



FiberLink 8200 Series



**3G/HD/SD-SDI Optical/Copper Hybrid
Optical Distribution Amplifiers**

**Installation and Operations
Manual**

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Welcome

The FiberLink 8200 Series of 3G/HD/SD-SDI Optical/Copper Hybrid Optical Distribution Amplifiers is a one, two, three or four output optical distribution amplifier (O.D.A.) designed to work with SDI copper or optical signals for optical transmission. The FiberLink 8200 receives either a copper or optical SDI signal from any SMPTE compliant source and then digitally regenerates and relaunches it over one to four outputs. Each output may transmit to any SMPTE 297-2006 compliant receiver unit or to another O.D.A. unit. Cascading O.D.A.s together allows for the creation of elaborate point-to-multipoint distribution.

Inputs and outputs on the 8200 Series support both multimode and single mode fiber types. Outputs may also be configured with DFB type lasers for use with CWDM multiplexers, such as Artel's 6400 CWDM Series and the FiberLink FlexPOD.

Features

- Switch selectable copper or optical 3G/HD/SD-SDI input
- Supports 3G/HD/SD-SDI and DVB-ASI signals
- Available with one to four outputs
- Copper and optical ports are SMPTE compliant
- All 3G/HD/SD-SDI and DVB-ASI signals are equalized and re-clocked
- Active re-clocked BNC loop of selected input (BNC or Optical)
- Support pathological patterns across the entire operating temperature range
- Available with LC or ST connectors
- Supports single mode and multimode fibers in one unit
- Optional CWDM compatible optical outputs available
- Can be used as an inline repeater for optical extension or as an interface between multimode and single mode fibers with active repeating
- Compatible with FiberLink Matrix and FiberLink 7820 Series
- Small, compact design as standalone box; Card version available for 6000A card cage
- Low power consumption - 3.6 watts

Package Contents

- One FiberLink 8201, 8202, 8203 or 8204
- This User's Manual

Technical Specifications

General Specifications

Indicators	Power, Data Rate Lock (3G, HD, SD/DVB-ASI) Alarm (Card Version Only)
Switch	Selects BNC or Optical input
Box Version Dimensions	6.5 W x 1.15 H x 6 L (inches) 165 W x 29 H x 152 L (mm)
Weight	14 ounces, 398 grams
Slots in 6000A Card Cage	2
Power	9-24 volts, DV or AC, 3.6 watts 12.28 BTU/Hr
Operating Temperature	-10° C to +50° C
Compatibility: 2302/4,	FiberLink Matrix, 7820, 3350, 3360, 3380, 3353, 3355 and other SMPTE compliant devices

Serial Video BNC Input

Number of Inputs	1
Date Rate Range	19.4 Mbps to 2.97 Gbps
Supported Standards	SMPTE 259M, 292, 297-2006, 424M-2006, 305M, 310M, 344M, DVB-ASI
Re-clocked Data Rates	270 Mbps (SMPTE 259M, DVB-ASI-270), 1.485 Gbps (SMPTE 292) 2.97 Gbps (SMPTE 424M-2006)
Equalization	Automatic up to 100m of Belden 1694A at 3.0 Gbps, 200m at 1.485 Gbps and 350m at 270 Mbps
Return Loss	> 10dB up to 2.97 Gbps

Fiber Optic Input

Connector	LC or ST
Wavelength	1100 - 1620 nm
Minimum Input Sensitivity	-17 dBm at 2.97 Gbps -20 dBm at 1.485 Gbps -21 dBm at 270 Mbps

Technical Specifications

Serial Video BNC Loop-Through Output

Number of Loop-Throughs	1
Signal Level	800mV \pm 10%
DC Offset	0V \pm 0.5V
Rise/Fall Time	< 135 ps at 2.97 Gbps per SMPTE 424M-2006 < 270 ps at 1.485 Gbps per SMPTE 292 0.4 ns to 1.5 ns at 270 Mbps per SMPTE 259M
Overshoot	< 10% of amplitude
Timing Jitter	< 0.2 UI at 270 Mbps; < 1.0 UI at 1.485 Gbps; < 2.0 at 2.97 Gbps with color bar signal
Alignment Jitter	< 0.2 UI at 270 Mbps; < 0.2 UI at 1.485 Gbps; < 0.3 at 2.97 Gbps with color bar signal
Re-clocking	At 270 Mbps, 1.485 Gbps and 2.97 Gbps

