

## DLC270

### Composite Video (NTSC/PAL) and Analog Audio to SDI Conversion with Multi-rate Digital Video Optical Transmitter

#### DL4000 VIDEO TRANSPORT SYSTEM



### Features

#### Composite Video and Analog Audio to SDI conversion with optical transmitter for all digital services (electrical to optical)

##### Convert composite (NTSC/PAL) to SDI (SMPTE 259M)

- Analog composite 75-ohm video input BNC
- Automatic NTSC-M / PAL-B/G format detection
- 12-bit video composite to 10-bit component digital processing
- Advanced, adaptive 3D comb filter
- Comprehensive VBI data handling
- SMPTE 259M SD-SDI 270Mb/s output
- Automatic and manual gain and equalization (150 meters)

##### Convert Analog Audio to AES and Embed into SDI

- Balanced 600ohm analog audio inputs (4)
- SMPTE 272M 24-bit, 48 kHz audio embedding

##### Use with DLC170DA for optical transport of Analog Video and Audio

- Exceeds TV-1 and ANSI T1.502 "short haul" specification

##### Optical transmitter for all Digital Video formats (electrical to optical)

- 1.485Gb/s HD-SDI (SMPTE 292M)
- 270Mb/s
  - SD-SDI (SMPTE 259M-C, ITU 656)
  - SDTI (SMPTE 305M)
  - DVB-ASI
  - Artel 270
- 19.39Mb/s ATSC (SMPTE 310M)

##### Externally Accessible SFP Transceiver Optics

- Optical budget to 34dB
- WDM (1310nm, 1550nm)
- CWDM ITU G.694.2 (Channels 27-61)
- DWDM ITU G.694.1 (Channels 21-60)

##### Remote Management via DL-Manager

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

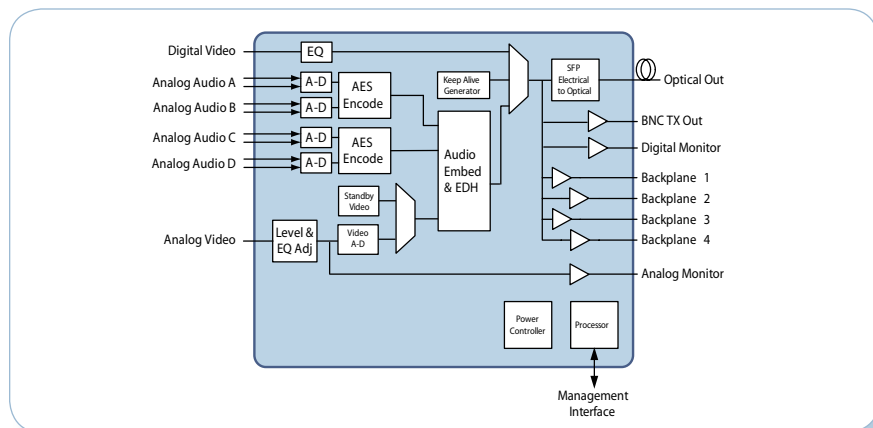
The DLC270 converts Composite Video and Audio to SDI (SMPTE 259M) and includes an optical transmitter. When used with the DLC170DA, the design insures full TV-1 RS250-C "short haul" analog performance over a true SMPTE 259M SD-SDI optical transport link. In addition the DLC270 is an optical transmitter for HD-SDI, SD-SDI, DVB-ASI and SDTI. Combining Analog to Digital Video conversion and standards based optical transmitter into one module provides the ultimate flexibility for moving from Analog today to Digital tomorrow.

The Composite Analog to SDI conversion is performed using the same feature set as the DLC170AD.

The DLC270 performs a high quality, feature rich format conversion with audio embedding, and includes a front panel monitor jack selectable to either the analog input or the converted SDI signal. When used in conjunction with a DLC170DA, the design insures full TV-1 RS250-C "short haul" analog performance over a true SMPTE 259M SD-SDI optical transport link.

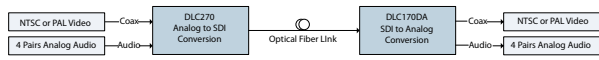
For optical transport, the DLC270 includes capabilities to transmit broadcast quality jitter free HD-SDI (SMPTE 292M), SD-SDI (SMPTE 259M-C), DVB-ASI, ATSC signals as well as all other 270Mb/s based transport formats. Used in conjunction with the DLC170DA, migrating from Composite Analog to any digital format is possible without replacing any equipment. In digital mode, the DLC270 is compatible with the DLC100, DLC300 and other non-scrambled or dithered optical receivers.

Optical transmission is performed using externally accessible SFP optics in 1310nm, 1550nm, CWDM or DWDM wavelengths. Provisioning and monitoring is accomplished using switches, front and back panel LEDs and BNCs. DL-Manager, an SNMP or HTTP remote provision and management tool is also embedded in the module. Cost effective, flexible, and reliable, the DLC270 continues Artel's tradition of making the world's most innovative and reliable video over fiber optics transport hardware.

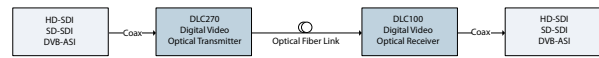


## DLC270 Applications

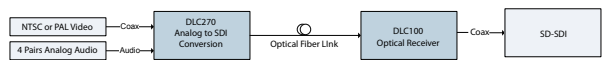
### Composite Video (NTSC/PAL) and Analog Audio Optical Transport



### Digital Video Optical Transport



### Composite Video (NTSC/PAL) and Analog Audio to SDI with Optical Transport



## Specifications

### Environmental

Ambient Storage Temperature	-40 to 80°C
Ambient Operating Temperature of DL4000 Chassis	0 to 50°C
Relative Humidity	10 to 95% (non-condensing)
Power Dissipation	16W

### Physical

Dimensions	1.4" x 5" x 10.8"
2 slots in DL4000 chassis	Can only be used with DL4000; requires functionality of DL4000 backplane

### Optical Interface

**Artel Video SFP** See SFP Specification Sheet

### Electrical Interface (Digital)

<b>Signal Formats</b>	
• 1.485Gb/s HD-SDI (SMPTE 292M)	• DVB-ASI
• SD-SDI (SMPTE 259M-C, ITU 656)	• ARTEL 270
• SDTI (SMPTE 305M)	• 19.39Mb/s ATSC (SMPTE 310M)
Signal Polarity	Non Inverting
Channels	1-transmit
Connectors	
Input (1)	BNC 75ohm
Loop Through (1)	BNC 75ohm
Monitor (2)	Mini 75ohm SMB
Return Loss	> 15 dB, 5-1485 MHz
Cable Equalization for Belden 1694A type cable:	0 to 350 meters (270 Mb/s) 0 to 140 meters (1485 Mb/s)

### Regulatory Conformance

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

### Ordering Information

#### DLC270 Function Module

Model	Description	Part #
DLC270	Multi-rate Digital Transmitter with Composite Video and Analog Audio	390-008075-00

#### SFP Optics

Model	Description	Part #
DLS31VX-11	Video SFP 1310nm Transceiver 11dB	393-021310-11
DLS31VX-30	Video SFP 1310nm Transceiver 30dB	393-021310-00
DLS55VX-30	Video SFP 1550nm Transceiver 30dB	393-021550-00
DLSCxxVX-30	Video SFP CWDM Transceiver 30dB	393-041xx1-00
DLWxxHX-33	Video SFP DWDM Transceiver 33dB	393-240033-xx

### Monitor Cable

Model	Description	Part #
DL100MC-72	Monitor Cable, Mini 75ohm SMB to BNC, 72"L	396-001001-00

### Analog Video to SDI Conversion (6)

Output Format	SMPTE 259M via optical interface or backplane
Input Format	SMPTE-170M NTSC-M or ITU-R BT.624-4 PAL-B/G Composite Video
Input Amplitude	1.0 V p-p nominal
Input Gain Range	± 3 dB (1)
Input Common Mode Range	±10 V
Input Common Mode Rejection (0 to 5.5 MHz)	>30 dB
Input Impedance	75ohm or Hi-Z
Input Return Loss (0 to 5.5 MHz)	>30 dB, 75ohm
Freq Amplitude Response	
NTSC to 4.5 MHz	<0.10 dB
NTSC to 5.0 MHz	<0.10 dB
PAL to 4.8 MHz	<0.10 dB
PAL to 6.0 MHz	<0.10 dB
Differential Gain	<1.0%
Differential Phase	<0.7 Degrees
Line Time Distortion	<1.0%
Chroma-Luma Gain	<±2%
Chroma-Luma Delay	<5 nS
Signal to Noise, weighted	>67 dB

### Analog Audio to AES and Embed (6)

Channels	4(2)
Input	Balanced Analog
Input Impedance	600ohm or >100Kohm
Input Common Mode Range	±30V
Input Common Mode Rejection	>60 dB
Nominal (test) Level	18 dBm (3)
Maximum Level (0 dBFS clipping)	+10 to +24 dBm (4)
Insertion Gain	±0.25 dB (5)
Freq Amplitude Response (20 Hz to 20 kHz)	±0.3 dB
THD+N (20-20k @ +18 dBm)	0.01%
SNR (weighted)	>95 dBA
Crosstalk @10kHz	70 dB
Audio to Video Lead/Lag	<2 ms

(1) Automatic or manual control.

(2) Specifications are with 48 kHz, 24-bit audio.

(3) Nominal level is +20 dBm for 0 dBFS (clipping) with performance specifications based on a +18 dBm test level.

(4) User selectable maximum (0 dBFS) level in eight 2 dB steps

(5) Each end set to the same nominal 0 dBFS level.

(6) Analog Specifications based on end-to-end performance with DLC270



Front panel monitoring and status displays



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



SFP Optics (Small Form-Factor Pluggable)