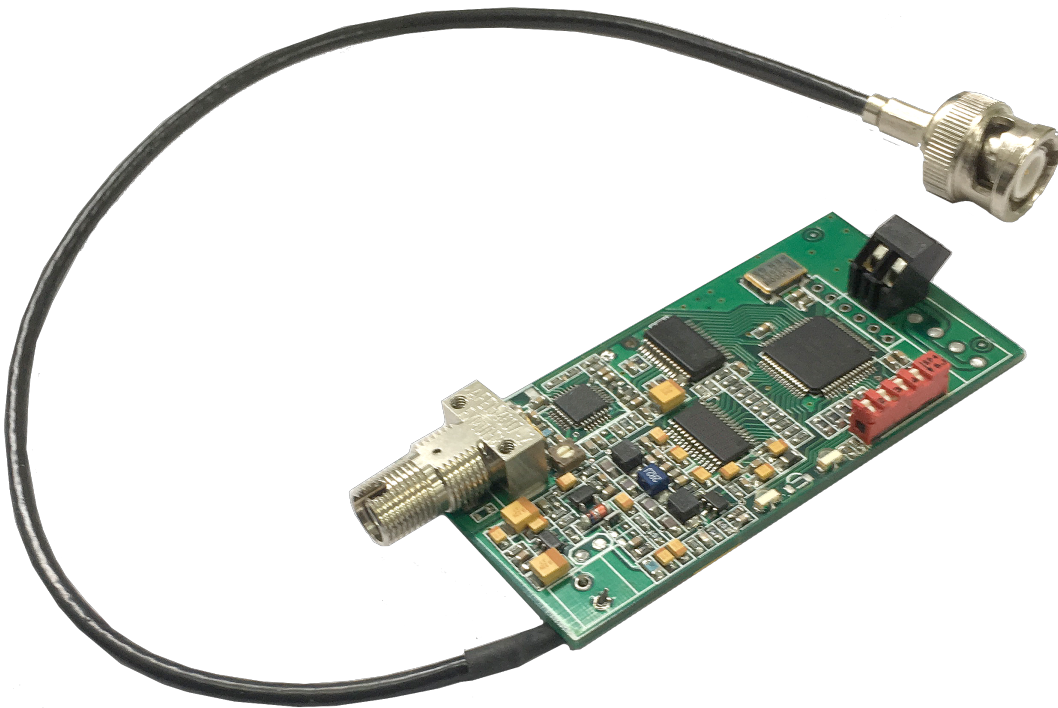




Fiber Optic Video Transmission System



User Manual

BT-1U-x-E94

Bare-board Digitally-Encoded 10 Bit Video Transmitter

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1. Product Description

Meridian's BT-1U-x-E94 product is a bare board fiber optic transmitter.

Utilizing 10-bit digital encoding, this transmitter meets RS-250C short haul specifications and provides exception video quality. This board also contains on-board LEDs to allow testing/diagnostics without having the camera connected.

This transmitter board is part of Meridian's DigiSlim product family and transmits one real-time, simplex, fixed video signal over either single-mode or multimode fiber (see part number configuration for ordering details).

The DigiSlim product series incorporates Meridian's SpectraView real-time diagnostics for fast, easy to interpret information on the integrity of the optical link. Using SpectraView, the entire fiber transmission system can be tested without the need to have the camera attached. Convenient gray-scale bars on the monitor are displayed when either the video input signal or the optical fiber has been disrupted.

Conformal coating provides an additional level of protection from environments with high humidity.

2. Product Signal Format & Specifications

The BT-1U-x series products transmit and receive the following signals:

Signal Type	Channels	Transmitter
NTSC/PAL video	1	BT-1U-x

The tables below identify the specifications for the various signals that these modems transmit/receive.

Video	
Format	NTSC, PAL, SECAM
Voltage/Impedance	1Vp-p, 75 Ohm, 1.5 Vp-p (max)
Bandwidth	5 Hz to 10 MHz @ -3 dB
Differential Gain	<0.6 %
Differential Phase	<0.3o
SNR	>67dB (weighted)
Return Loss	>30dB
Field Tilt	<0.5%
Optical	
Fiber Data Rate	270 Mb/s
LED	
Optical Monitor Status	Green: TX Carrier Present, Red: Error
Video Monitor Status	Green: Video Present, Red: Video Absent

3. Receiver Compatibility

This transmitter is compatible with the following receivers:

SR-1U-x1 channel receiver card
 SR-3U-x3 channel receiver card
 MR-1U-x1 channel receiver module

4. Installation Instructions

Series BT-1U-x products are bare board modules and can be installed in compatible camera housing or in suitable custom housing. See installation instruction section for details.

