MultiDyne

Video & Fiber Optic Systems

INSTRUCTION MANUAL

HD-1500 / HD-3000 Series

SERIAL DIGITAL VIDEO FIBER OPTIC
TRANSPORT & DISTRIBUTION
SYSTEM FOR HDTV & SDTV

May 26, 2009

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TABLE OF CONTENTS

INTRODUCTION

The HD1500 / HD-3000 Series of Stand-alone Serial Digital Interface (SDI) Video Fiber Optic Transport Systems for standard and high definition DTV have been designed to ease the engineering and financial difficulties associated with the migration to DTV. The system will transport digital signals from 143 Mbps up to 1.485 or 2.970[1] Gbps. The supported standards include SMPTE 259M-C, SMPTE 292M, SMPTE 424[1] SDI, working at 270 Mbps, 1.495 Gbps and 2.970[1] Gbps, and compatible with DVB/ASI, and SMPTE 297M interfaces at the defined rates. The units include a Digital Re-clocking DA and Repeater for the SMPTE SDI standards mentioned above. For other standards, the signal is passed thru without reclocking. For the electrical SDI interfaces, if you need to go beyond the 350-meter limit, the HD1500 / HD3000 can be used to repeat and re-clock the signal multiple times with minimum loss or jitter. 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 transmit and receive units are available in portable or stand-alone and modular configurations ideal for both field and studio applications.

FEATURES and OPERATION

TRANSMITTER, HD-1500-FTX or HD-3000-FTX

The transmitter module, designated by model number HD-1500-FTX or HD-3000-FTX, includes a fiber output ST or SC connector and a serial digital video 75 Ohm input BNC connector. The unit also includes a re-clocked 75 Ohm serial video output BNC connector for a loop-through connection. The front of the module displays RATE LEDs for 270 Mbps, 1.485 Gbps, or 2.970[1] Gbps, Carrier Detect LED and Power LEDs that indicate the status of the unit.

The rate LEDs indicate that a valid SMPTE rate is locked by the re-clocker PLL. The Carrier LED indicates that a signal has been applied to the input. Carrier Detect is sensitive to digital carriers from 19Mbps and above.

The Loop-through SDI output is an active regenerated version of the signal in the transmitter SDI input that can be used to feed other transmitters or SDI complaint equipment.

RECEIVER, HD-1500-FRX or HD-3000-FRX

The receiver module, designated by model number HD-1500-FRX or HD-3000-FRX, includes a fiber input with ST or SC connector, and two re-clocked serial digital video 75-Ohm output BNC connectors. The front panel includes LEDs with the same functionality as the transmitter, described above with the exception of Carrier Detect that is a PLL Lock indicator for the fiber signal.

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[1] Only HD-3000

POWER REQUIREMENTS

The HD1500 / HD3000 Series operates from 110 or 220 VAC with the appropriate wall-mount power supply or 5 to 24 VDC @ 1A using a coaxial type connector (sleeve ground) on the rear panel labeled POWER.   The wall-mount power supply should provide a minimum of 5V DC at 1 amp.   If desired, the units could be powered from a battery pack or automotive battery instead of the wall unit.

INSTALLATION

The installation and start up of the HD1500 /HD3000 Series do not have special requirements. No special sequence must be followed to connect and start up the unit. RG59 or other 75 Ohms Coax cable must be used for the SDI inputs and outputs and single mode fiber with the selected proper connectors must be used for the fiber link. Optionally, multimode fiber can be used with a shift patch on the transmitter, though significant reduced range performance is expected for this scenario. The HD1500 / HD3000 Series come standard as stand-alone units. An optional rack-mounting kit is available to mount up to 6 units in a 1 Rack-unit or 1 ¾" by 19" rack space. The part number is –RM6.

NON STANDARD SETTING

The HD1500 / HD3000 series comes configured to satisfy the needs of most users. This includes automatic cable equalization and auto mute for SMPTE HD and SD signals and support for DVB/ASI. However, it is possible to pass other non SMPTE rates and digital signals by setting a jumper in the FTX and FRX units. It is possible that SMPTE 310 or 19.4Mbps will not operate in automatic mode.   In this case please change jumpers as suggested below.

The FTX unit uses the 3 pin jumper J2, 1-2 setting by default to auto mute the link when there is not a valid signal in the input, like noise from any external source. The default optic of this link is designed for SMPTE rates over 143 Mbps; however the link can support a wider range with alternative optics. The J2 Jumper must be set to 2-3 for passing signals slower than 20 Mbps. Similarly to the FTX, the FRX unit has the jumper J5 placed by default to auto mute when no signal or non SMPTE rates are detected.

Transmitter –FTX Jumper J2:
    Short 1-2 or closest positition to BNC for Auto Mute

Transmitter –FTX Jumper J2:
    Short 2-3 or positition away from BNC for SMPTE 310, 20Mbps or less

Receiver –FRX Jumper J5:
    Short for Auto Mute

Receiver –FRX Jumper J5:
    Open for SMPTE 310, 20Mbps or less

MAINTENANCE

There are no user serviceable parts or internal adjustments other than the jumper selections described above. For repair and service, please call the factory.

SPECIFICATIONS

General:
Power: ....5-24V / 1A
Typical Range (2.97G/1.485G/270M) ....>10KM/20KM/35KM
Standards Supported: ....SMPTE 259M-C
SMPTE 292M
SMPTE 425M[2]
SMPTE 297M
DVB/ASI

Transmitter (-FTX):
Input Type: ....1 BNC
Input Impedance: ....75 Ohms
Loop Output Type:...1 BNC
Loop Output Impedance ....75 Ohms
Input and Loop Output Return Loss: ....>15dB up to 1.5GHz
>10dB up to 3 GHz [2]
Fiber Output Type: ....ST or SC
Wavelength: ....1310nm Single mode
Optical Power: .... −12 dBm to −7.5 dBm
Laser Strength:..Laser Class 1

Receiver (-FRX):
Fiber Input Type: ....ST or SC
Wavelength: ....1100 to 1600nm
Optical Sensitivity: ....-20 dBm
Output Type: ....2 X BNC
Output Impedance: ……………………………………………………75 ohms
Output Return loss: ....>15 dB up to 1485MHz
>10dB up to 3 GHz [2]
Output Jitter:...<0.2UI

Specifications are subject to change without notice.

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[2] Only HD-3000