



Installation/Operation Instructions

Fiber Optic RGB & DVI Video Transmission System

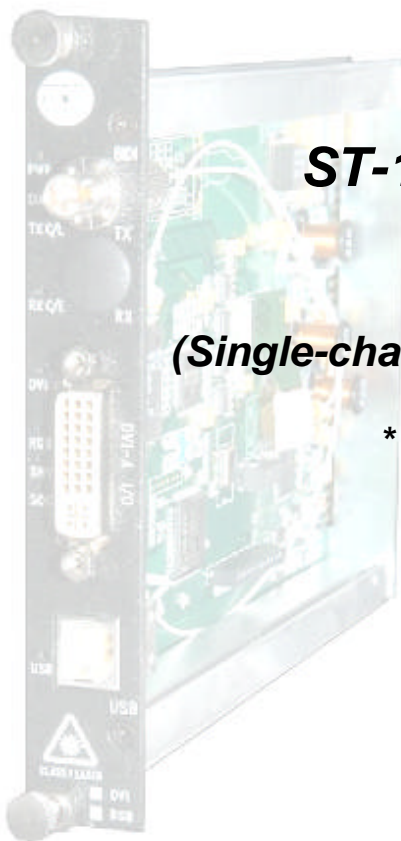
Part Numbers:

ST-1RG-0-E70 & SR-1RG-0-E70

(RGB-T-0 & RGB-R-0)*

(Single-channel, RGB / DVI Transmitter & Receiver)

** Old Reference. Part number changed on 11/2007*



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Table of Contents

1.0	Product Description.....	3
2.0	Installation	3
2.1	Fiber connections	4
3.0	Product Signal Format & Specifications	4
3.1	RGB resolutions & refresh rates	5
3.2	RGB Video Adjustments	5
3.3	Monitor Parameters	8
3.4	RGB to DVI conversion	15
3.5	RGsB Input/Output	15
3.6	Connectors	16
3.7	Conversion Cables	17
4.0	Front Panel Pinout Assignment Diagram.....	17
4.1	Status Indicators	22
5.0	Troubleshooting	22
	Appendix 1 – Supported Video Resolutions & Refresh Rates	23
	Part Number Variations	24

1.0 Product Description

Meridian's ST/SR-1RG-x product is part of Meridian's new ***Digi View*** product family. This state-of-the-art, high performance video transmission system transmits fully-compliant DVI, RGsB or RGBHV signals over one, multimode or single-mode fiber. Optional DVI adapter cables allow easy interface to standard video connection interfaces on computers, monitors, switches, etc. The ST/SR-1RG-x provides real-time, digitized transmission of DVI, RGB and H&V sync signals. Because it transmits signals in real-time, no video information is lost and is a perfect solution for dynamic video signals with crystal clear video and no color pixel skewing.

Having both DVI and RGB input/output capability, this system offers an easy upgrade path from RGB to DVI systems with the same modules. With this dual input/output capability, the user can easily interface RGBHV sources to DVI monitors and also DVI video sources to standard RGBHV monitors and video switches. The user can further enhance the video performance with the use of the computer USB interface. This data channel allows the user to adjust brightness, contrast, H&V position, picture sharpness, color, etc.

This product uses Meridian's standard 1-slot wide chassis mount card assembly and plugs into the following Meridian chassis: SR-500/S, SR-1002/S, SR-1600/S, and SR-2001 & SR-2000 series 19" equipment chassis.

Both ST and FC optical connectors are supported, depending on the part number. An ST optical interface is available for both multimode and single-mode fiber applications. The FC optical interface is available only for single-mode products. Conformal coating provides an additional level of protection from environments with high humidity.

2.0 Installation

The RGB/DVI series products are one-slot wide cards and, as such, occupy one slot in Meridian's standard chassis (SR-500/S, SR-1002/S, SR-1600/S, and SR-2001 & SR-2000 series 19" equipment chassis). To install in the chassis, orient the card with the Meridian logo at the top of the module and slide onto the top and bottom card guides in the chassis. Press securely on the top and bottom of the module to ensure that it is fully seated in the chassis so that the electrical connector mates with the chassis-mounted motherboard. Once installed, manually tighten the two thumbscrews located at the top and bottom of the card. Do not use tools to secure these and do not over tighten.

Note: A fully populated subrack should have forced-air cooling to avoid excessive heat buildup inside the chassis. A fan assembly tray (P/N FA-2000/1) with three (3) fans is available from Meridian and should be installed under the 19" SR-2000/1 whenever possible.

2.1 Fiber connections

There is one ST style fiber connection interface on the transmitter and a corresponding ST style fiber connection on the receiver. These modems are designed for multimode fiber (either 62.5 or 50 micron core diameter fiber). The maximum fiber distance is listed below:

Fiber type	Maximum distance
62.5/125um	300 meters
50/125um (standard performance)	1000 meters
50/125um (high bandwidth)	2000 meters
9/125um (1550 band)	5000 meters
9/125um (1310 band)	50000 meters

If the fiber distance is larger than that listed above, the video signal quality will be compromised and may not operate properly.

3.0 Product Signal Format & Specifications

The RGB series products transmit and receive the following signals over one fiber:

- DVI, RGBHV, RGsB (YPbPr)
- VGA, SVGA, SGA, SXGA & UXGA - Auto selection of resolutions and refresh rates from 640x480 to 1600x1200 x 60Hz
- HDTV resolutions of 480p, 720p and 1080i (DVI & RGBHV), 1080p
- H&V Sync frequency range of 60Hz to 150Hz (vertical), 30 to 130kHz (horizontal)
- RGB processing – 24-bits, no compression or scaling
- Input impedance/level – RGB 75ohm

The table below lists the optical specifications for both singlemode and multimode fiber applications.

