



Multi-Input AC-3 Frame Synchronizer and Rate Shaper Model LA-5448

Maintaining consistent, error-free AC-3 bitstreams is critical for high quality audio transmission. Bitstreams delivered from sources outside of the local plant must be synchronized to local reference, must be free of errors and must be of a consistent data rate to prevent multiplexer issues. Decoding and re-encoding AC-3 is expensive and degrades audio quality, and is therefore no longer an option.

The Linear Acoustic Model LA-5448 Frame Synchronizer and Rate Shaper satisfies these requirements and more, all without re-coding.

Frame synchronization locks incoming AC-3 streams to a local 48 kHz AES reference. This reference can be either PCM or AC-3. With a 48 kHz AC-3 reference, all outputs are both frequency and phase synchronized. This reference input can be optionally used as a fourth processing channel, assuming that its input is already locked to a local reference. The LA-5448 operates in a similar fashion to a video frame synchronizer, skipping or repeating a frame of audio to maintain synchronization.

Silent Frame mode keeps the output of the synchronizer error free. Based on CRC values present in every AC-3 stream, error detection and concealment is accomplished by repeating the last good frame. If the error condition persists longer than one frame, silent AC-3 frames are inserted, maintaining the data rate and channel mode of the incoming AC-3 stream.

Rate Shaping mode keeps the output of the synchronizer fixed at a single, consistent data rate regardless of the input data rate. This is accomplished by transforming the input AC-3 frames of any rate equal to or lower than 448 kbps to a fixed 448 kbps.

While Rate Shaping is enabled, Silent Frame mode is also automatically enabled, thereby producing a consistent output data rate that is devoid of errors. These functions combine to provide an easy method for handling unpredictable AC-3 streams.

One application involves satellite, cable, and telco video providers that must pass on many channels of programming that will likely include pre-compressed AC-3 audio streams. It is impossible to know what might be created upstream, but is imperative that these streams be of consistent quality and data rate. The efficient LA-5448 can bring all of these streams back to a common local plant reference and data rate, enabling straightforward multiplexing and transmission of surround sound programs with no need to sacrifice audio quality by decoding and re-encoding.

Another application allows switching between AC-3 sources of different data rates prior to the LA-5448 using a standard AES routing switcher, and results in a single, error-free output at a fixed data rate. This is useful and cost-effective method for commercial insertions where incoming data rates may not always be known, and where the AC-3 switch must not produce audible or measurable errors.

The LA-5448 is capable of processing up to four separate AC-3 streams while requiring only one rack unit of space. Dual, redundant medical-grade power supplies ensure fault-free performance. Hard relay bypass of each input to its corresponding output is provided in case of failure.

A bright LED display, rotary encoder, and four control keys provide for straightforward menu navigation and function adjustment on the processing unit.

LA-5448 Specifications:

AC-3 Inputs

Main In (PGM 1-PGM 4): BNC Female, 75Ω, unbalanced, internally terminated. Signal levels per SMPTE 276/AES-3ID-2001. Hard relay bypassed to outputs in case of failure.

Reference Input (PGM 4)

AC-3 or PCM, can be used as the fourth processed channel. BNC Female, 75Ω, unbalanced, internally terminated. Signal levels per SMPTE 276/AES-3ID-2001

Synchronized/Rate Shaped AC-3 Outputs

Main Outputs (PGM 1-PGM 4): BNC Female, 75Ω, unbalanced. Signal levels per SMPTE 276/AES-3ID-2001. Hard relay bypassed from inputs in case of failure.

Sample Rate

48 kHz

Unit Boot Time

<5 seconds

Processing

- Frame Synchronization
- Silent Frame mode keeps AC-3 output continuous regardless of input
- Rate Shaping function produces 448 kbps output from any AC-3 signal (<448 kbps) applied to input.

Processing Delay

1.5 AC-3 frames, +/- 0.5 frame (48 msec +/- 16 msec)

Front Panel Controls and Indicators

Rotary encoder and control keys plus bright dot matrix LED display

Power Requirements

90-264 VAC, auto-sensing, 35 W maximum

Dimensions and Weight

One rack unit- 1.75"H x 19"W x 24"D (44 x 483 x 610 mm)

Net weight: 6 lbs (12.6 kg), approximate.

Shipping weight: 8 lbs (15.75 kg), approximate.

Environmental

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

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. RoHS and WEEE compliant product.

Warranty

Two-years limited parts and labor

