

## DLC150E

### DL4000 VIDEO TRANSPORT SYSTEM

### SDI/SDTI 4 Channel Analog/Digital AES Audio Embed and Optical Transmitter

#### Features

##### Single card audio embedder and video transport

##### Embed into SDI or SDTI

- One-to-four analog audio channels
- One or two AES-3 audio pairs
- Asynchronous or synchronous digital audio
- Standby video signal continues to deliver audio on loss of video input

##### Optical transport (with or without embedded audio)

- SD-SDI (SMPTE 259M-C, ITU 656)
- SDTI (SMPTE 305M)
- DVB-ASI
- Artel 270
- Analog Audio (4)
- AES-3 (2 stereo pairs)
- Full reclocking removes jitter from SDI

##### Externally accessible SFP transceiver optics

- Optical budget to 34dB
- WDM (1310nm, 1550nm)
- CWDM ITU G.694.2 (Channels 27-61)

##### Inputs

- Video (with or without embedded audio)
  - 75ohm BNC
  - Other modules on DL4000 chassis (via backplane)
- Audio
  - Analog audio via 600ohm or high-Z balanced
  - AES-3 110ohm balanced
  - AES-3 75ohm unbalanced (DLC150E/D)

##### Outputs

- Optical via SFP
- Other modules in DL4000 chassis (via backplane)

##### Multiple monitoring options

- Front panel monitor (mini 75ohm SMB) selectable between:
  - Input video (pre-embed)
  - Output video (post-embed)
- Front and rear panel status LEDs

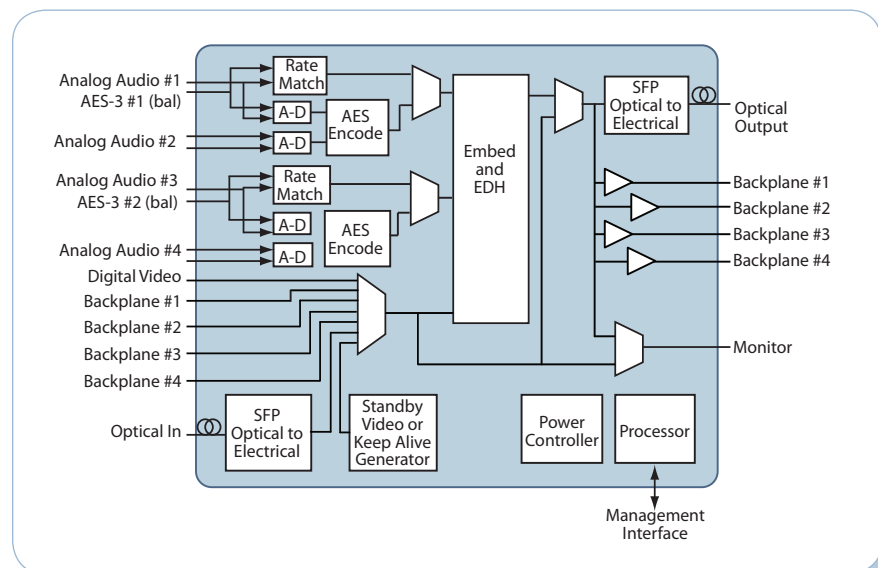
##### Remote management via DL-Manager

- No external software required
- HTTP or SNMP v2
- Monitor
- Configure
- Upgrade firmware



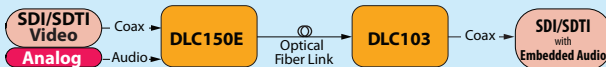
The DLC150E is a flexible audio embedder and video transport card designed for use in the DL4000 digital video transport system. The DLC150E will embed analog or AES audio into SDI and SDTI as well as transport all standard 270Mb/s digital formats.

The DLC150 functions as both an audio embedder for four channel analog or two stereo pair AES-3 audio, and as a 270Mb/s video over fiber optics transport module. The DLC150 uses industry standard 1310nm, 1550nm, and CWDM Small Form-Factor Pluggable (SFP) optics. Provisioning and monitoring is accomplished using switches, LEDs, front monitor jack, SNMP or HTTP via DL-Monitor.