5. Optical Specifications

The table below lists the optical specifications for both single-mode and multimode fiber applications.

Meridian Optical Code	Fiber Type/Size (um)	Optical Output (dBm)	Receiver Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical Connector	Optical Dynamic Range (dB)
1	Multimode (FP Laser) 62.5 / 125	-3	-22	19	1300	ST	22
3	Single-mode (FP Laser) 9 / 125	-3	-22	19	1310	ST, FC	22
7, CWDM	Single-mode (DFB Laser) 9 / 125	+1	-22	23	1550, CWDM -1550 Band	ST, FC	22
9, CWDM	Single-mode (DFB Laser) 9 / 125	+1	-22	23	1310, CWDM -1310 Band	ST, FC	22

6. Module Pinout Diagram and LED Status Indicators

There are two indicator lights that provide visual operational status of the modules and link. The function of these LED indicators is as follows:

Video Monitor Video present - Green (OK), Red (Overload)
Optical Monitor Tx Carrier present - Green (OK), Red (Alarm)

BT-1U-x-E94 PIN-OUT DIAGRAM

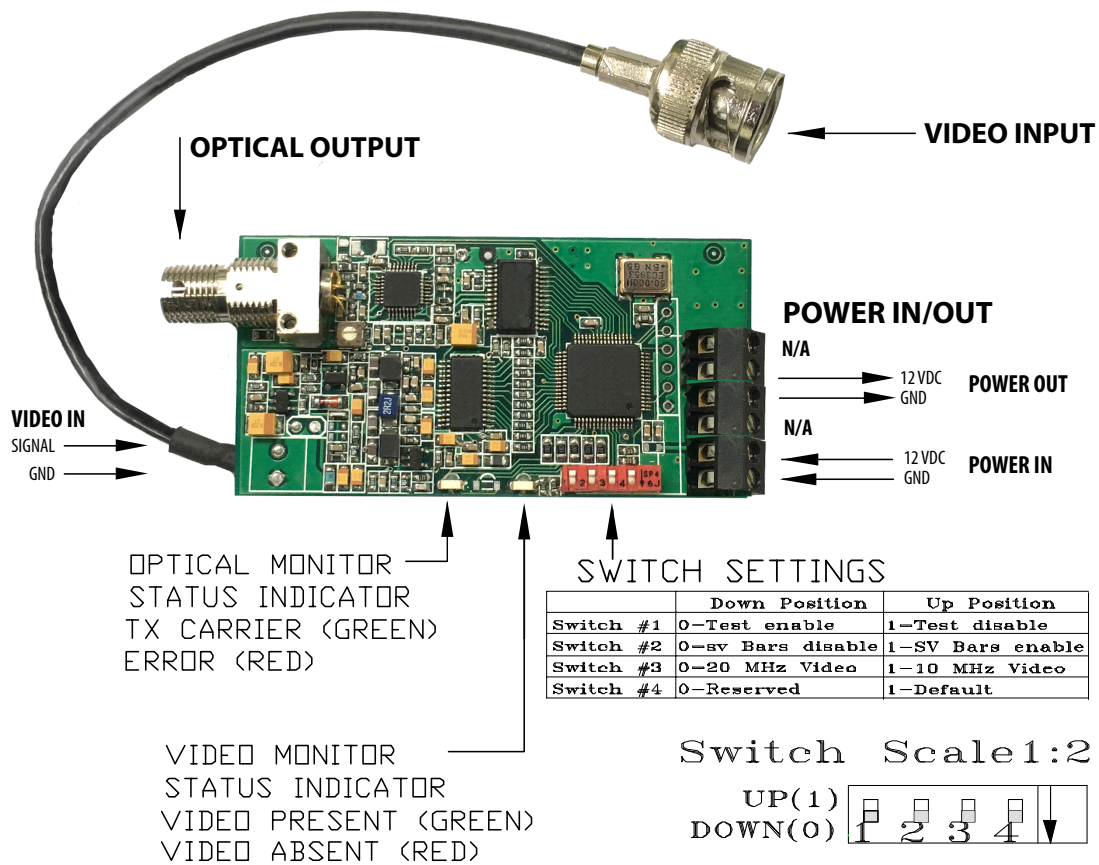


Figure 6.1

7. Signal Conditioning Switch Settings

A group of 4 switches is located on the lower left side of the module's circuit card (see figure 6.1). The first switch is used for video test signal and the second switch is for SpectraView™ monitoring. The figure and table below illustrate these switch locations on the board and how they are configured. The factory-supplied default position for Switch #1-4 is OFF. The switch settings can be configured according to the table on the figure 6.1