Optical Specifications								
Meridian Optical Code	Fiber Type/Size (um)	Optical Output (dBm)	Rx Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical connector	Optical Dynamic Range	Max Distance (Km)
0	Multimode (VCSEL) 62.5/125 & 50/125	+2	-8	10	850 Band	ST	15	1
20	Singlemode (DFB Laser) 9/125	0	-16	16	1310 Band	ST, FC	20	50
21	Singlemode (DFB Laser) 9/125	0	-16	16	1550 Band	ST, FC	20	5

3.1 RGB resolutions & refresh rates

Meridian's ST/SR-1RG-x transmission system is designed to automatically sense and configure itself to work with many of the standard video resolutions and screen refresh rates. When first connected to an RGBHV video source, the transmitter/receiver pair will determine the incoming signal characteristics, search its internal firmware database and modify the characteristics of the system to properly encode, transmit and decode the signal. This initial recognition will cause the monitor's display to go blank for approximately 1 second while the system synchronizes with the incoming signal. Once completed the video transmission will continue.

The Resolution/Refresh rate table Appendix 1 lists the various video resolutions and refresh rates these modules support – at the time of this writing. If needed, please contact Meridian for an updated list of the resolutions/refresh rates this product supports.

3.2 RGB Video Adjustments

There are occasions where the resolution of the video source does not exactly match the resolution of the monitor or minor adjustments in color, contrast, picture position need to be made. In this case, the quality of the video may be somewhat compromised. In order to correct this, the ST/SR-1RG-x modules can be adjusted slightly to make minor corrections in the quality of the video signal. These adjustments include Horizontal/Vertical position, color, brightness and contrast. The steps below identify the proper procedure for installing and running the supplied software.

There are no physical hardware adjustments on this equipment. All of the adjustments are made with the supplied software that can be installed on your Windows 2000/XP/Vista computer. Please follow the instructions below on the software installation.

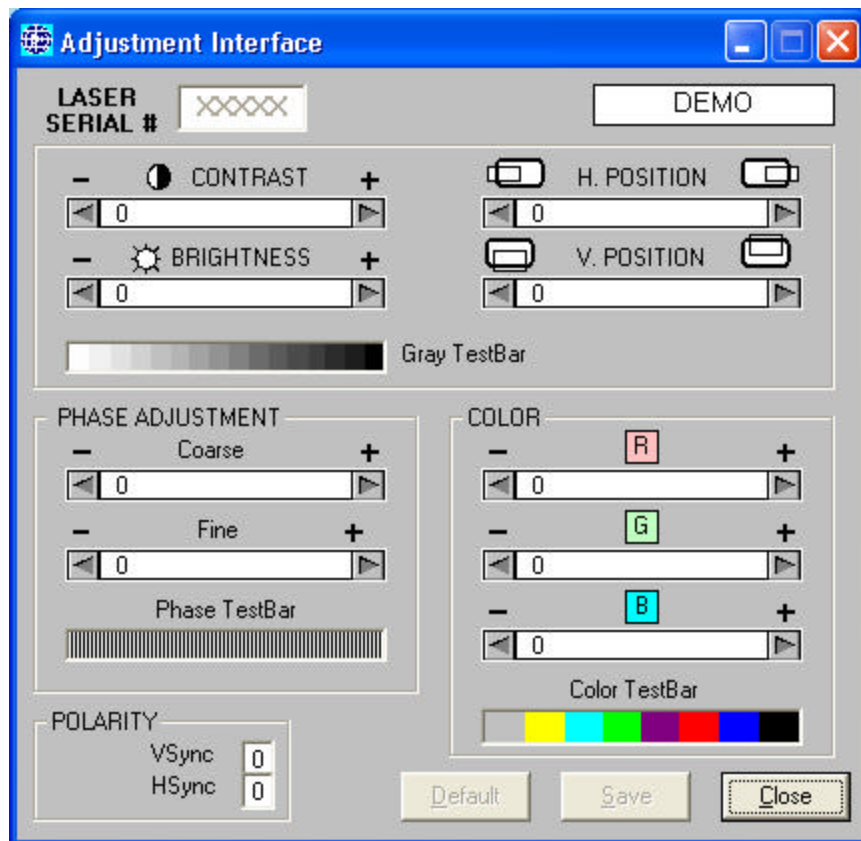
RGB-HV Interface software installation

1. Insert the CD, supplied with the card, into PC CD/DVD drive, choose RUN from Windows START menu and type D:\setup (where D is PCs CD/DVD drive), then follow the instructions to install the software.
2. When the installation is finished, power up the card and connect the card with PC by USB cable(USB2.0).
3. On the screen of the PC the message "Found new hardware" and window "Found New Hardware Wizard" are appeared. Choose "Install from a list or specific location (Advanced)", click "Next". In the next window click "Browse". On the list find CD drive "RGBInterface", click on

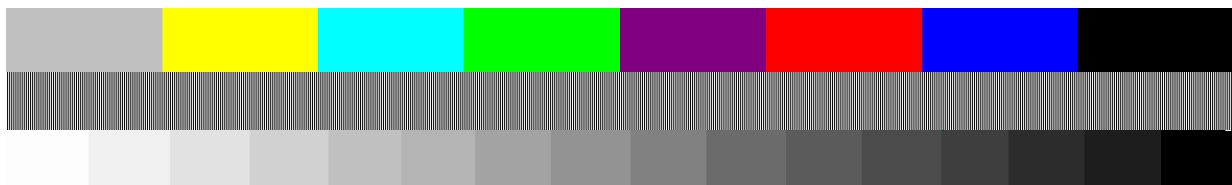
- it and highlight “win2k_xp_vista32_64”. Click OK, then NEXT and wait until driver is installed. Click “Finish”.
4. Then go to START -> CONTROL PANEL -> SYSTEM -> HARDWARE -> DEVICE MANAGER -> Ports(COM & LPT). There should be Communications Port (COMx), where usually x>1 and is the Virtual COMM#. Double click on it and check that the Manufacturer is Microchip Technology, Inc. Remove the USB cable from the card. This COMx is disappeared from the Device Manager List. Connect it again and this virtual port is appeared in the list.
 5. Click START button on task bar, then PROGRAMS and choose RGBInterfaceE program. Select the Virtual COMM #x and click “Connect”.



1. On Menu tab click on the “Settings”, The “Display Adjustment”. “Adjustment Interface” screen will appear.



2. Click on any TestBar: Gray, Phase or Color to make this TestBar full screen size.



3. Adjustments may need if some level of unwanted 'ghosting' or vertical bars appear on the display. Normally, no adjustments will be necessary. If you made some adjustments and want to save them, click button "Save", and parameters of this will be saved in the nonvolatile memory of this card.
4. If you need to revert to the original settings, click button "Default".

This concludes the fine tuning adjustments of the RGB-HV transmission system.

3.3 Monitor Parameters

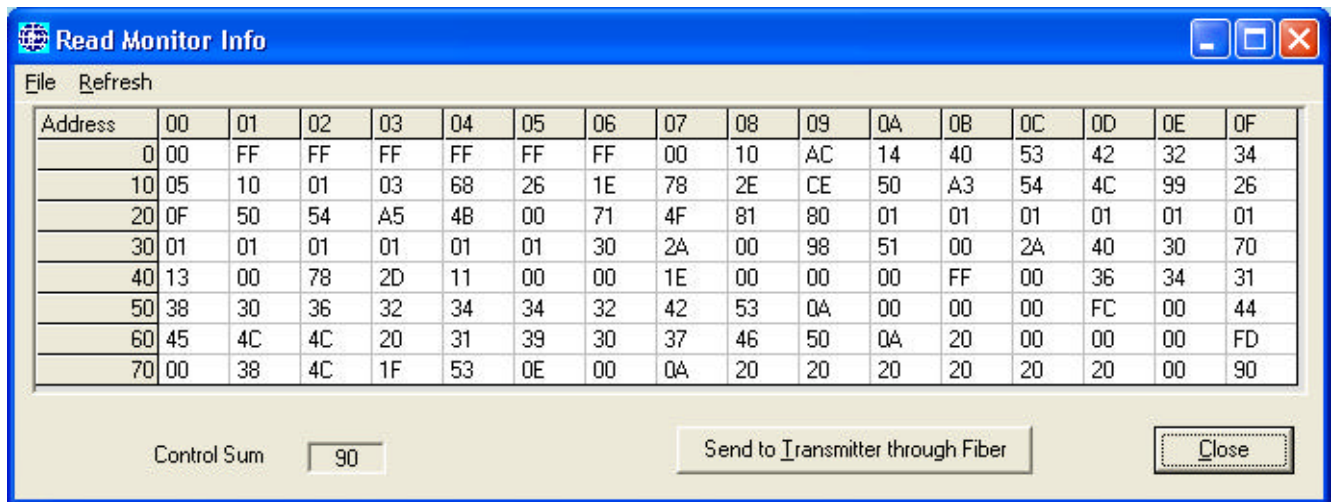
Instruction for transferring Monitor parameters (EDID).

If you have monitor EDID file in *.bin format you can load it in RGB transmitter card directly via USB port as described in p. 8-14 of this instruction and skip p.p. 1-7. Length of this file may be 128 or 256 bytes.

1. Turn on Monitor, set internal switch 9 of the Tx RGB in position ON(down), then turn on RGB card.
2. Connect Receiver RGB card to Laptop or PC via USB port.
3. On Laptop start RGBInterface TxRx program / should be software version 3.04 or higher/.
4. Select virtual COM Port /Control panel, System, Hardware, Device manager, Ports/ and click "Connect".
5. If button "Connected" is shaded (that means the connection is established), click "Setting" and then "Monitor Info".



Window “Read Monitor Info” is opened

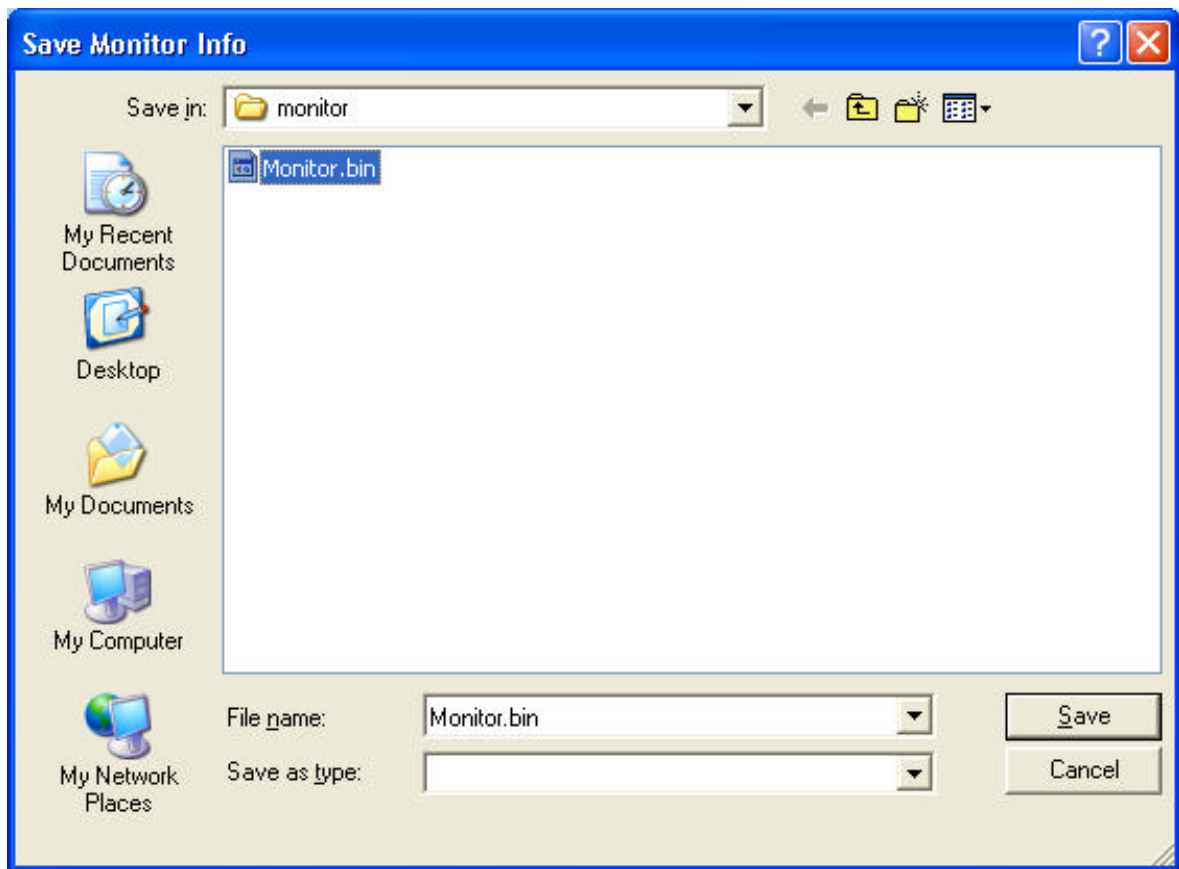


Click menu “Refresh” and in a few seconds the message “Info is refreshed” is appeared, click on “OK”

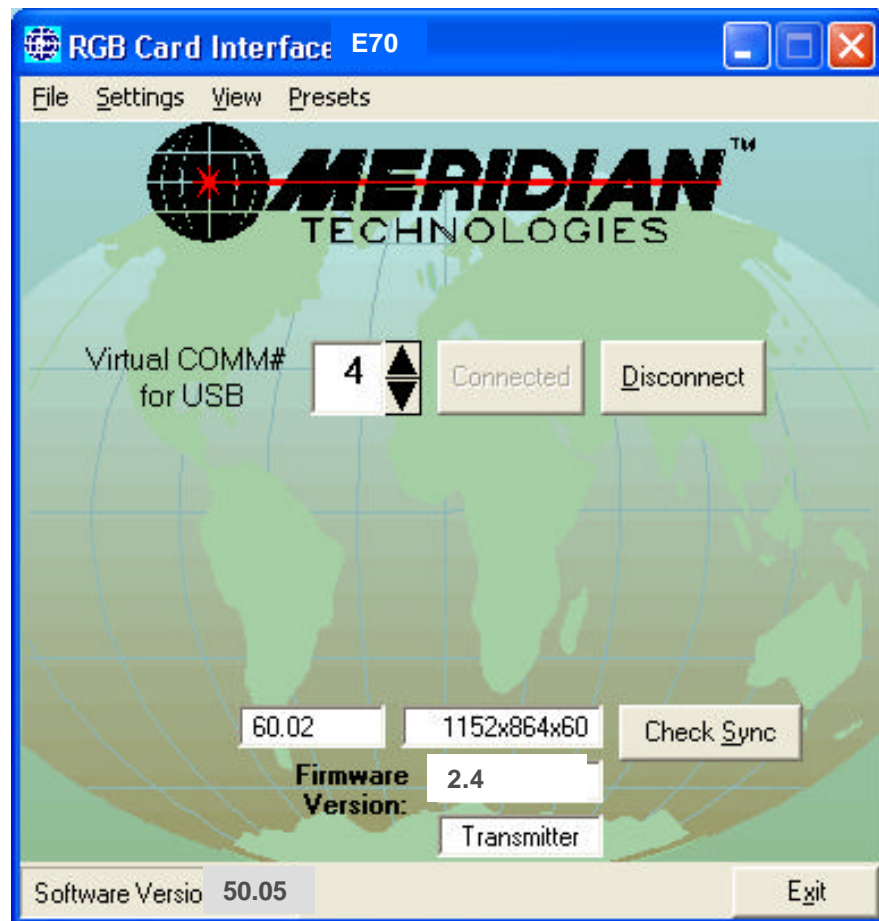


Then on the window click menu “File” and “Save”.

6. Select the path where you want to place this file (It may be folder in Laptop, outer flash memory or floppy disk).

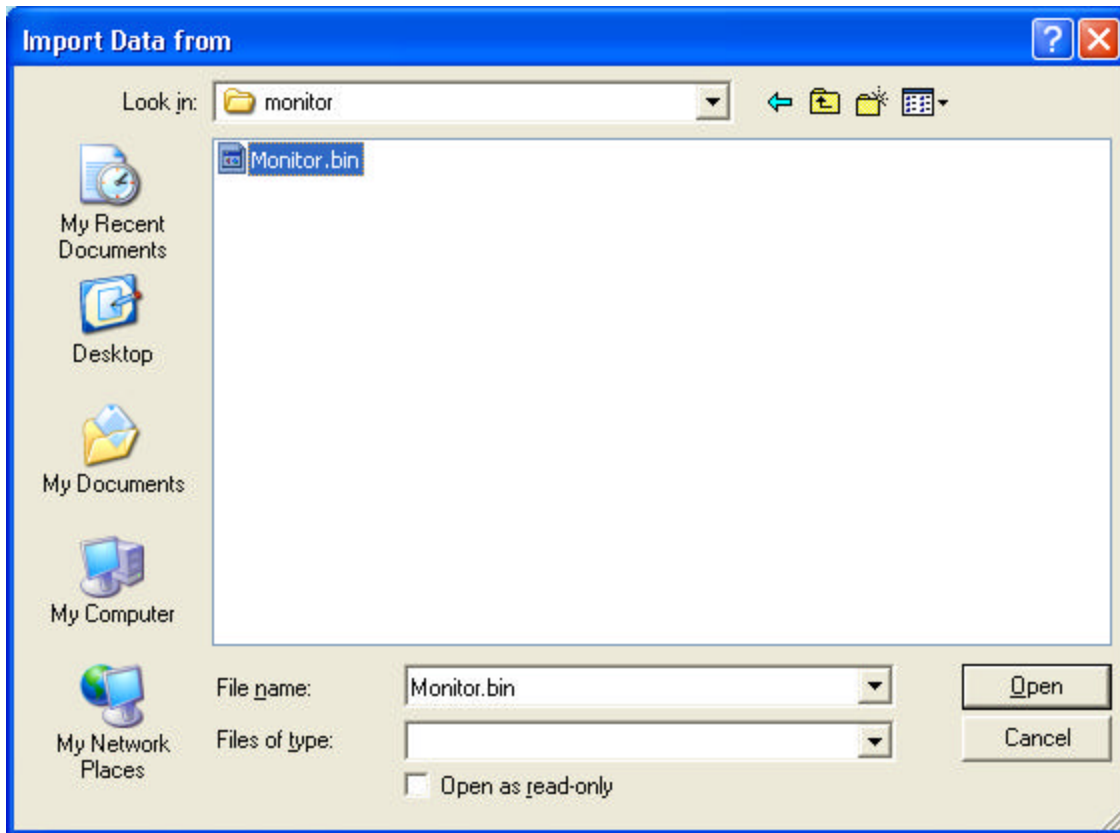


7. On window "Save Monitor Info" click "Save", confirm this command by "OK". Disconnect USB socket from Rx RGB card.
8. Connect Tx RGB card to PC USB Port .
9. Set internal switch 9 of the Tx RGB in position ON(down), then turn on RGB card.
10. Select virtual COM Port /Check COM# in Control panel, System, Hardware, Device manager, Ports/ and click "Connect". (If the button "Connected" is shaded, click "Disconnect" and then "Connect")