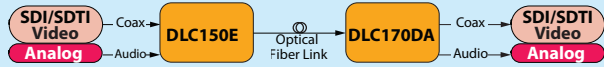


## DLC150E Applications

### 4 Channel Audio Embed into SDI or SDTI with Optical Transport



### 4 Channel Audio Embed into SDI or SDTI with Optical Transport and Audio De-Embed



## Specifications

### Environmental

Operating temperature of DL4000/4300 chassis	0 to 50° C
Ambient storage temperature	-40 to 80°C
Relative humidity	10 to 95% (non-condensing)
Power dissipation	10 watts

### Physical

Dimensions	0.8" x 5" x 10.8"
	1 slot in DL4000 platform

### Optical Interface

**Artel Video SFP** See SFP specification sheet

### Analog Audio Features

- SMPTTE 272M embedding of 2 analog stereo pairs (one to four analog signals) in SD-SDI (SMPTTE 259M) or SDTI (SMPTTE 305M)
- 24-bit sampling @ 48kHz
  - 600ohm balanced and high-impedance balanced input (3-position terminal block)
  - 0 dBFS (full scale) adjustable from +16dBm to +28dBm in 2dB steps (600ohm)
  - Selectable target group (0, 1, 2, 3)
  - Option to not embed if audio present in the target group
  - Option to disable embedding for transport-only applications

### Analog Audio Specifications

Quantizing	24-bit
Sampling rate	48 kHz
Number of channels	4 analog audio balanced
Connector	3-position terminal block plugs
Input impedance	600ohm or >100Kohm, Switchable
Input return loss	>30 dB (600ohm)
Input common mode rejection	>60 dB 20Hz - 20kHz
Input common mode range	+/-10 V (20Vp-p)
Maximum input level (clipping)	0 dBFS = +10 to +24dBm (600ohm) Adjustable in 2 dB steps
Amplitude frequency response	+/- 0.1 dB (20Hz to 20kHz)
Distortion (THD+N)	<0.05% (20Hz - 20kHz @+18 dBm)
Intermodulation distortion	<0.05% (SMPTTE RP12, 60/7k, 4:1)
Audio signal-to-weighted-noise ratio	> 90 dBA (referred to +18 dBm)
Audio channel crosstalk	<-70 dB (20Hz - 20 kHz)
Video crosstalk	-85 dB
Insertion gain	0.0 dB +/- 0.2dB
Interchannel phase delay	<1° (20Hz-20kHz)
Audio-video delay	<10 ms

Specifications are subject to change without notice.

### AES-3 Audio Features

- SMPTTE 272M embedding of 2 digital audio streams (two stereo pairs) in SD-SDI (SMPTTE 259M) or SDTI (SMPTTE 305M)
- Interfaces A, B, C, D, E, F, and G
  - AES-3 audio stream support for 110ohm balanced (3-position terminal block)
  - AES-3 audio stream support for 75ohm unbalanced (BNC) [Note: separate order number for unbalanced input]
  - Synchronous (48kHz) and asynchronous (32.0kHz, 44.1kHz, 48kHz) streams supported
  - Selectable target group (0, 1, 2, 3)
  - Option to not embed if audio present in the target group
  - Option to disable embedding for transport-only applications

### Digital Video Features

- Transport of all 270Mb/s digital video
- SD-SDI (SMPTTE 259M)
  - SDTI (SMPTTE 305M)
  - DVB-ASI (no audio embedding)
  - Artel 270 (no audio embedding)
  - Automatic detection
- Jitter cleanup of SD-SDI and SDTI
- 75ohm BNC input
- >15dB return loss
  - Cable equalization up to 300m (Belden 8281 or equivalent)
- EDH checking and generation for SD-SDI and SDTI
- Standby video generator
- Selectable SD-SDI signal allows audio to be delivered when input video is lost
  - Selectable non-video keep alive maintains link operation while allowing downstream equipment to detect loss of signal when input video is lost
- DLC150E can be cascaded via backplane inputs and outputs for multi-group embedding

### Regulatory Conformance

Compliance: NEBS Level 3, CSA 60950, EN60950, EN55022 FCC Part 15 (Class A), CISPR 22

### Ordering Information

#### DLC150E Function Module

Model	Description	Part #
DLC150E	SDI Audio Embedder and Optical Transmitter	390-008050-00

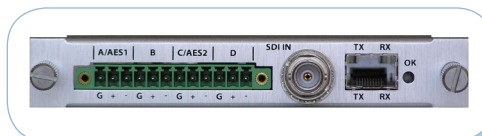
**SFP Optics** See optics compatibility chart

#### Monitor Cable

Model	Description	Part #
DL100MC-72	Monitor cable, 75ohm mini-SMB TO BNC, 72"L	396-001001-00



Front panel monitoring and status displays



Rear panel includes electrical video input, analog or AES audio inputs and SFP transceiver cage



SFP optics (Small Form-Factor Pluggable)