



INSTRUCTION MANUAL
SilverBULLET 3G Series

**SERIAL DIGITAL INTERFACE
FIBER OPTIC TRANSPORT miniature link
FOR HDTV and SDTV**

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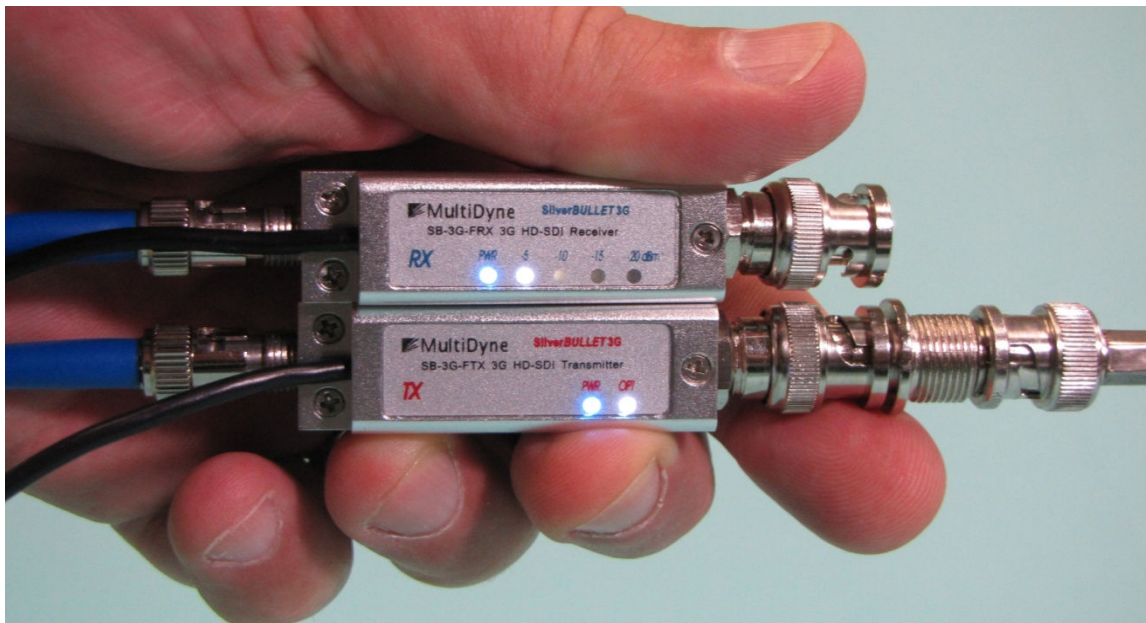
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INTRODUCTION

The SilverBULLET 3G (SB-3G) series of miniature stand-alone fiber converters for SDTV and HDTV Serial Digital Interface (SDI) Video have been designed to ease the engineering difficulties associated with medium to large DTV installations. In such installations, it is needed to link equipment over distances un-reachable with coaxial cable. These links will transport digital signals from 19.4 Mbps up to 2.970 Gbps. The supported standards include SMPTE 259M-C, SMPTE 292M, and SMPTE 424 SDI, working at 270 Mbps, 1.495 Gbps, and 2.970 Gbps respectively. It is also compatible with DVB/ASI, and SMPTE 297M interfaces at the defined rates. The units include automatic cable equalization based on the data rate detected.

Applications include transmission links for high definition or digital television, studio to transmitter, studio-to-studio, studio to CATV head-end, and backhaul feeds from special events. The transmitter and receiver links are available in a miniature portable enclosure that is directly connectable to a BNC SDI connector.



FEATURES and OPERATION

The SilverBULLET 3G series supports the following SMPTE SDI standards: SMPTE 259M-C, SMPTE 292M, SMPTE 424 SDI, and SMPTE 297M. It is also compatible with DVB/ASI. The units do not need any special setting for operation and will operate as soon as they are powered up with their included adapter.

TRANSMITTER, SB-3G-FTX

The transmitter front is shown in figure 1. There are only two LEDs to show power state, **PWR**, and status of the optics, **OPT**. These LEDs should both light in normal operation. If **OPT** is not lit, it could mean a failure of the laser, and service will be required.



Figure 1. Front of SB-3G-FTX

RECEIVER, SB-3G-FRX

The receiver front is shown in figure 2. There are five LEDs to show power state, **PWR**, and optical power received in dBm, **-5**, **-10**, **-15**, or **-20**. One of these 4 LEDs should light in normal operation to indicate the received power. Note that a **-20** indication would be a borderline weak signal. Better reception can be achieved by shorting the link, reducing the number of splices and barrels, and ensuring the optical connectors are clean.