11. Button “Connected” is shaded, click menu “File” and then “Import Monitor File”.

12. Window “Import Data from” is opened, select folder, where you saved *.bin” file, and click “Open”.

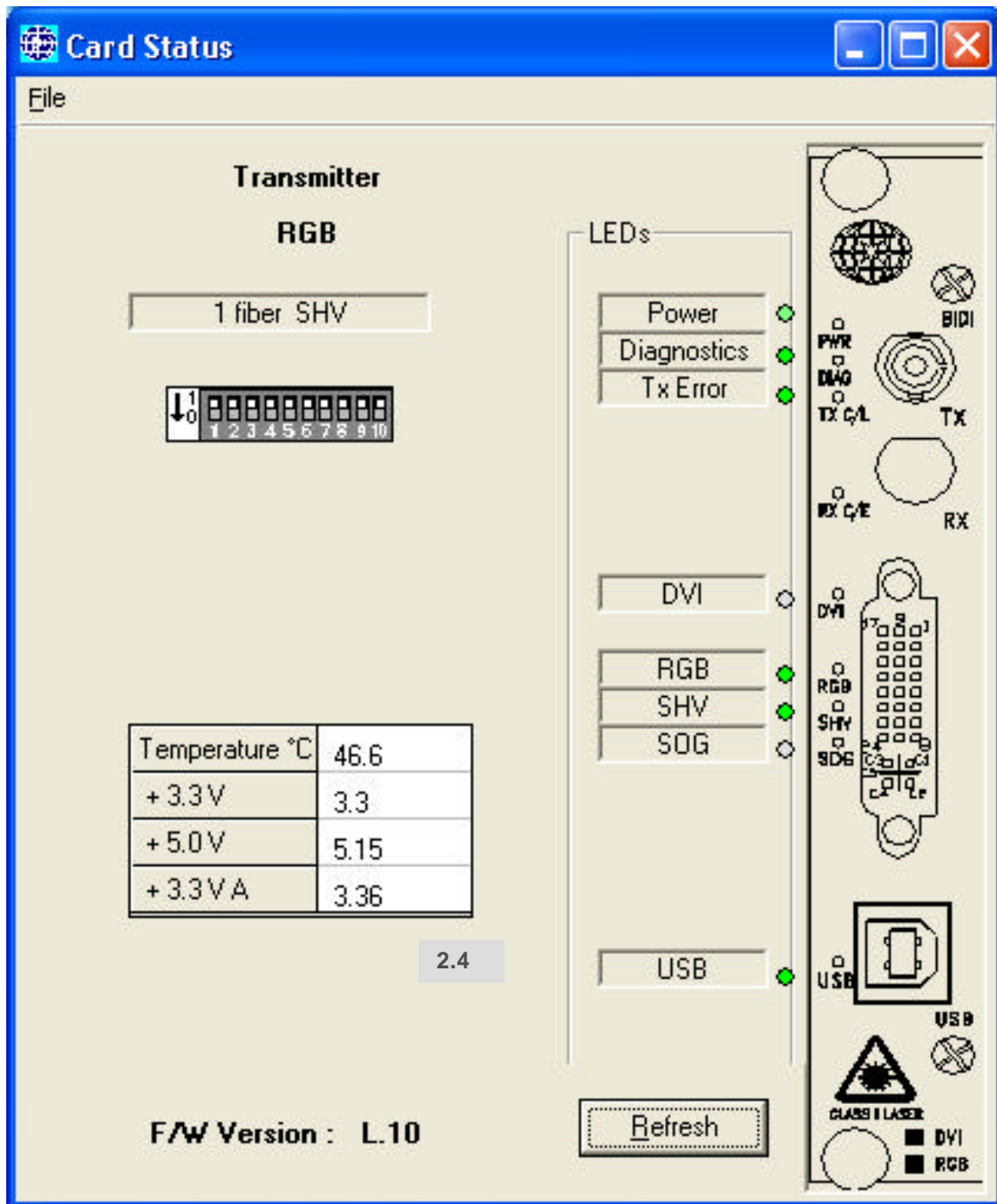


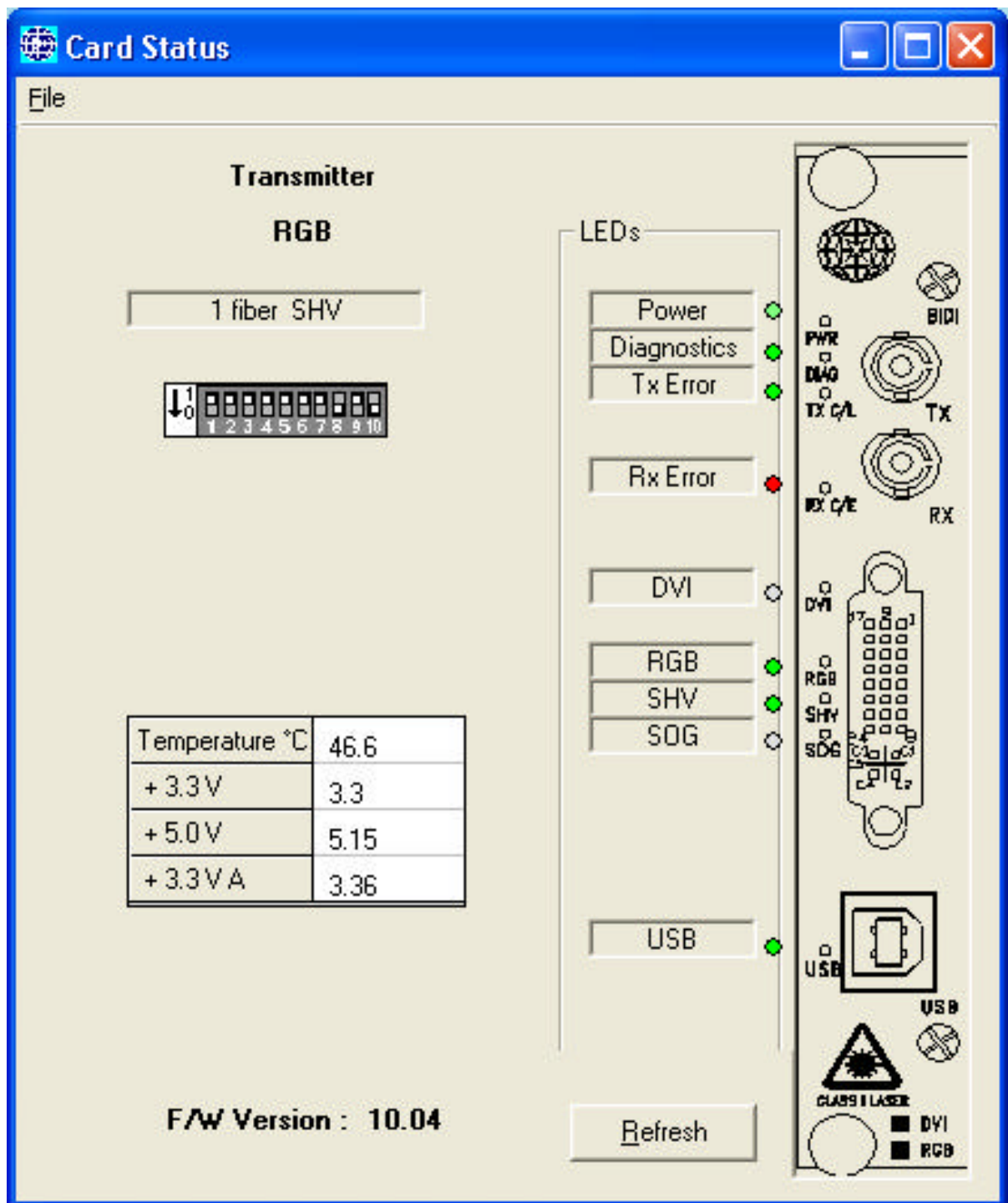
13. Confirm to load the file, clicking “OK” and after some time conformation window is appeared.
14. Then you can restart the computer and it will read monitor parameters from TxRGB card.
15. This information stores in EEPROM TxRGB card and need to update only when you change monitor.

Notes:

- 1. It is initial installation, it should be done only when monitor is changing.**
- 2. RGB receiver card should have serial number # 149052 or higher.**
- 3. Monitors with E-EDID 256 bytes are supported by software ver. 50.09 or higher, firmware of RGB Receiver ver. 12.8 and RGB Transmitter ver. 5.4 or higher.**

For viewing card status click “View “ and “Status”.
And click button “Refresh”





3.4 RGB to DVI conversion

These modems are capable of operating in both RGBHV & DVI modes. Both the Tx & Rx units can be individually configured to transmit/receive either RGBHV or DVI. In order to do this, one switch on the Tx and Rx boards must be set. The table and figure below show the location of this switch on the circuit board and the proper configuration of the switch for the desired mode of operation.

