IZ Appendix
RADAR 24
AESLINK

Memo Date: November 14, 2000

AESLINK CARD

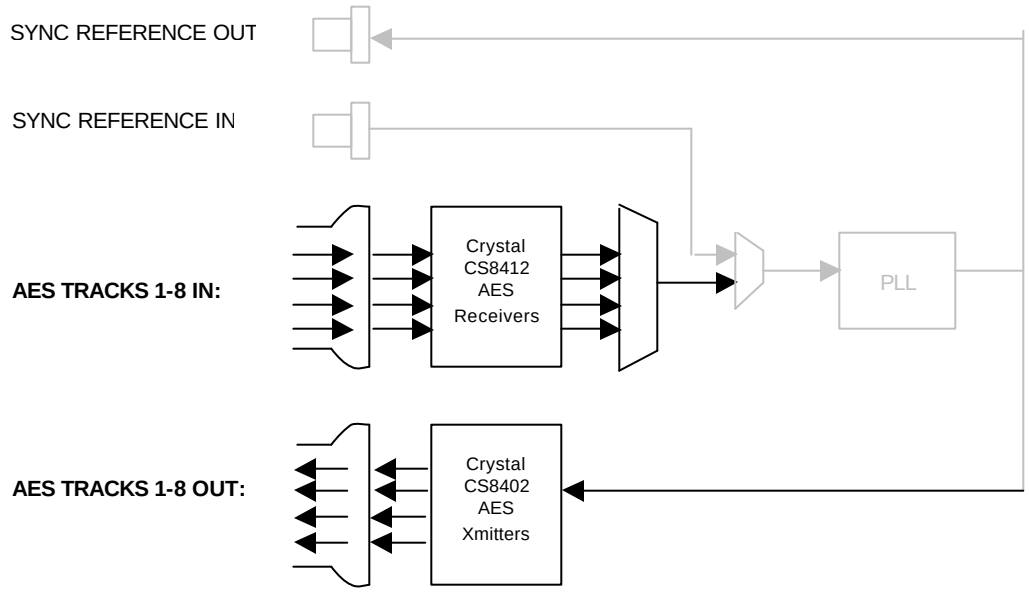
Description

AESLINK is an interface card for RADAR 24 that provides 24 tracks of 24-bit digital audio input and output. The digital audio is divided into three input and three output DB25 connectors of 8 tracks each, and conforms to the AES connector standard found on the Sony PCM-800 digital recorder and the Otari UFC-24.

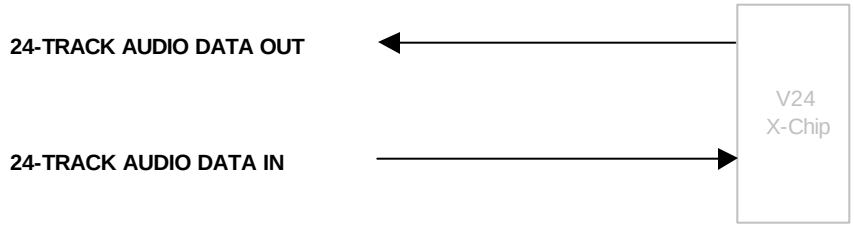
Block Diagram

Only tracks 1-8 of the 24 track AESLINK card are shown in the clock diagram below. Tracks 9-16 and 17-24 are identical in operation. Functional blocks located on the AESLINK card are darkened in the diagram.

Clock Diagram



Digital Audio Diagram



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USING THE AESLINK DIGITAL INTERFACE CARD

AES Output – No Problem

With RADAR 24 as a master, transferring digital audio from RADAR 24 to an external box is quite straight forward. When playing, RADAR 24 is always outputting AES digital audio and the Sync Ref outputs.

Just plug in the required cables and perform the transfer.

AES Input - Simpler than TDIF

Syncing

Who is the clock master? It will either be the RADAR 24 or an external box.

Framing

How does the input AES circuit frame the input audio data? Unlike the TDIFLINK's framing, AESLINK framing is transparent to the user. The Crystal CS8412 AES chips automatically find the start of each input audio sample.

