Audio Monitoring Solutions

PAM2-12G

The PAM2-12G range from TSL is a comprehensive Audio Monitoring Solution designed for use in UHD applications using 12G-SDI or SMPTE 2110 streams.

The PAM2-12G provides high quality audio monitoring for customers needing to handle a wide variety of signal types including AES and analog audio, UHD and HD-SDI, or AES67/Dante, SMPTE 2110 and SMPTE 2022-6 IP sources.

PAM2-12G is available in 2RU form-factor, with an intuitive front panel interface including two high resolution LCD screens showing 16 audio bargraphs with selectable scales, scroll to hear audio channel navigation, 8 user presets for fast configuration changes, and a high quality loudspeaker system.

In addition, the PAM2-12G range includes advanced monitoring features such as comprehensive loudness monitoring with histogram display, Dolby encoded audio monitoring (including

metadata and downmixing), and a video confidence display of both SDI and IP sources.

In addition to handling baseband video and audio signals, the PAM2-12G is equipped with 2 x 10Gig/E interfaces for direct connection into COTS IP fabrics. Supporting IP control protocols such as NMOS and Ember+ allows for 'In-Band' control, offering tight integration with a variety of control systems.

Audio over IP is also covered, with Primary and Redundant 1Gig/E Dante/AES67 ports, allowing up to 64 AoIP audio channels to be monitored.
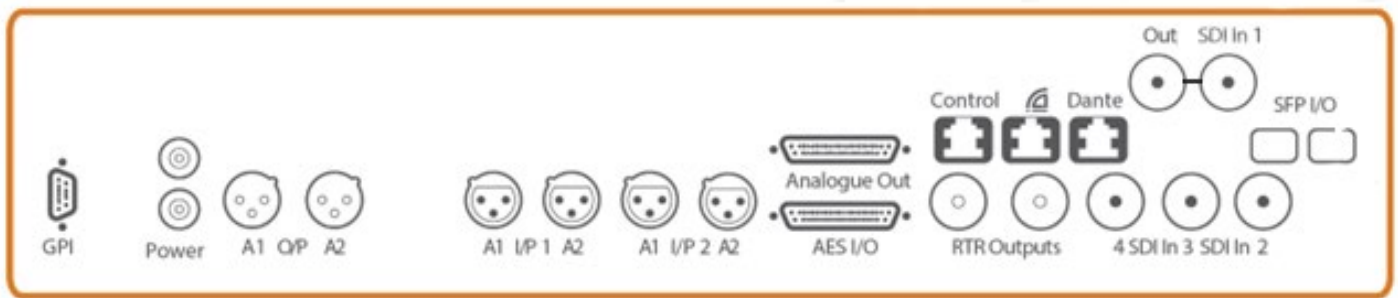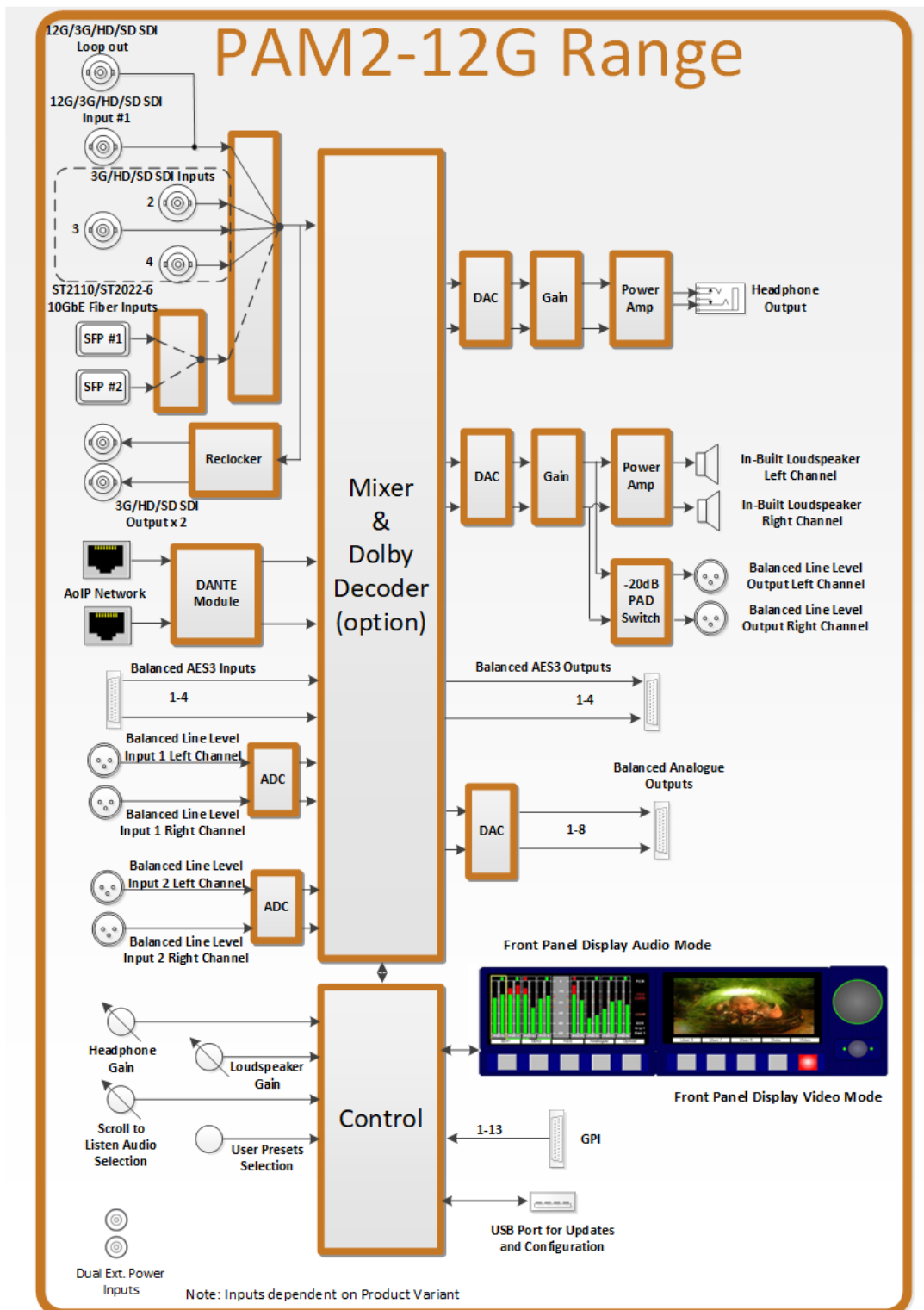
KEY FEATURES