8. CWDM Options

These modules are also available with a CWDM option. The MT unit will transmit on one unique CWDM wavelength and receive on the complementary wavelength. The table below shows these various wavelength combinations for this particular unit.

Part #	Transmit Wavelength	Part #	Transmit Wavelength
BT-1U-27-E94	1270nm	BT-1U-47-E94	1470nm
BT-1U-29-E94	1290nm	BT-1U-49-E94	1490nm
BT-1U-31-E94	1310nm	BT-1U-51-E94	1510nm
BT-1U-33-E94	1330nm	BT-1U-53-E94	1530nm
BT-1U-35-E94	1350nm	BT-1U-55-E94	1550nm
BT-1U-37-E94	1370nm	BT-1U-57-E94	1570nm
BT-1U-39-E94	1390nm	BT-1U-59-E94	1590nm
BT-1U-41-E94	1410nm	BT-1U-61-E94	1610nm

Please consult the part number for the transmitter unit to properly identify the wavelength for your specific module. Matching part number for receiver will be MR-1U-3.

When using in a system with a CWDM multiplexer/demultiplexer, it is essential that the specific wavelengths to and from these units be connected to the corresponding input/output wavelengths on the CWDM mux/de-mux units. Otherwise, the individual wavelengths will not pass through the CWMD mux/de-mux device.

When using higher power CWDM lasers, an external attenuator of 3dB minimum is required when performing short distance testing to eliminate optical overload at the Rx unit.

9. SpectraView™ Monitoring

This module series is equipped with Meridian's SpectraView monitoring that continuously monitors the fiber system and associated equipment to provide real-time information regarding the integrity of the system.

SpectraView supports the following diagnostic functions:

1. Fiber continuity
2. Presence/loss of video

Notification and identification of faults for the above conditions is automatically displayed on the monitor connected to the video output on the receiver module.

The table below lists the detected faults and associated alert messages that are displayed on the monitor:

Fault	Video Display Message
Broken optical fiber between Tx & Rx units	8 vertical gray-scale bars across the monitor screen
Loss of video signal at CCTV (Tx) side	4 vertical gray-scale bars across the monitor screen

In addition to the loss of video on the monitor, these messages alert the operator as to the cause of the associated video loss. Upon receiving one of these messages, the operator should inform their technical service center to remedy the situation.

10. Product Part Number Variations

These series products are available in one fiber version. In addition, both single-mode and multimode fiber are supported. The table below lists the part number examples and their optical transmission characteristics:

Module Part #	Wavelength (nm)	Fiber Type	Optical Connector
BT-1U-1-E94	1300	Multimode	ST
BT-1U-3/FC-E94	1310	Single-mode	FC
BT-1U-7/ST-E94	1550	Single-mode	ST
BT-1U-9/ST-E94	1310	Single-mode	ST

11. Troubleshooting

Below is a listing of several problems that may arise during the installation & operation of the modules. If you are having difficulty installing or operating the modules please refer to this list below.

Problem: *Tx signal light is Red*

Action: Check fiber connection.

Problem: *Rx signal light is Red*

Action: Received optical signal is absent or weak. Check fiber connection and measure optical power at receiver.

Problem: *No video signal at the output of module*

Action: Check to ensure that the video-specific LED is lit Green. Also, check to ensure that the optical LEDs are ON. If no video is still present, check to ensure that the monitor is ON and the video cable is connected to the correct video port on the Rx module.

Problem: *Video image is dark*

Action: Check the iris control on the camera to ensure that it is open to the proper amount for the conditions.

Problem: *Video image is too bright and appears overexposed*

Action: Check the Video overload indicator on the Rx module. If it is Red, the video signal level is too high and the CCTV iris should be checked to ensure that it is open properly for the conditions.

If the problem still persists after reviewing the above items, please contact Meridian technical support:
+1 516-285-1000 / support@meridian-tech.com

Notes:

