16			Y			Y	F&V				Y						Y
MPA1-Solo-8			2				8	8		F&V										Y
MPA1-Mix-8			16				8	8		F&V				Y						Y
SAM1 Range																				
SAM1-MADI			22	2		Y	4			F&V	F&V	Y		Y		Y				Y
SAM1-3GM			22	2			4			F&V	F&V	Y				Y				Y
T-Mix			22	2			8			F&V	F&V	Y				Y				Y
PAM PiCo																				
PAM PiCo One		Y	4	1			3					Loop								Y
PAM PiCo Two		Y	8	1			3					Loop				Y	Y			
PAM PiCo Five	Y	Y	16	1			3					Loop				Y	Y			

DID YOU KNOW?

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

Visit www.tsproducts.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:

www.tslproducts.com

TSL Sales: +44 (0)1628 564 610

E-mail: enquiries@tslproducts.com



UNITS 1 & 2, FIRST AVENUE, GLOBE PARK, MARLOW, SL7 1YA, UNITED KINGDOM