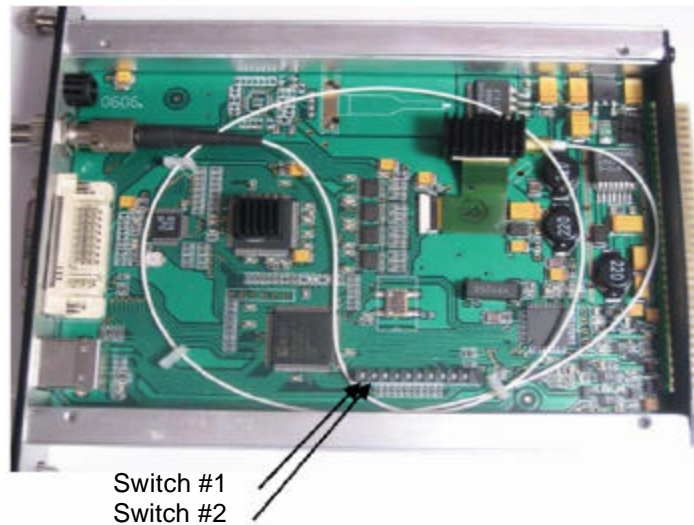
RGB/DVI Selector Switch		
Mode (Tx or Rx)	Tx Switch #1	Rx Switch #1
RGB (In) - RGB (out) - Default	OFF (up)	OFF (up)
RGB (In) – DVI (out)	OFF (up)	ON (down)
DVI (In) – RGB (out)	ON (down)	OFF (up)
DVI (In) – DVI (out)	ON (down)	ON (down)

The photo below shows the location of the bank of switches. The only switch in this bank of 10 switches that needs to be configured is Switch #1 (far left switch). The default position is ON (up) for RGB operation. Each of the Tx/Rx modules can be configured individually so that, if desired, you can make a conversion between RGBHV & DVI. The above table indicates how each of these configurations can be accommodated using this RGB/DVI selector switch.

This switch bank can be accessed either by using a small screwdriver to reach inside the slot module's cover on the right side. Otherwise, the side cover can be carefully removed (screws in each corner of the card) where the switch can then be accessed.

3.5 RGsB Input/Output

These units can also be used to transmit and receive RGsB (RGB w/sync on Green) video signals. The selector switch on the appropriate Tx/Rx units must be set to transmit or receive this signal. In order to input or output an RGsB video signal, both switch 1 & 2 must be in the ON (down) position.