Optical Output

Connector	LC or ST
Wavelength	1310nm (nominal)
Emitter Type	FP Laser
Output Power (nominal)	-3.5 dBm at 270 Mbps, 1.485 Gbps & 2.97 Gbps
Re-clocking	At 270 Mbps, 1.485 Gbps and 2.97 Gbps

Alarm Switch Settings & Options

The Rack Card version of this product has an additional red indicator LED that illuminates when an alarm condition exists. The rack card unit also provides an output to drive a model 6020A Alarm Sensing Module which provides an audible tone and activates a set of contacts for external signaling purposes.

Alarm Switch Settings for the 8200 Series Card

Switch Position	Alarm Indication	On	Off
1	Loss of BNC Input Video or Optical Signal	Enabled	Disabled
2	N/A	N/A	N/A

Note: The detection of the loss of input video or optical signal is dependent upon the position of the input selection switch. Whichever input is selected, only that input will be monitored by the alarm circuit.

Part Numbers & Wavelength Identification

Part Number	Description	Fiber Outputs
8201-xzw	One Output Optical Distribution Amp	1
8202-xzww	Two Output Optical Distribution Amp	2
8203-xzwww	Three Output Optical Distribution Amp	3
8204-xzwwww	Four Output Optical Distribution Amp	4

Part Number Suffix Codes:

x:	B	Box Version	z:	S	ST Connector
	C	Card Version		L	LC Connector
w:	7	Standard 1310nm FP laser	I	1470	
	A	1310nm DFB laser	J	1490	
	B	1330	K	1510	
	C	1350	L	1530	
	D	1370	M	1550	
	E	1390	N	1570	
	F	1410	O	1590	
	G	1430	P	1610	
	H	1450			

Installation Instructions

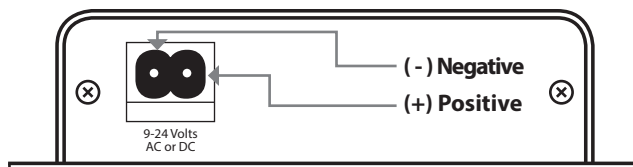
The FiberLink 8200 Series of fiber optic transmission systems are ready for immediate use and do not require any special tools or equipment. However, an Optical Power Meter, such as the FiberLink 6615, can be useful in determining optical loss budgets during your systems design and maintenance.

The following instructions describe the typical installation procedure:

- 1) Connect the fiber optic and/or copper SDI signal to the 8200's inputs.
- 2) Connect the fiber optic cables from the 8200's outputs to the intended devices.
- 3) Connect the Universal Power Supply to the 8200 unit.
For box versions using DC power, please refer to figure 1.
- 4) Select the input source by using the front panel switch to select either the BNC or the optical input.
- 5) If desired, an active re-clocked loop-through signal of the input selected by the switch is available on the BNC Loop-Through connector.
- 6) When a valid SDI input signal is detected on the input selected by the front panel switch, the data rate lock LED (3G/HD or SD) will illuminate and the optical outputs will transmit the selected signal. Note that no data rate lock light will illuminate when a non-standard signal is applied.

Note: The Rack Card version has an additional red LED for indicating the presence of an alarm condition (loss of signal). Refer to Indicator LED's and Alarm Circuitry sections of this manual.

Figure 1:
Power Connector
DC Input Polarity



DANGER!

The transmitting elements in the FiberLink 8200 units contain a solid state Laser Diode located in the optical connector. This device emits invisible infrared electromagnetic radiation which can be harmful to human eyes. The radiation from this optical connector, if viewed at close range with no fiber optic cable connected to the optical connector, may be sufficient intensity to cause instantaneous damage to the retina of the eye. Direct viewing of this radiation should be avoided at all times!

