



Installation/Operation Instructions

Fiber Optic Video Transmission System

Part Numbers:

NT/NR-1HD-x (ST/FC)

(1-Channel HD-SDI Multi-rate Video Transmitter/Receiver)

NT/NR-1HG-x (ST/FC)

(1-Channel 3G-SDI Multi-rate Video Transmitter/Receiver)



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1.0 Product Description

Meridian's product series NT/NR-1HD-x and NT/NR-1HG-x are fiber optic modems that transmit or receive one channel of real-time, uncompressed video HD-SDI for series NT/NR-1HD and 3G-SDI for NT/NR-1HG series. This product supports one channel of SMPTE 292M, 310M, 259M, 344M and 424M compliant digital video data rates, over one optical fiber using digital transmission technologies. This system is available for use with multimode or single-mode fibers and with CWDM lasers. System features Automatic Gain Control - no adjustments are required for different lengths of cables

The NT/NR-1HD-x and NT/NR-1HG-x is the stand-alone model. This product is powered by 5VDC power supply (Part # WP-5). Option "A" on the end of the part number indicates a unit with round power jack.

NT/NR-1HG-x -E is powered by internal switching power supply via 2 pin screw terminal connector and will accept 12-24VAC or DC (Part # WP-24). This power input is optional for this module and it's available only if it is specified in the order.

Both ST and FC optical connectors are supported. An ST optical interface is available for both multimode and single-mode fiber applications while the FC optical interface is available only for single-mode products.

Optional conformal coating provides an additional level of protection from environments with high moisture and humidity.

2.0 Installation

The NT/NR-1HD-x and NT/NR-1HG-x is a shelf mount module and can be mounted in either a horizontal or vertical configuration. There are two mounting holes for # 8 (maximum) hardware. A 2-pin plug-in connector is located on the side of the module for power. For proper operation of this module Meridian recommends the WP-5 power supply for 5VDC (default) or WP-24 power supply for 12-24VAC/DC (optional) power input.

3.0 Product Signal Format & Specifications

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

Video		
	HD-SDI (HD)	3G-SDI (HG)
Formats	19.4 Mbps (SMPTE 310M) 143 To 540 Mbps SMPTE 259M/344M 1.485 Gbps SMPTE 292M HDTV DVB/ASI at 270 Mbps SMPTE 305M SDTI Rates	19.4 Mbps (SMPTE 310M) 143 To 540 Mbps SMPTE 259M/344M 1.485 Gbps SMPTE 292M HDTV DVB/ASI at 270 Mbps 2.97 Gbps SMPTE 424M SMPTE 305M SDTI Rates
Nominal Level	0.8 Vp-p, 1.0 Vp-p (max)	0.8 Vp-p, 1.0 Vp-p (max)
Data Rate	19Mb/s - 1.5Gb/s per channel	19Mb/s - 3Gb/s per channel
Impedance	75 Ohm	75 Ohm
Gain	Unity	Unity
Input Coupling	AC	AC
Return Loss	>15dB	>15dB
Jitter (Pathological Data Pattern)	<0.2UI	<0.2UI
Cable Equalization	Automatic 0-200m @ 1.5Gb/s	Automatic 0-70m @ 3Gb/s
Bit-Error Rate (0 to -20dBm)	10 ⁻¹²	10 ⁻¹²

Connectors	
Video	75 Ohm BNC w/gold center pin
Optical	Singlemode – ST or FC Multimode – ST
Power	2 pin terminal strip or DC Power Jack

HD-SDI Optical Specifications							
Fiber Type/Size (um)	Optical Output (dBm)	Rx Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical connector	Optical Dynamic Range (dB)	Approx. Maximum Distance (km)
Multimode (FP Laser) 62.5 / 125	-3	-22	19	1300	ST	22	1.3
Single-mode (FP Laser) 9 / 125	-3	-22	19	1310	ST, FC	22	30
Single-mode (DFB Laser) 9 / 125	+1	-22	23	1270-1610	ST, FC	22	60
3G-SDI Optical Specifications							
Multimode (FP Laser) 62.5 / 125	-3	-20	17	1300	ST	19	0.65
Single-mode (FP Laser) 9 / 125	-3	-20	17	1310	ST, FC	19	30
Single-mode (DFB Laser) 9 / 125	+1	-20	21	1270-1610	ST, FC	19	60



Compliant with Class 1 Laser Safety Rating.