(>) Wide range of input signals supported including; SD/HD/3G/12G-SDI with 16 channel audio de-embedding, balanced or unbalanced AES audio, balanced analog audio, and 10GbE ST 2110 and ST 2022-6 IP streams

(>) Dual High Resolution 3.4'' LCD displays allow side-by-side viewing of video, audio and metadata information

(>) ITU BS1770.71 Audio loudness measurement with Histogram display

(>) Optional Dolby E, D and D+ decoding and Metadata display

(>) Optional Monitoring of Dante/AES67 AoIP streams (Dante Domain Manager Compliant)

(>) High quality internal loudspeaker system, and headphone output with selectable loudspeaker muting behavior

(>) Downmixing of discreet multichannel sources, plus Multichannel audio outputs suitable for external 2.0 and 5.1 loudspeaker systems

(>) Remote monitoring of System Status and IP flow status from a built-in webpage

(>) In band or out of band IP control options, with support for NMOS and Ember+ in band, and TSL Audio RESTful API out of band

(>) User programmable Presets, and GPI control

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Audio. Control. Power.

REAR PANEL

BLOCK DIAGRAM

SPECIFICATIONS

HEIGHT	2RU	SDI INPUTS	1 x 12G/3G/HD/SD-SDI (SMPTE 2082, 424M, 292M, 259M) 3 x 3G/HD/SD-SDI (SMPTE 424M, 292M, 259M)
DIMENSIONS	483mm x 89mm x 335mm	SDI OUTPUTS	1 x 12G/3G/HD/SD-SDI loop-through (SMPTE 2082, 424M, 292M, 259M) 2 x 3G/HD/SD-SDI (SMPTE 424M, 292M, 259M)
POWER	100-240V ~ 50/60Hz, 2A Max	AoIP INPUTS	Dante, AES67
WEIGHT	5.62 kg	AES INPUTS	4 x AES3 or AES3id
DISPLAY	Audio Meters, Loudness, Dolby Metadata and Video	AES OUTPUTS	4 x AES3
AUDIO CHANNELS	16	ANALOGUE INPUTS	2 x >20k Ohms
UPGRADES	VIA USB	ANALOGUE OUTPUTS	8 x Balanced, Fixed or Variable Level
IP SFP CAGES	Non-MSA Embrionix modules	SIGNAL TO NOISE RATIO	-80dB
IP CONTROL	In Band NMOS, Ember+, Embrionix RESTful API	PEAK ACOUSTIC OUTPUT	>98dB @ 0.6m
UNIT CONTROL	RESTful API	FREQUENCY RESPONSE	70Hz to 20kHz

WEB PAGE CONTROL AND MONITORING

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

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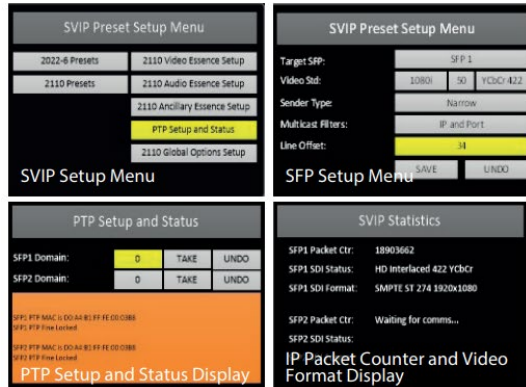Wide, Narrow and Narrow Linear senders can all be monitored by the PAM-IP.