RGsB Selector Switch				
Mode (Tx or Rx)	Transmitter (ST-1 RG-x)		Receiver (SR-1 RG-x)	
	Switch #1	Switch #2	Switch #1	Switch #2
RGB (In) - RGB (out) - Default	OFF (up)	OFF (up)	OFF (up)	OFF (up)
RGsB (In) – RGB (out)	OFF (up)	ON (down)	OFF (up)	OFF (up)
RGB (In) – RGsB (out)	OFF (up)	Off (up)	OFF (up)	ON (down)
RGsB (In) – RGsB (out)	OFF (up)	ON (down)	OFF (up)	ON (down)

Note: To convert to or from DVI using RGB, please follow the table in section 3.4 for the correct switch setting for the DVI interface selection.

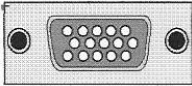
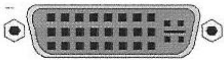
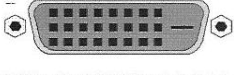

3.6 Connectors

The tables below identify the various connectors on the modules. The DVI-I connector is mounted to the module's front panel on both the transmitter and receiver.

Connectors	
Video	Standard DVI-I female (with RGBHV analog inputs/outputs) DVI-I to RGBHV (HD-15 female) molded adapter (dongle)
RGB adjustment	4-pin USB (type B)
Optical	Singlemode - ST or FC Multimode - ST

3.7 Conversion Cables

There are several types of DVI connectors that are mounted on standard computers and monitors. Meridian offers standard adapter cables (6 ft length) to properly interface these various connectors to our ST/SR-1RG-x modules. The table below identifies the type of connectors and the corresponding Meridian adapter cable that should be used. The connector on the opposite end of the cable is the standard DVI-I connector that interfaces to the RGB transmitter/receiver modules.

Computer/Input/Output Device	Adapter Cable Part Number
 HD15(M)	C-HD15-6
 DVI-I Connector	C-DVI-I-6
 DVI-D Connector	C-DVI-D-6
<p>BNC Connectors</p>  <p>Red Grn Blu H-Syn V-Syn</p>	C-BNC-6

4.0 Front Panel Pinout Assignment Diagram

Figure 4.1 below shows the front panel layout, connector location, indicator location and pinout assignment for both the ST-1RG-x and SR-1RG-x modules. This diagram shows the video pinouts for the on-board DVI-I video connector.

STATUS INDICATORS

PWR - POWER (GREEN)
 DIAG - NA
 TX C/L - TX CARRIER (GREEN)
 /OVERLOAD (RED)
 RX C/E - NA

DVI - DVI PORT ACTIVE (GREEN)

RGB - RGB PORT ACTIVE (GREEN)

SHV - HV SYNC PRESENT (GREEN)

SOG - SYNC ON GREEN PRESENT
 (GREEN)

USB INPUT (TYPE B)

STATUS INDICATOR

USB -USB ACTIVE (GREEN/RED)

***-OLD REFERENCE**

MERIDIAN TECHNOLOGEIS INC.

9/15/09

V.2

ST-1RG-0 PINOUT DIAGRAM

(ST-RGBHV-0*)
 (RGB-T-0*)

OPTICAL PORT (ST)

DVI INPUT/OUTPUT (DVI FEMALE)

1. TMDS DATA 2 -
2. TMDS DATA 2 +
3. TMDS DATA 2 SHIELD
4. NA
5. NA
6. DDC CLOCK
7. DDC DATA
8. ANALOG VERT. SYNC
9. TMDS DATA 1 -
10. TMDS DATA 1 +
11. TMDS DATA 1 SHIELD
12. NA
13. NA
14. +5V POWER
15. GND
16. HOT PLUG DETECT
17. TMDS DATA 0 -
18. TMDS DATA 0 +
19. TMDS DATA 0 SHIELD
20. NA
21. NA
22. TMDS CLOCK SHIELD
23. TMDS CLOCK+
24. TMDS CLOCK-
- C1. ANALOG RED
- C2. ANALOG GREEN
- C3. ANALOG BLUE
- C4. ANALOG HORZ SYNC
- C5. ANALOG GROUND

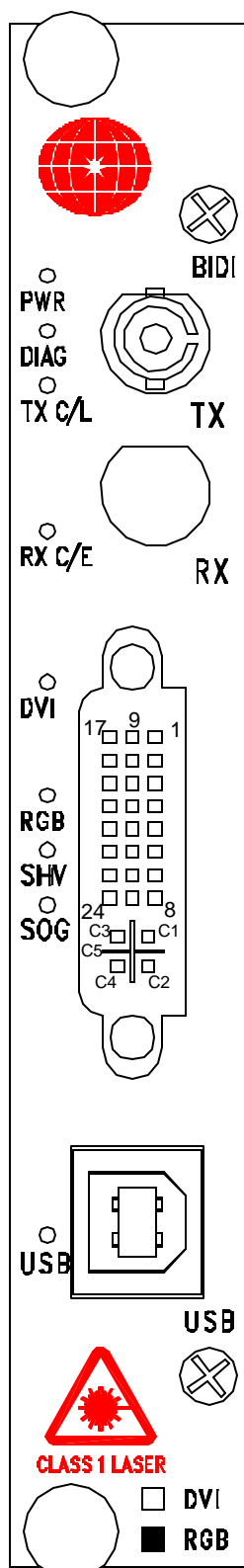


Figure 4.1

ST-1RG-x Front Panel Layout Diagram

STATUS INDICATORS

PWR - POWER (GREEN)
 DIAG - NA
 TX C/L - NA

RX C/E - RX CARRIER (GREEN)
 / ERROR (RED)

DVI - DVI PORT ACTIVE (GREEN)

RGB - RGB PORT ACTIVE (GREEN)

SHV - HV SYNC PRESENT (GREEN)