4.0 Module Pinout Diagram

Figure 4.1 below show the connectors and LED status indicators location for both the NT/NR-1HD-x and NT/NR-1HG-x modules.

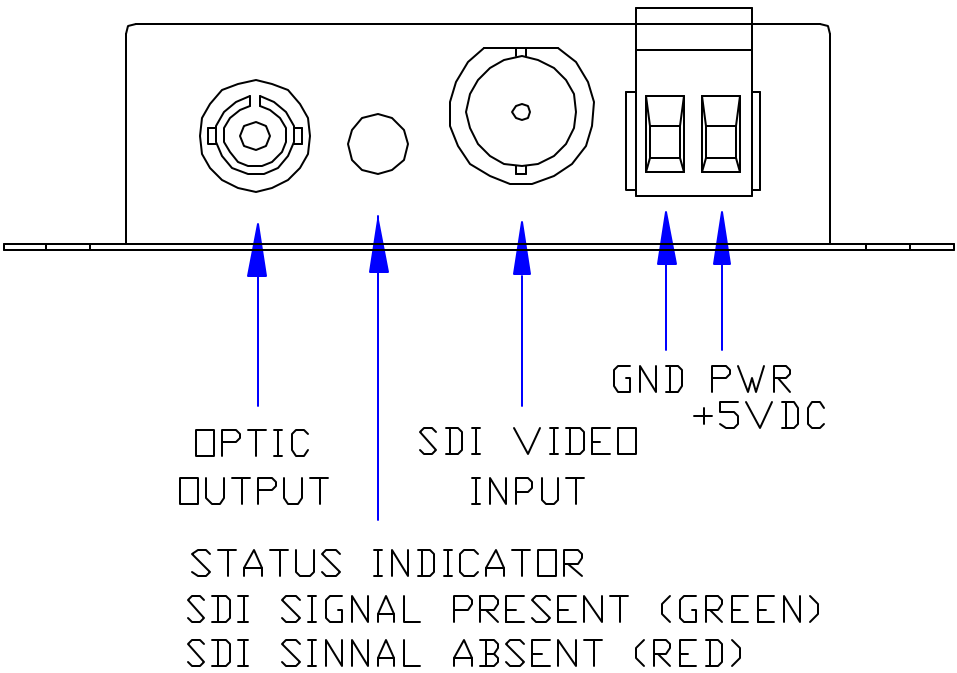
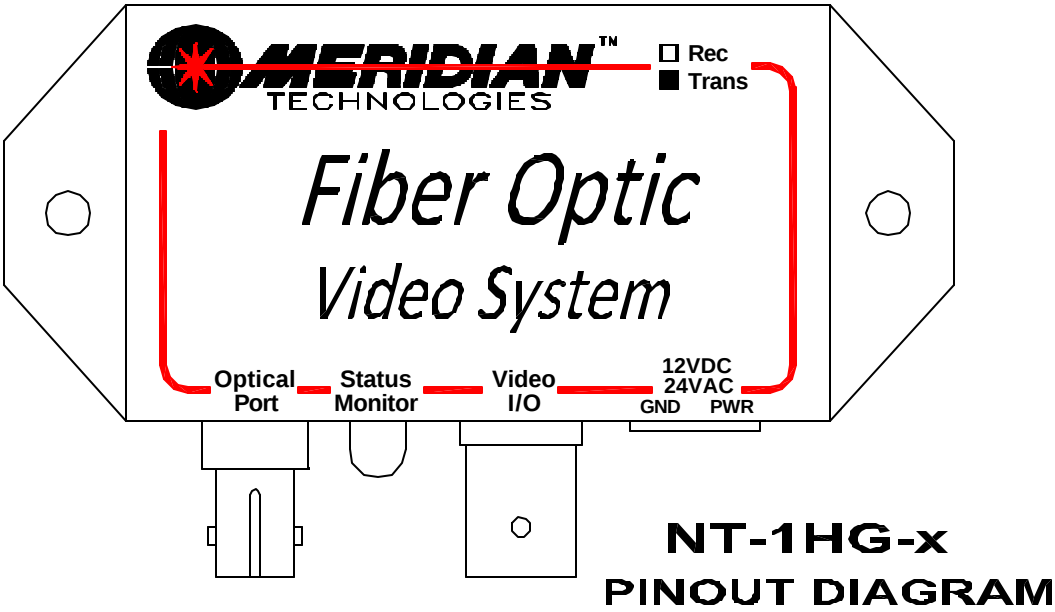
