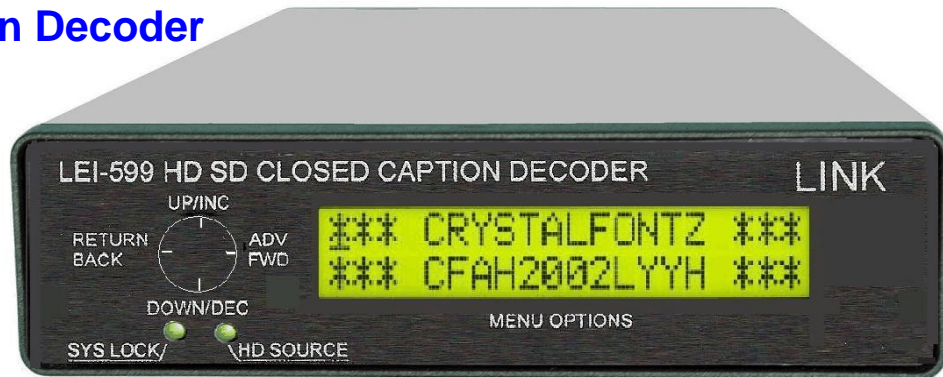




HD SD Caption Decoder MODEL LEI-599

MULTI FORMAT



The LEI-599 will accept HD SD SDI transport streams with embedded closed captions and other ancillary data and decode and re-insert those captions in the outgoing HD/SD-SDI stream so that the captions now appear during active video. Captions which appear in active video are called "Open" captions. CEA-608-B based streams will decode CC1, CC2, CC3, CC4 and text service T1. Text service T2, which is used by MSN-TV to transmit the internet links for their service, will not be decoded.

Channel CC3 is now used to transmit the eXtended Data Service (XDS) packets which is decoded to the front panel LCD display.

The LEI-599 will also display open captions for CEA-708-B based (DTVCC) service 1 and service 2 data streams. Finally, the eight variants of the Active Format Description (AFD) codes as described in SMPTE 344M and SMPTE 2016-1 will be detected and displayed on the LCD.

Once the closed captions are decoded, they are active in the HD SD SDI output video signal as displayed on the video monitor.

Every effort is made to keep the latency between the open and closed captions to a minimum. The XDS and AFD decodes can be viewed on the front panel 40 character (2-line) LCD display. A front panel navigation switch is used to scroll through and select which of the XDS data fields are to be displayed. The navigation switch will also access the LEI-599 setup menus.

The setup menu allows, among other things, the user to choose to retain or delete the incoming closed caption data in the output stream, turn on/off the open captions, and select to bypass the LEI-599 entirely. For the LEI-599, the XDS fields chosen to be viewed on the LCD display are as follows:

- Network name
 - Call letters
- Program name
 - Program length/Time in show
 - Program description, Fields 1 & 2
 - Parental rating systems (VCHIP) (XDS packet)
 - Transmission Signal Identifier (TSID) (XDS packet)
 - Copy Generation Management System (CGMS) (XDS packet)
- Active Format Description (AFD) (DID 0x41, SDID 0x05) (SMPTE 2016-1)

The user can modify the following attributes for the locally generated open captions. These modifications do not affect any attribute of the closed captions passed through the LEI-599.

- Adjustable opacity (transparency) of the caption area background
- Select one of eight font colors
- Select between four fonts families
- Override or fix Caption position directives

HD SD Caption Decoder

The signal processing starts with the input SDI data being equalized and deserialize to 10-bit (SD)/20-bit (HD) parallel data streams. Any closed caption data in the video data stream is used to select appropriate characters from a custom on-board character ROM. The characters are then digitally mixed into the visible areas of the video, just as they might appear on a typical caption enabled receiver.

The new data stream, with the visible captions, are then re-serialized and re-clocked and output as serial data in the exact same format of the input transport stream. There are no scaling or format conversions necessary in this project. Essentially, as applied to standards and formats, all outputs follow the input format and standards.

In the case of power failure, or upon command from the user, the input data stream is switched, unaltered, to a dedicated output. This provides an uninterrupted data path in critical path applications.

Specifications

Signal Input:

- Number of Inputs: 1
- Connector: BNC per IEC 61169-8 Annex A
- Impedance: 75 ohms - terminating
- Standard Format: 480i, 576i, 720p, 1080i, 1080p (including 3G)
- Quantization: 10-bits
- Specified Requirements: Supports CEA-608 & CEA-708 Closed-caption standards

Outputs:

- HD/SD SDI Output with open captions: 1
 - Output Standard: Follows Input
 - Quantization: 10-bits (SD) and 20-bits (HD)
 - Connectors: BNC per IEC 61169-8 Annex A
 - Impedance: 75 ohms
 - Signal Level: 800mV p-p nominal
 - DC Offset: 0V
 - Rise/Fall Time: 200ps nominal
 - Overshoot: < 10% of amplitude
 - Return Loss: > 15dB up to 1.5Gb/s
 - Wideband Jitter: < 0.2UI
- General Purpose Interface (GPI) Input:
- Number of Inputs: 1
 - Ethernet: 1
 - The HD SD SDI Caption Decoder is controlled via the NIC connector on the rear chassis

Form-Factor: 1RU, 1/3 rack wide, Chassis

Power/ Environment:

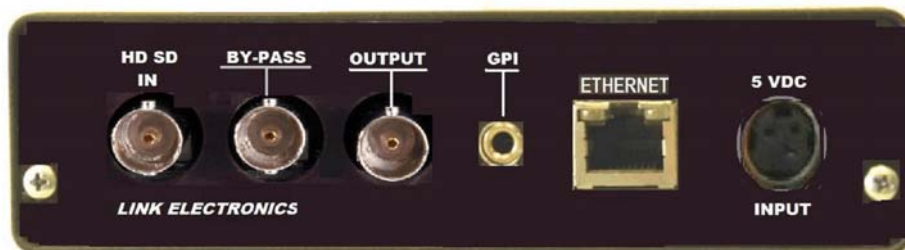
- +5V: from external 5VDC Power Supply
- Ambient: 0° C to 40° C
- Relative Humidity: <95% non-condensing

Model LEI-599

The LEI-599 has one optically isolated GPI input for turning open captions on/off. A network interface (NIC) allows remote control and status monitoring over Ethernet* using a virtual communications port (VCP) interface.

*The VCP was chosen because it emulates a serial port, and commands can be sent or received like any other serial port. The LEI-599 will be housed in a 1RU height, 1/3 rack wide enclosure and is powered from an external 5VDC power supply.

The serial command structure is simple and straightforward. The local control scheme is via a front panel navigation switch, menu structure, and a LCD display.



External Power Supply

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