Configuring RADAR 24 for an AES Transfer

Step 1 – Let the RADAR 24 know the syncing details.

This step if required only if the user intends to sync the RADAR directly to one of the AES input channel pairs:

1. Press DIGITAL I/O.
2. Select DIG I/O ROUTING: AES 24-CHANNEL.
3. Select the desired AES channel pair from which the RADAR 24's MCLK will be sourced.

Step 2 – Sync up the RADAR 24.

1. Press SYNC.
2. Select SYNC SOURCE: AES 24-CHANNEL.
3. Select CLOCK REF: DIG or WD:48 (when RADAR is slave) or CLOCK REF: INT (when RADAR is master).
4. Select TC REF: EXT (chase to TC) or TC REF: INT.

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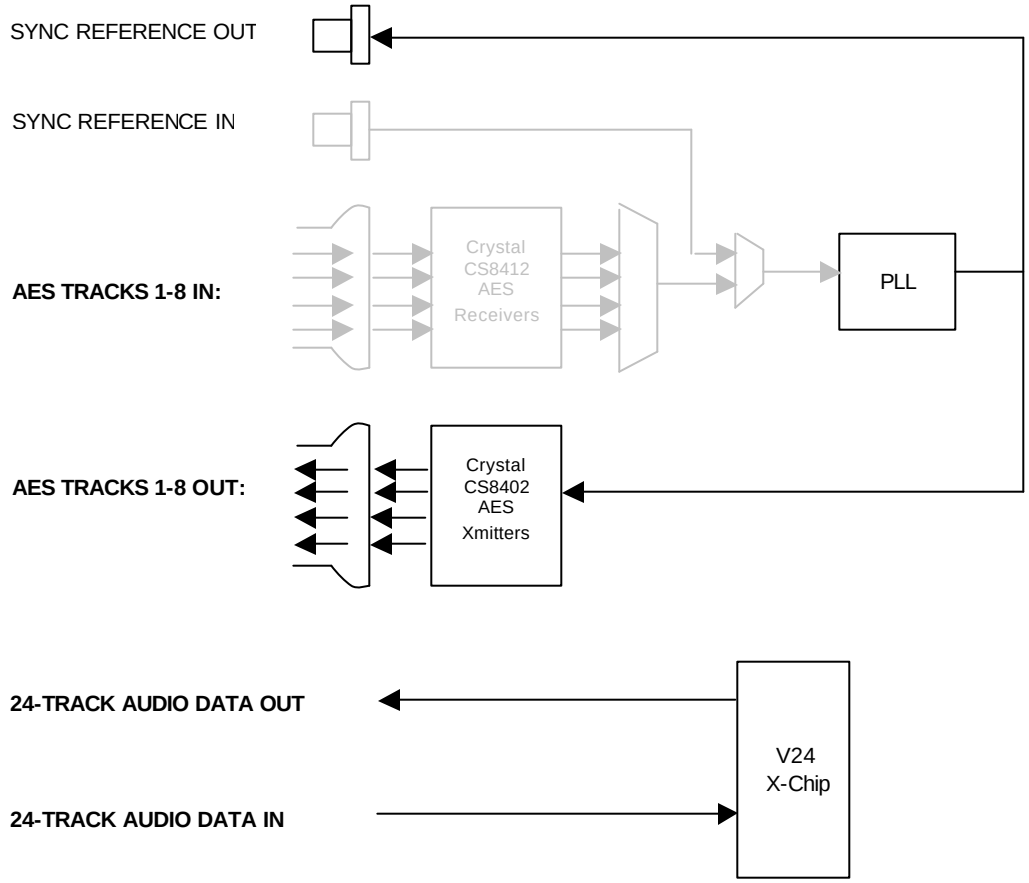
Example 1



Who is the clock master?

RADAR 24. It generates a clock from its internal sync reference, or may be locked to externally generated SMPTE, MIDI, etc.

When do I use this configuration?

This is a typical configuration when a simple AES digital audio transfer is required between the RADAR 24 and a single external box. The external box locks to RADAR 24, via RADAR 24's AES output or sync reference output, so the AES running into RADAR 24 will be in sync with RADAR 24's PLL.

