



## MODEL AL4501/AL4502

### LOW LATENCY VIDEO & DATA OVER FIBER MULTIPLEXER and DEMULTIPLEXER



#### 1. FEATURES

- **8 Video Signals**
  - NTSC Composite Video
  - <2 microsecond delay (no compression)
- **Video Inputs**
  - Accepts 1/2V p-p to 2V p-p Input Level
  - Automatic Gain Control
- **Video Outputs**
  - Front Panel Adjustable up to 2V p-p Output
- **8 PCM Signals**
  - TTL Level, Data and Clock
  - 100 bps to 40M bps range
  - Format Independent (no setup required)
  - Compact 5 ¼ inches Rack mount chassis
- **Intermediate Range Fiber Optic Link**
  - 1310 nm DFB Laser
  - Up to 15 km reach
  - LC type Optical Interface

#### 2. PURPOSE

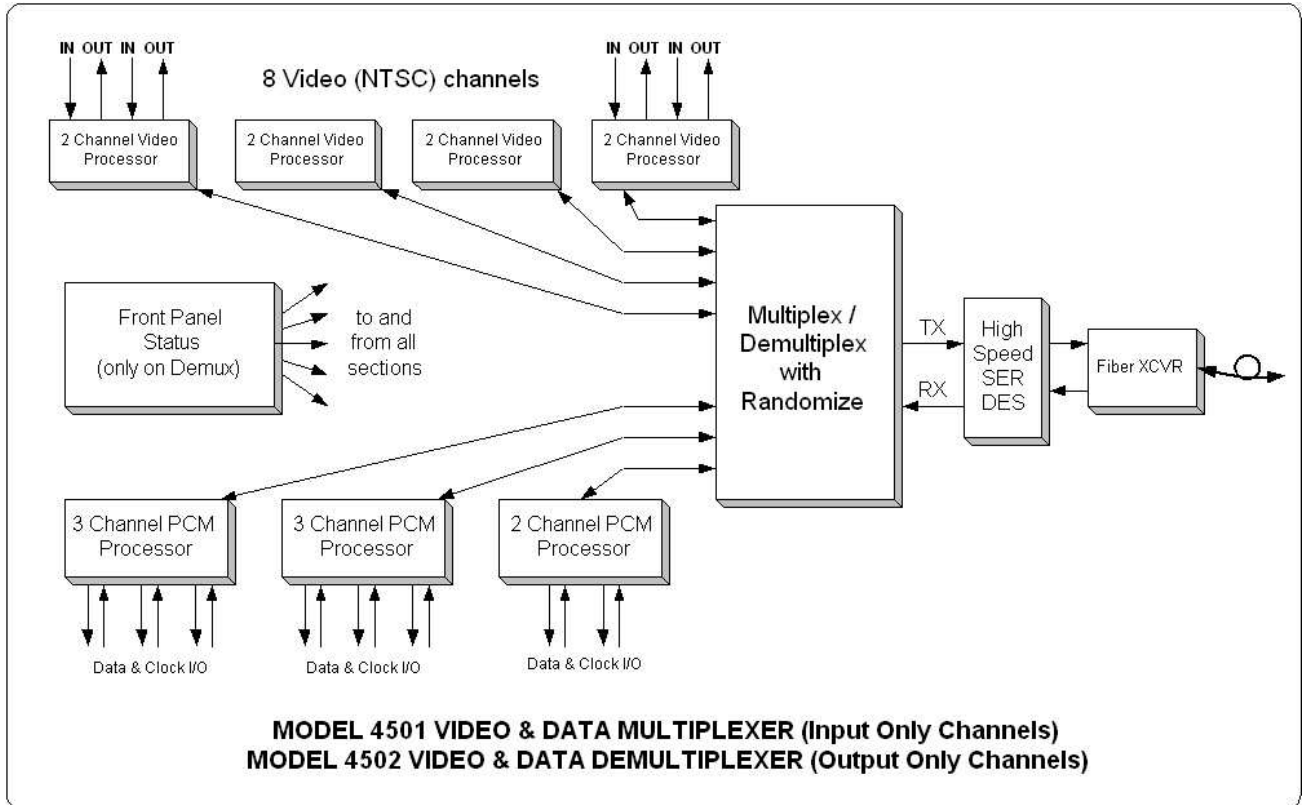
The Apogee Labs Models AL4501 Multiplexer Set is designed to provide high quality transmission of up to 8 Video and 8 PCM signals over a Fiber Optic Link with MINIMAL DELAY. At the receive site the AL4502 Demultiplexer reconstructs the original Video and PCM signal. Total Video signal delay through the two units combined is less than 2 microseconds. PCM delay at 10M bps is less than 20 microseconds.