Indicator LEDs

The FiberLink 8200 Series has several indicator LEDs that are used to monitor the state of the unit. Card versions have an additional Alarm LED.

Indicator LEDs		
LED	Status	Definition
Power	On	Indicates that correct power has been applied.
3G Rate	Off	Indicates no 3G-SDI data rate lock
	On	Indicates 3G-SDI data rate lock at 2.97 Gbps or 2.97/1.001 Gbps
HD Rate	Off	Indicates no HD-SDI data rate lock
	On	Indicates HD-SDI data rate lock at 1.485 Gbps or 1.485/1.001 Gbps
SD Rate	Off	Indicates no SD-SDI or DVB-ASI data rate lock
	On	Indicates SD-SDI or DVB-ASI data rate lock at 270 Mbps
Alarm (Card Version Only)	On	No input signal

Note: The 3G/HD, and SD LEDs indicators are off when a non-standard signal is applied.

Operating Pointers

Remember to check attenuation of the fiber optic cable. The system will only operate properly if these specifications fall within the range of the system's loss budget.

Troubleshooting

Multimode fiber optic cable contains an optical fiber with a light carrying "core" that is only .0025 inches (62.5 microns) in diameter. Single mode fiber optic cable has an even smaller "core," only .00032 to .0004 inches (8-10 microns). This is smaller than a human hair! Therefore, any minute particles of dirt or dust can easily block the fiber from accepting or radiating light. To prevent this from happening, always use the provided dust caps when ever optical connectors are exposed to air. It is also a good idea to gently clean the tip of an optical connector with a lint-free cloth moistened with alcohol whenever dust is suspected.

The status of the LEDs should provide the first clue as to the origin of any operational failure. If these are off, it usually means that the fiber is broken or has too much attenuation. Next, be certain that the input and output signal connections are correct.

An optical power meter, such as the FiberLink 6615, a visible light source, such as the FiberLink 6610, and a Three Wavelength Light Source, such as the FiberLink 6620, can greatly assist and expedite troubleshooting of fiber optic transmission systems and are recommended tools all installers should have available.

Finally, although multimode and single mode devices may look the same, they will not operate properly together. Using the wrong device or fiber can easily add more attenuation than specified, resulting in poor overall performance. It should be noted that some of our fiber optic products support both single mode and multimode fiber in the same unit.

If, after reviewing the above possibilities, the system is still not operating, please contact the Customer Service Department for further assistance. If you suspect your problem is caused by the optics or the fiber optic cable, and you have an optical power meter, please take the appropriate measurements prior to contacting support.

Maintenance and Repairs

The FiberLink 8200 Series has been manufactured using the latest semiconductor devices and techniques that electronic technology has to offer. They have been designed for long, reliable and trouble-free service and are not normally field repairable.

Should difficulty be encountered, Artel Video Systems maintains a complete service facility to render accurate, timely and reliable service of all products.

The only maintenance that can be provided by the user is to ascertain that optical connectors are free of dust or dirt that could interfere with light transmission and that electrical connections are secure and accurate. Please see the Troubleshooting section of this manual for additional information.

An optical power meter, such as the FiberLink 6615, a visible light source, such as the FiberLink 6610, and a Three Wavelength Light Source, such as the FiberLink 6620, can greatly assist and expedite troubleshooting of fiber optic transmission systems and are recommended tools all installers should have available.

All other questions or comments should be directed to our Customer Service Department. It should be noted that many "problems" can easily be solved by a simple telephone call.

If you suspect your problem is caused by the optics or the fiber optic cable, and you have an optical power meter, please take the appropriate measurements prior to contacting support.

Certifications



Proven Products, Unrivaled Service, and Great Support



- High performance plug and play products
- Stand alone and card cage versions available
- Solutions for most video, audio, and data formats
- Multimode and single mode versions
- Designed and manufactured in the USA
- Training and installation support available
- 24x7x365 technical support available



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