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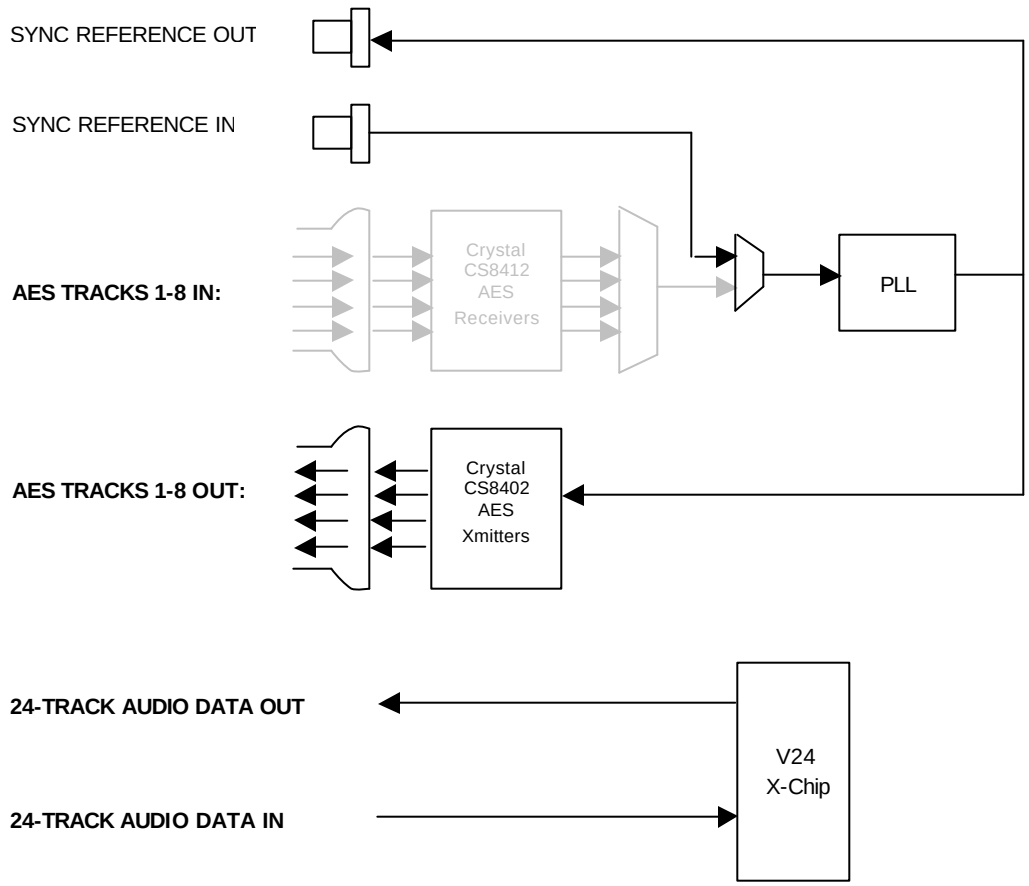
Example 2



Who is the clock master?

An external box, which may be a clean house clock source. The RADAR 24 generates a clock from the external sync reference input.

When do I use this configuration?

This is a reliable configuration when several digital boxes are used in a studio. All boxes are synced to a single, clean house clock. In this case, jitter in one PLL does not propagate to the next PLL in the daisy-chain of boxes.