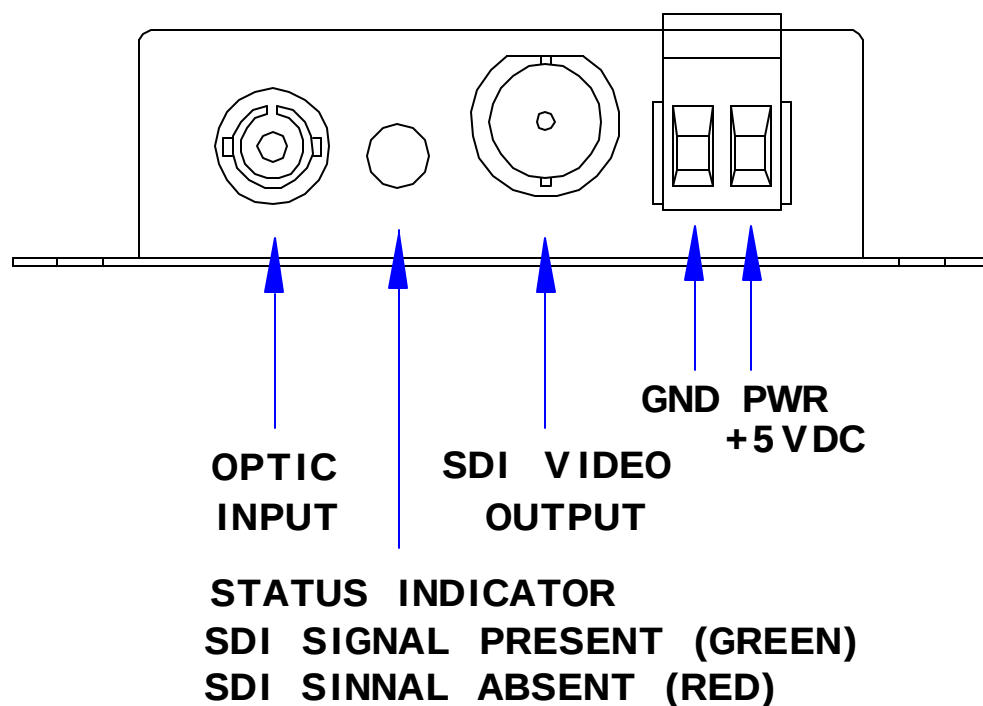
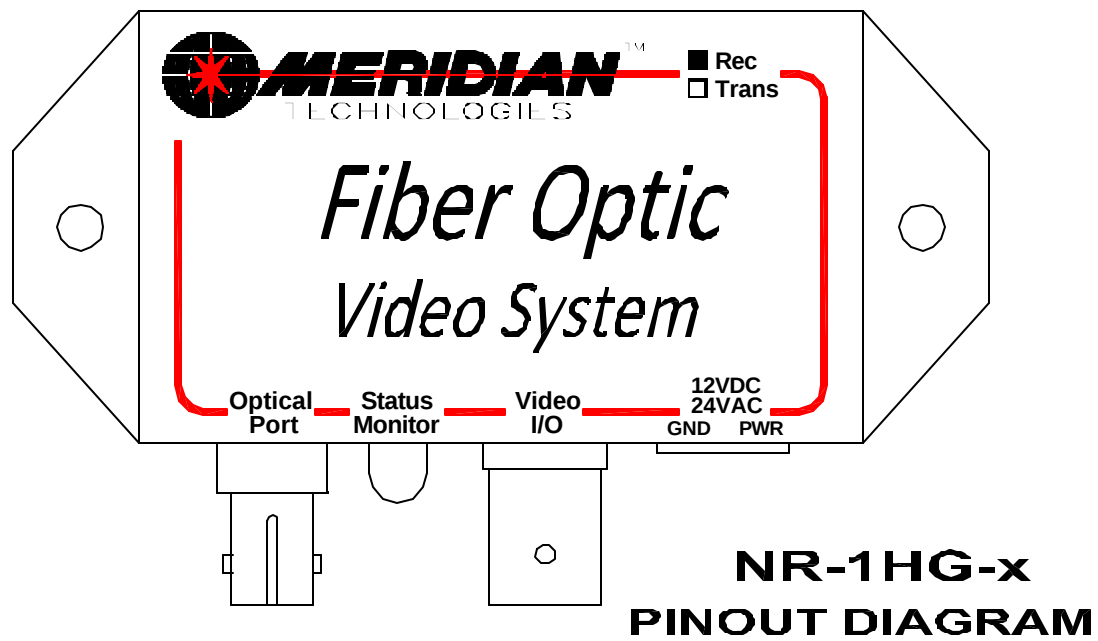
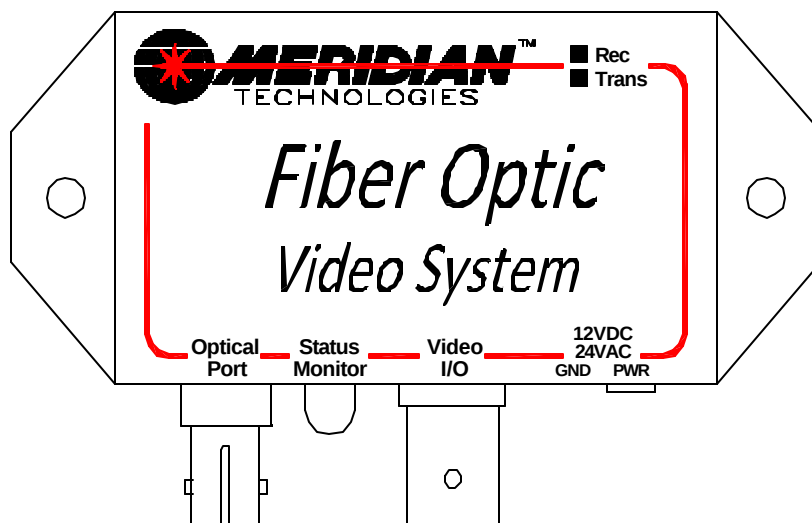