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 multicast addresses of all currently subscribed sources.
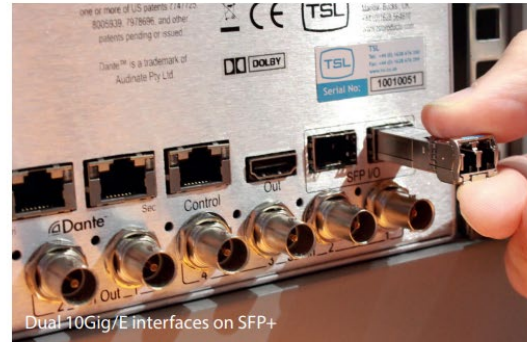
IP Monitoring Tools

Alongside the ability to present Audio Levels, Dolby Metadata, Loudness Histograms and Video directly on the front panel, the PAM-IP-3G also includes diagnostic information to help troubleshoot issues when working with SMPTE 2022-6 and SMPTE 2110 uncompressed sources.

External Control

Support for control protocols such as Ember+ and NMOS allow for 'In-Band' control of the PAM-IP, offering tight integration with a variety control systems. 'Out of Band' control integration is also possible using TSL's RESTful API.

SVIP Setup Menu

SFP Setup Menu

PTP Setup and Status Display

IP Packet Counter and Video Format Display

Dual 10Gig/E interfaces on SFP+

PAM2-12G VERSIONS

GENERAL DESCRIPTION

2RU Precision Audio Monitor. 2 x Front Panel LCD Displays, providing 16 Channel Audio Monitoring with simultaneous Video Confidence Monitoring. 1 x 12G/3G/HD/SD-SDI Input, 3 x 3G/HD/SD-SDI Inputs, 4 x AES Inputs, 2 x Stereo Analogue Inputs, 1 x 12G-SDI loop-through output, 2 x External SDI Monitoring Outputs, 4 x AES Outputs, EBU-R128 Loudness Monitoring with Histogram Display, Audio and Video Metadata Monitoring, 5.1 Monitoring Output, Remote Control and Configuration via Web-Browser Support for PAM and 3rd Party Control Protocols, 1 x External P.S.U. (optional redundant power supply also available). Options available for DOLBY, DANTE, ST-2110 and ST-2022-6 Monitoring.

Version	Order Code	Description	Why Choose This Monitor
PAM2-12G	PAM2-12G-ND	PAM2-12G 2RU Precision Audio Monitor.	High quality, fully comprehensive Audio Monitoring Solution designed for use in hybrid baseband and IP environments enabling audio to be monitored from either IP, SDI or direct audio signals.
PAM2-12G + Dolby	PAM2-12G	PAM2-12G 2RU Precision Audio Monitor. Includes DOLBY E, DOLBY D and DOLBY DD+ decoding and Monitoring	High quality, fully comprehensive Audio Monitoring Solution ideal for monitoring both compressed and uncompressed audio sources
PAM2-12G + Dante	PAM2-12G-ND-DNT	PAM2-12G 2RU Precision Audio Monitor. Includes DANTE/AES67 Audio Monitoring option, Dante Domain Manger Compliant.	High quality, fully comprehensive Audio Monitoring Solution useful when needing to handle a wide variety of uncompressed audio sources including Dante
PAM2-12G + Dante & Dolby	PAM2-12G-DNT	PAM2-12G 2RU Precision Audio Monitor. Includes DOLBY E, DOLBY D and DOLBY DD+ decoding and Monitoring, and DANTE/AES67 Audio Monitoring option, Dante Domain Manger Compliant	High quality, fully comprehensive Audio Monitoring Solution designed for use in hybrid baseband and IP environments needing to handle both compressed and uncompressed audio sources from either IP, SDI or direct audio signals.
Spare PSU	PSU-PAMIP-11A	Redundant power supply for use with PAM1-IP-3G, PAM2-IP-3G and PAM2-12G Precision Audio Monitoring Units.	Cost effective monitoring solution using single SDI sources with embedded audio for live monitoring applications.
ST2022-6 option	PAM-IP-HBR6-10G-OPTION	Single ST-2022-6 10GbE multi-mode fiber SFP Module for use with PAM1-IP-3G and PAM2-IP-3G (Field upgradeable, with a maximum installation of 2 SFP modules).	Enables audio monitoring in IP environments.
ST2110 option	PAM-IP-2110-10G-NMOS PAM-IP-2110-10G-EMBER+	Single ST-2110-6 10GbE multi-mode fiber SFP Module for use with PAM1-IP-3G and PAM2-IP-3G, including NMOS or Ember + management support options (Field upgradeable, with a maximum installation of 2 SFP modules).	Enables audio monitoring in IP environments.