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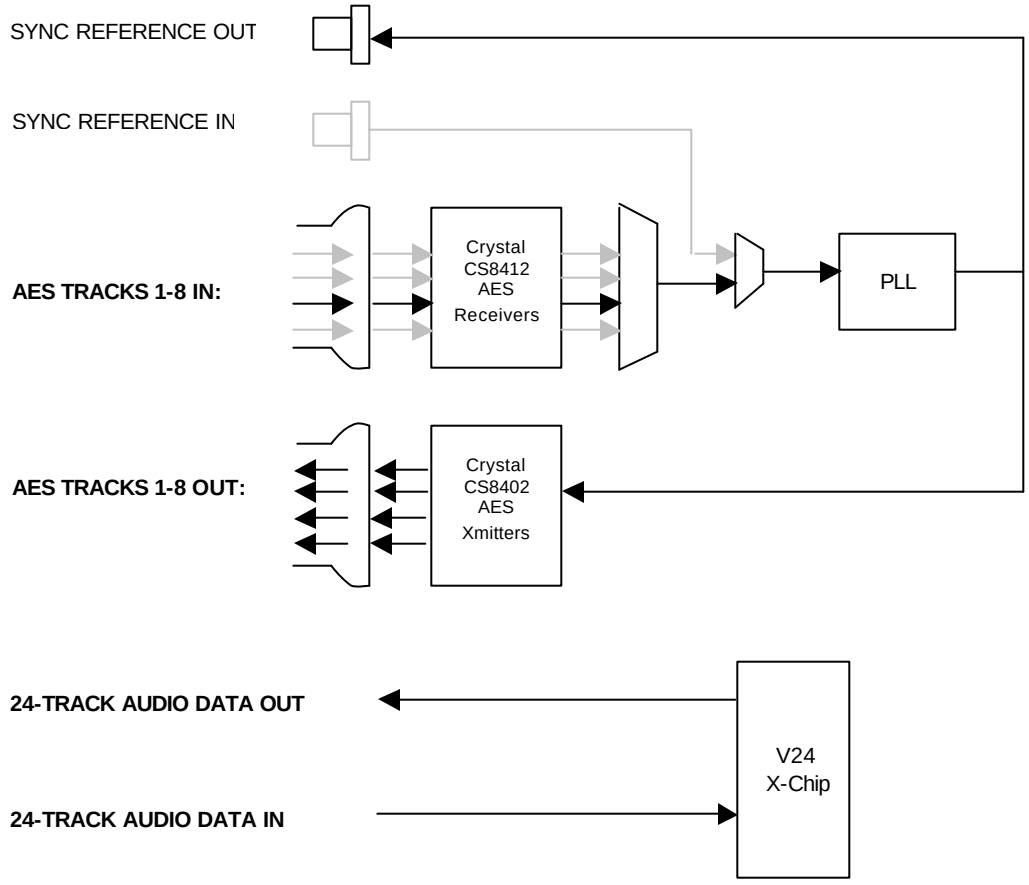
Example 3



Who is the clock master?

An external AES box. The RADAR 24 generates a clock from the selected input AES channel pair. In this case, the clock is sourced from tracks 5/6.

When do I use this configuration?

This is a typical configuration when a simple AES digital audio transfer is required between the RADAR 24 and an external box, and the RADAR is a slave. The RADAR 24 locks to the external box via the MCLK derived from the selected AES channel pair. Note that Example 2 does a better job of minimizing noise problems, in most cases.

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AESLINK Diagnostics Menu

Several parameters of the AESLINK digital audio interface can be by the AESLINK user. They are found in the “Diagnostics Menu” under “AES I/O Menu”.

Sample Rate In and Emphasis In

Each AESLINK channel pair contains input sample rate indicator and emphasis indicator bits. These bits do not necessarily reflect the actual sample rate or emphasis of the input audio data. Some boxes ignore these signals, while others do not. RADAR 24 simple provides the user with this information in the Diagnostics Menu.

The four possible sample rates are 48 KHz, 44.1 KHz, 32 KHz, are no connect. “No connect” is indicated when the cable is not plugged in.

The four possible emphasis values are none, 50/15 uS, J.17, and other.

Sample Rate Out and Emphasis Out

Each AESLINK channel pair contains sample rate and emphasis indicator signals. The output sample rate is set automatically by RADAR 24 and matches the sample rate of the box. The four possible sample rates are 48 KHz, 44.1 KHz, 32 KHz, and not indicated.

The value of the emphasis out is set by the user in the Diagnostics Menu.

Note that all output tracks always output the same sample rate and emphasis indicator values.

Card Type

In the AES Diagnostics Menu, the user is informed of the number of AES tracks on the installed AESLINK card. Currently, there is only a 24-track version of the card.