Figure 4.1
NT-1HD(HG)-x
Module Layout Diagram

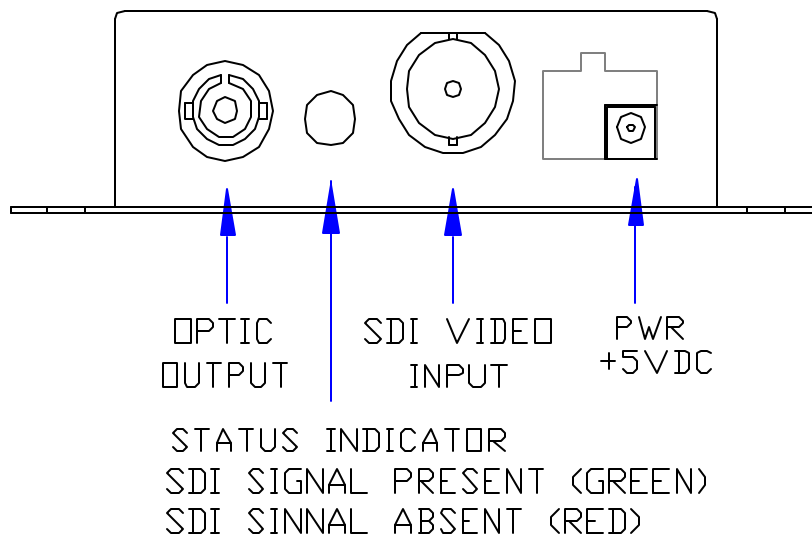


**Figure 4.2
NR-1HD(HG)-x
Module Layout Diagram**



NT-1HG-xA

PINOUT DIAGRAM



NR-1HG-xA

PINOUT DIAGRAM

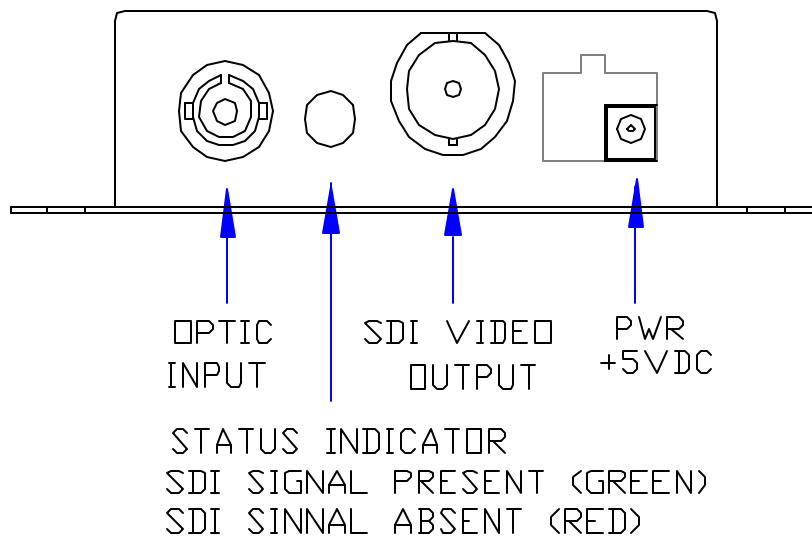


Figure 4.3
NT/NR-1HD(HG)-xA
Module Layout Diagram

4.2 Connection Diagram

Figure 4.2 below show the video and fiber connections for both the NT/NR-1HD-x and NT/NR-1HG-x modules.

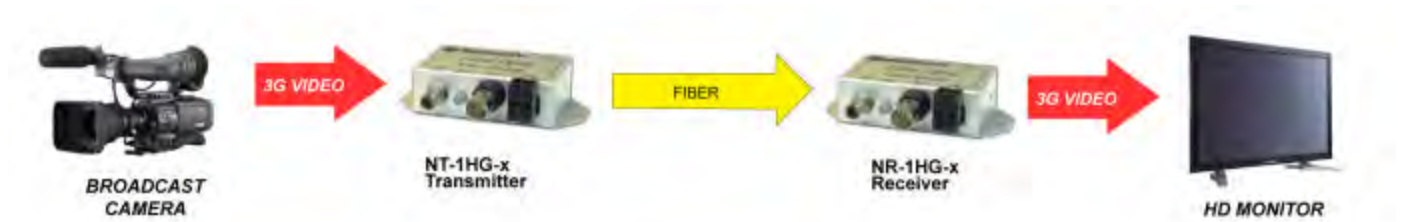


Figure 4.2
NT/NR-1HD(HG)-x
Module Connection Diagram

5.0 CWDM Option

These modules are also available with a CWDM option. The NT 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.

