



LAMBDA™

Professional Digital Audio and Metadata Monitor

Baseband and HD-SDI Audio and Metadata Monitor with ITU Loudness Measurement; Supports Dolby® Digital (AC-3), Dolby® E, and Linear Acoustic e² (e-squared®) Decoding

Audio Monitors Are Not Created Equally.

Broadcast audio has been taken a quantum leap forward in quality and complexity, and it is no longer sufficient to simply display metering information and play audio out of speakers.

Modern digital broadcast audio has grown beyond stereo and also supports 5.1 or more channels of surround sound. Audio is now accompanied by metadata, or data that describes the audio data which is used to configure downstream coding equipment and is passed along to consumers to automatically optimize their playback systems. This can work well assuming the audio and metadata are correct.

This means that in order to properly monitor audio inside a plant, an audio monitor must carefully take into account metadata and appropriately adjust metering and playback audio levels. If this is not done, operators will be unable to determine if the audio they are viewing and hearing is truly correct and could result in bad sounding decisions.

Enter the Experts

Introducing the Linear Acoustic Monitor for Broadcast Digital Audio, LAMBDA. This unit combines a unique understanding of audio and metadata through the entire broadcast chain from production to consumer.

LAMBDA can display and reproduce up to sixteen audio channels via AES or embedded HD-SDI input, and accepts industry standard professional audio metadata via 9-pin serial input or by extracting it from the vertical ancillary (VANC) space of an applied HD-SDI input. Audio and metadata can be displayed and properly combined to allow for

accurate monitoring. Any channel, channel pair, or LtRt or LoRo downmix can be monitored through the powerful two-way digitally amplified speaker system, via the exceptionally dynamic front panel headphone connector, or from the rear panel balanced analog stereo or AES digital output.

Optional Dolby Digital (AC-3) and Dolby E decoding and standard Linear Acoustic e-squared decoding can be applied to any of the discrete AES or embedded audio channels. Decoded discrete PCM audio is provided via the rear panel, and decoded metadata is displayed and can be applied to the audio and metering signals. Dolby E guard band position with respect to applied HD-SDI reference can be measured and displayed.

Loudness metering per the new ITU BS.1770 (RLB) standard is also available to give operators a built-in method for quickly verifying program loudness.

A long-life and durable vacuum fluorescent display, plus two intuitive navigation clusters for menu and monitoring functions provide straightforward system navigation and audio adjustment.

All metering information is available via ETHERNET for remote monitoring and so-called "glass cockpit" applications (protocol on request). The unit supports a second optional power supply for redundancy.

Options

Future options will include a built-in tracking delay applied to the input HD-SDI video signal prior to output to compensate for Dolby E and Dolby Digital delay of up to six video frames.

LAMBDA Specifications:

Input Channels

Sixteen audio inputs via eight BNC connectors or optional HD-SDI (SMPTE 292M/299M) input; PCM audio and Linear Acoustic e-squared (e^2) supported by default, optional decoding of audio formats such as Dolby E/Dolby Digital (AC-3) and others.

Dolby Digital (AC-3) and Dolby E decoding (Available Option)

Decodes AC-3 and Dolby E signals, displays meters for all encoded channels, any pair of channels or LtRt or LoRo outputs for monitoring.

Digital Audio Inputs and Outputs

1/2, 3/4, 5/6, 7/8, 9/10, 11/12, 13/14, 15/16 AES inputs, with passive loop-through; 1/2, 3/4, 5/6, 7/8, 9/10 AES Out for e-squared and Option -01 decoding; AES Monitor output (LtRt or LoRo). All digital I/O via unbalanced female BNC connectors with signal levels per SMPTE 276/AES-3ID-2001.

Audio Sample Rate

48kHz

Frequency Response (Electrical Outputs)

20Hz – 20 kHz +/- 0.25 dB

Speaker Outputs

98 dB SPL @ 1 meter, 160Hz - 20 kHz, 85 dB SPL @ 120 Hz

Headphone and Monitor Outputs

Headphone via 6.3mm front panel connector, +12 dBu max into 600-Ohms, mutes speakers upon insertion; Analog Monitor out via electronically balanced 3-pin male XLR, output impedance 25-Ohms, 24-bit DAC, 0 dBFS=+4dBu.

Latency

PCM Audio: <1 msec; Dolby Digital (AC-3): 33 msec; Dolby E (NTSC): 33 msec, Dolby E (PAL): 40 msec; optional tracking video delay compensates HD-SDI signal for these and additional delays..

Metadata Input

9-pin female D connector, 115 kbps, pinout per SMPTE 207M (RS-485); Designed to directly interface with Dolby Metadata; alternately metadata can be extracted from VANC space of applied HD-SDI signals.

Ethernet

10/100-BASE-T for available remote application with metering data and selectable audio (channel pairs or downmix) provided to soundcard of host PC. Remote protocol details provided upon request.

Front Panel Controls and Indicators

Long-life, durable, reconfigurable vacuum fluorescent display provides visual indication of audio levels, metadata, and setup parameters. Two independent navigation clusters each with rotary encoder and four switches provide intuitive control of menus, monitor modes, volume, dim, and mute.

Power Requirements

High-reliability medical grade power supply rated at 90-264 VAC, auto-sensing, 65 W maximum, optional second supply for redundancy.

Dimensions and Weight

3.50"H (2RU) x 19"W x 15"D; (89 x 483 x 381 mm).
Net weight 20 lbs (9 kg), approximate.

Environmental

Convection cooled. Operating: 0 to 50 degrees C, non-operating -20 to 70 degrees C. RoHS compliant design.

Regulatory

North America: Designed to comply with the limits for a class A digital device pursuant to Part 15 of the FCC rules (CFR). Designed for U.S. and Canadian listing with UL.
Europe: Designed to comply with the requirements of Low Voltage Directive 73/23/EEC and EMC Directive 89/336/EEC.

Warranty

Two-years limited parts and labor

Available Factory Installed Options

Option -01 - Dolby Digital (AC-3)/Dolby E decoding
Option -02 - Redundant power supply
Option -03 - TCP/IP Remote (Q2 '08)
Option -04 - ITU Loudness Measurement

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