Figure 2. Front of SB-3G-FRX

POWER REQUIREMENTS

The SilverBULLET 3G Series operates from 110 or 220 VAC with the included wall-mount 5V power supply or other source in a range from 5 to 16 VDC and at least 2W of power. It uses a mini XLR 4Pin type connector, as shown in figure 3. If desired, the units are capable of being powered from a battery pack instead of the wall unit.

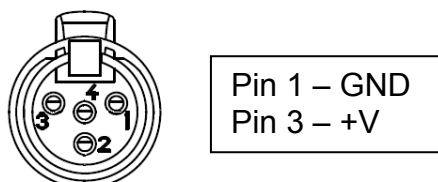
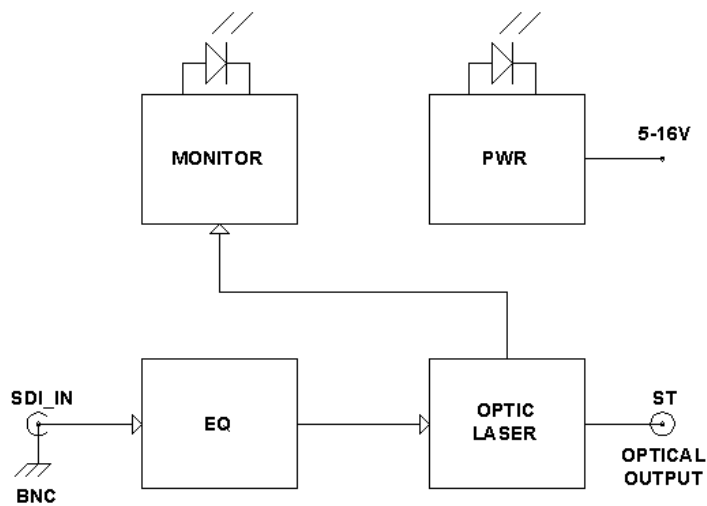


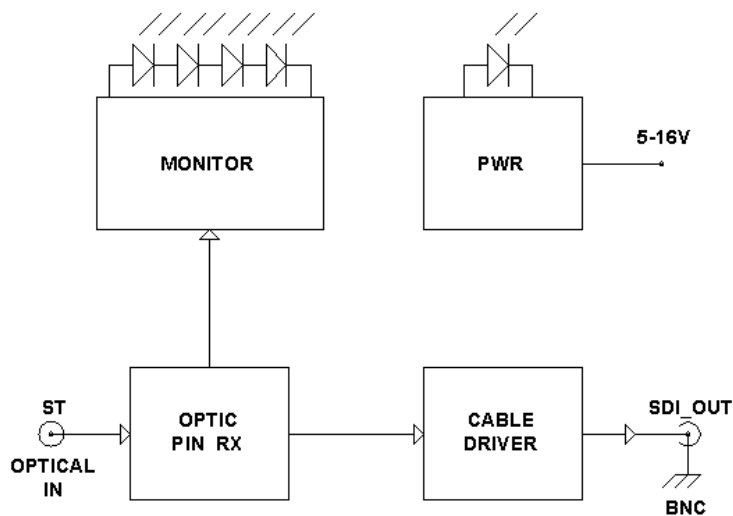
Figure 3. Power Connector

APPENDIX A. Block Diagrams

SB-3G-FTX



SB-3G-FRX



APPENDIX B. Technical Specifications

General

Power:	5-16V / 1W
Dimensions (LxWxH):	3.2"x0.65"x0.75" (81x16x19 mm)
Weight (Each end).....	2.5 oz (70 g)
Operating Temperature Range.....	-25° C to +55° C
Relative Humidity.....	0 to 95%, non-condensing
Standards Supported.....	S259M, S292M, S424M, DBV/ASI
Link budget (Standard 1310nm).....	13dB or 5Km at 3G
Link budget (CWDM or 1550nm option)	20dB or 30Km at 3G

Transmitter (-FTX)

Wavelength (Standard FP).....	1310nm Single Mode
Wavelength (CWDM or 1550nm DFB option).....	1470 to 1610nm
Optical Power (Standard)	-6 dBm
Optical Power (Option)	0 to +3dBm
Added Jitter:	<0.02UI under 1MHz
Input	BNC 75 ohms
Coax Equalization (Belden 1694A).....	350m @ 270 Mbps 150m @ 1.485 Gbps 85m @ 2.97 Gbps
Indicators	Power and Laser Status

Receiver (-FRX)

Wavelength	1100 to 1600nm
Optical Sensitivity	-20 dBm
Output.....	BNC 75 ohms
Output level	800 mVpp
Indicators	Power and Optical Power
Added Jitter:	<0.02UI under 1MHz

Specifications are subject to change without notice.