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 NR-1HD(HG)-3

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

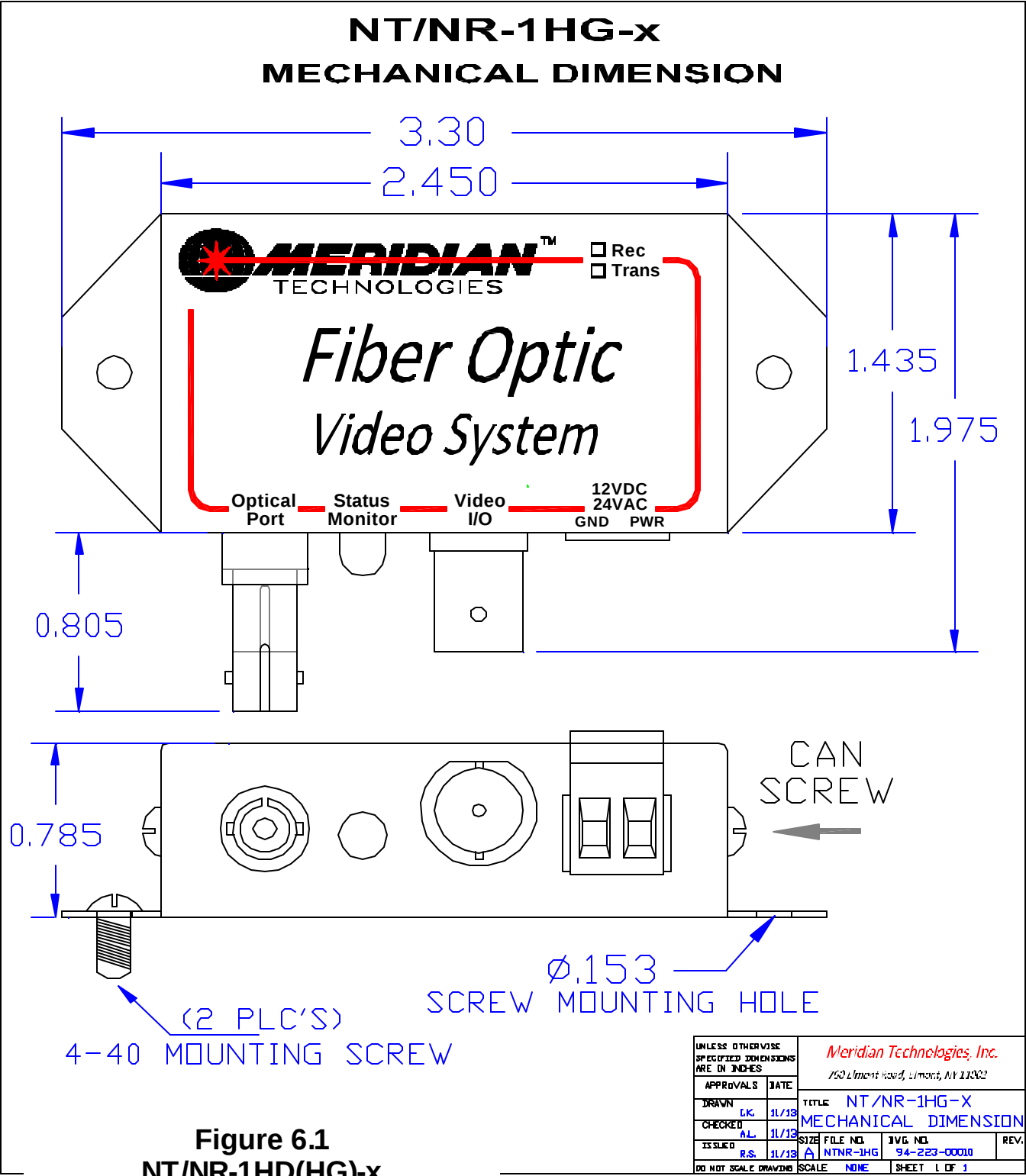
Figure 5.1
Wavelength Configuration

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/demux units. Otherwise, the individual wavelengths will not pass through the CWMD mux/demux 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.

6.0 Mechanical Dimensions

Module physical dimensions: Lent – 3.35”(86mm), Width – 1.8” (46mm), Height – 0.74” (19mm). Module weight: 0.22 Lb (100g)



7.0 Product Part Number Variations

The table below lists the various part numbers and description that are available for this series of product.

Figure 7.1

PICTURE	PART NUMBER	VIDEO TX	VIDEO RX	HD SDI	3G SDI	Wavelength (nm)	FIBER TYPE	CONN ECTOR (Optional)
	NT-1HG-1	1			v	1300	MM	ST
	NR-1HG-1		1		v	1300	MM	ST
	NT-1HG-3	1			v	1310	SM	FC (ST)
	NR-1HG-3		1		v	1310	SM	FC (ST)
	NT-1HG-7	1			v	1550 DFB	SM	FC (ST)
	NT-1HG-9	1			v	1310 DFB	SM	FC (ST)
	NT-1HG-CWDM	1			v	1270-1610	SM	FC (ST)
	NT-1HD-1	1		v		1300	MM	ST
	NR-1HD-1		1	v		1300	MM	ST
	NT-1HD-3	1		v		1310	SM	FC (ST)
	NR-1HD-3		1	v		1310	SM	FC (ST)
	NT-1HD-7	1		v		1550 DFB	SM	FC (ST)
	NT-1HD-9	1		v		1310 DFB	SM	FC (ST)
	NT-1HD-CWDM	1		v		1270-1610	SM	FC (ST)

For the 12-24VAC/DC power option add “E” on the end of the part number.

For proper operation, it is necessary to match the transmitter (NT) with the associated receiver module (NR).

8.0 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: *No video at output of module*

Action: Check to ensure that the monitor is ON and the video cable is connected to the Rx module. With an optical power meter, verify that the wavelength for the suspect optical channel is working properly (NR unit).

Problem: *SDI signal light off*

Action: Check power connection.

Problem: *SDI signal light Red*

Action: Check SDI input signal connection.

If the problem still persists after reviewing the above items, please contact Meridian technical support (+1-516-285-0570)

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