#### 3. FUNCTIONAL DESCRIPTION

Linked by a 'dark fiber' of sufficient quality to support the rate of 2.488G bps, the AL4501 unit will multiplex and transport eight video streams simultaneously using digital techniques to avoid signal cross talk, signal degradation due to path loss, or other analog performance issues. In addition, the unit will accept and multiplex 8 independent PCM data streams, each up to 40M bps without operator setup. Status LED's are provided to indicate signals present for each channel. There are no operating controls.

At the receive site, the AL4502 will automatically demultiplex the composite signal, again without operator setup, and reproduce the video and PCM Signals. Status LED's are provided to indicate data when received for each channel. Separate front panel controls are provided to adjust the output levels of the reconstructed Video Signals.

A unique feature of this Mux/Demux unit is the AGC function for video input signals. The Multiplex unit automatically adjusts gain and offset for input signals in the range of ½V p-p to 2V p-p so that the Demultiplexer output will remain constant per the user setting. This eliminates the need to readjust levels for video from various sources. The output level need only be set to accommodate the cabling and video display or recorder.



**Figure 1: Model AL4501/AL4502 Functional Block Diagram**

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**4. SPECIFICATIONS**

<b>General</b>	<b>Specification</b>	<b>Remarks</b>
Size	EIA 19" Rack Mount Chassis, 5 ¼" high	Front mounting ears provided
Environmental	Lab, 0-55°C, 5-95% RH without condensation, Sea level-10,000ft	
Weight	Less than 40 lbs	
Power	105-230VAC, auto detect, Single Phase	Total consumption <50 watts
<b>Video Input Channels – AL4501 Multiplexer</b>		
Number	8	5 Hz – 8M Hz bandwidth
Digitized Resolution	8 bits	After DC Restore and Amplitude AGC
Input Range	0.5V p-p to 2.0V p-p	NTSC Color signal
Input Impedance	75 ohms	
Sample Rate	31MS/s	No compression applied
Connector	Isolated BNC	
<b>PCM Input Channels – AL4501 Multiplexer</b>		
Number	8	NRZ-L and 0-degree (+/- 30deg.) clock
Bit Rate	100 bps to 40M bps, auto-track	No setup required
Signal Type	TTL levels	
Input Termination	50/75 ohm, jumper selectable	
Connector	BNC, 1 for Data, 1 for Clock per channel	
<b>Fiber Optic Interface – Both Units</b>		
Number	1	Laser emitter
Link	9/125 Single Mode Fiber	
Connector	LC type	
Typical Distance	Up to 15 km	
<b>Video Output Channels – AL4502 Demultiplexer</b>		
Thru put Delay	<2 microseconds	
Output Signal	Up to 2.0V p-p into 75 ohms	Front Panel 'set screw' type adjustment per channel
Connector	Isolated BNC	
Ch-Ch Crosstalk	>60 db of isolation	
<b>PCM Output Channels – AL4502 Demultiplexer</b>		
Digital Signal Type	TTL Data and Clock	NRZ-L and 0-degree clock output
Drive Level	>2.5Volts into 50 ohms	
Data Flow	Smooth, no bursts	clock rate changes < 2% p-p
<b>Other Operator Controls – Both Units</b>		
Power	On/Off switch	