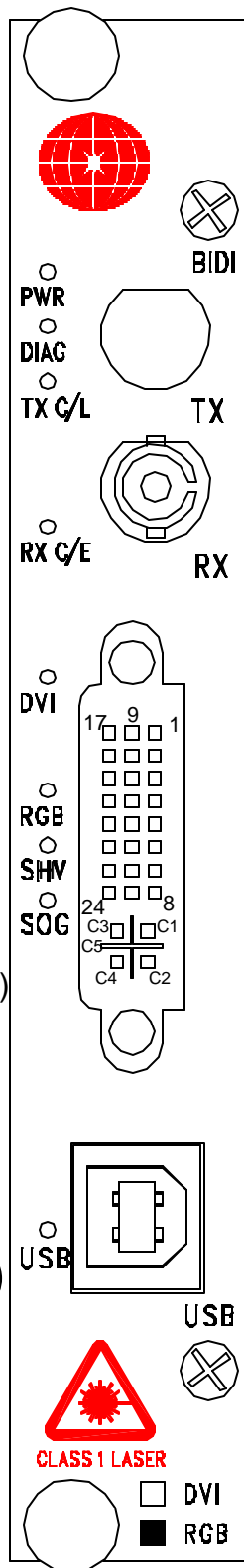
SOG - SYNC ON GREEN PRESENT
 (GREEN)

USB - USB ACTIVE (GREEN/RED)

USB INPUT (TYPE B)

***-OLD REFERENCE**

MERIDIAN TECHNOLOGEIS INC.
 9/15/09 V.2.1



SR-1RG-0

PINOUT DIAGRAM

(SR-RGBHV-0*)
 (RGB-R-0*)

OPTICAL PORT (ST) DVI INPUT/OUTPUT (DVI FEMALE)

1. TMDS DATA 2 -
2. TMDS DATA 2 +
3. TMDS DATA 2 SHIELD
4. NA
5. NA
6. DDC CLOCK
7. DDC DATA
8. ANALOG VERT. SYNC
9. TMDS DATA 1 -
10. TMDS DATA 1 +
11. TMDS DATA 1 SHIELD
12. NA
13. NA
14. +5V POWER
15. GND
16. HOT PLUG DETECT
17. TMDS DATA 0 -
18. TMDS DATA 0 +
19. TMDS DATA 0 SHIELD
20. NA
21. NA
22. TMDS CLOCK SHIELD
23. TMDS CLOCK+
24. TMDS CLOCK-
- C1. ANALOG RED
- C2. ANALOG GREEN
- C3. ANALOG BLUE
- C4. ANALOG HORZ SYNC
- C5. ANALOG GROUND

Figure 4.2

SR-1RG-x Front Panel Layout Diagrams

STATUS INDICATORS

PWR - POWER (GREEN)

DIAG - NA

TX C/L - TX CARRIER (GREEN)
/OVERLOAD (RED)

RX C/E - NA

DVI - DVI PORT ACTIVE (GREEN)

RGB - RGB PORT ACTIVE (GREEN)

SHV - HV SYNC PRESENT (GREEN)

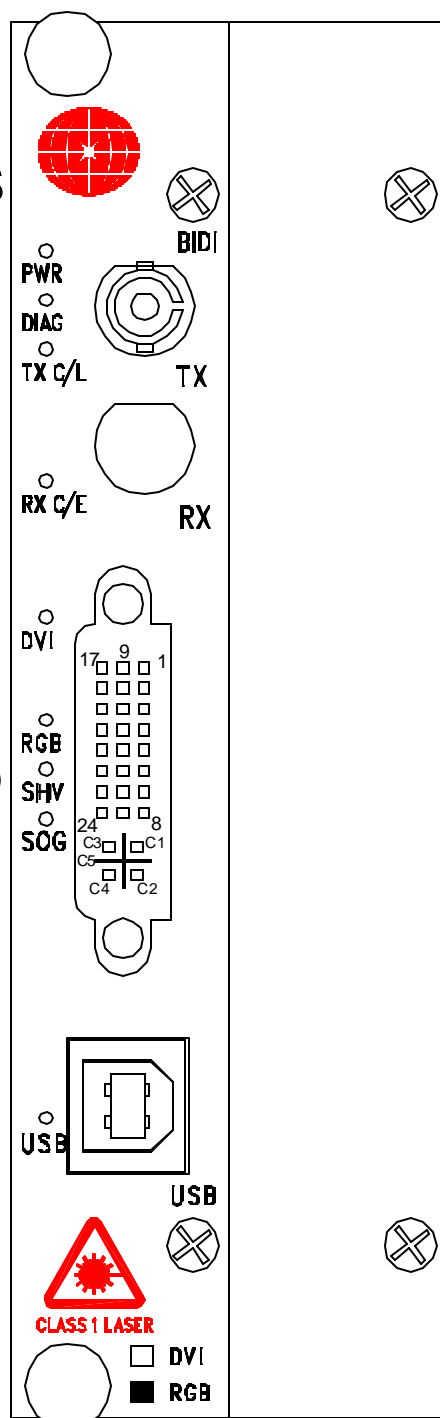
SOG - SYNC ON GREEN PRESENT
(GREEN)

USB INPUT (TYPE B)

STATUS INDICATOR

USB - USB ACTIVE (GREEN/RED)

07/21/2014 V.1



ST-1RG- X

PINOUT DIAGRAM

OPTICAL PORT (ST)

DVI INPUT/OUTPUT (DVI FEMALE)

1. TMDS DATA 2 -
2. TMDS DATA 2 +
3. TMDS DATA 2 SHIELD
4. NA
5. NA
6. DDC CLOCK
7. DDC DATA
8. ANALOG VERT. SYNC
9. TMDS DATA 1 -
10. TMDS DATA 1 +
11. TMDS DATA 1 SHIELD
12. NA
13. NA
14. +5V POWER
15. GND
16. HOT PLUG DETECT
17. TMDS DATA 0 -
18. TMDS DATA 0 +
19. TMDS DATA 0 SHIELD
20. NA
21. NA
22. TMDS CLOCK SHIELD
23. TMDS CLOCK+
24. TMDS CLOCK-
- C1. ANALOG RED
- C2. ANALOG GREEN
- C3. ANALOG BLUE
- C4. ANALOG HORZ SYNC
- C5. ANALOG GROUND

Figure 4.3

ST-1RG-20 or ST-1RG-21 Front Panel Layout Diagrams

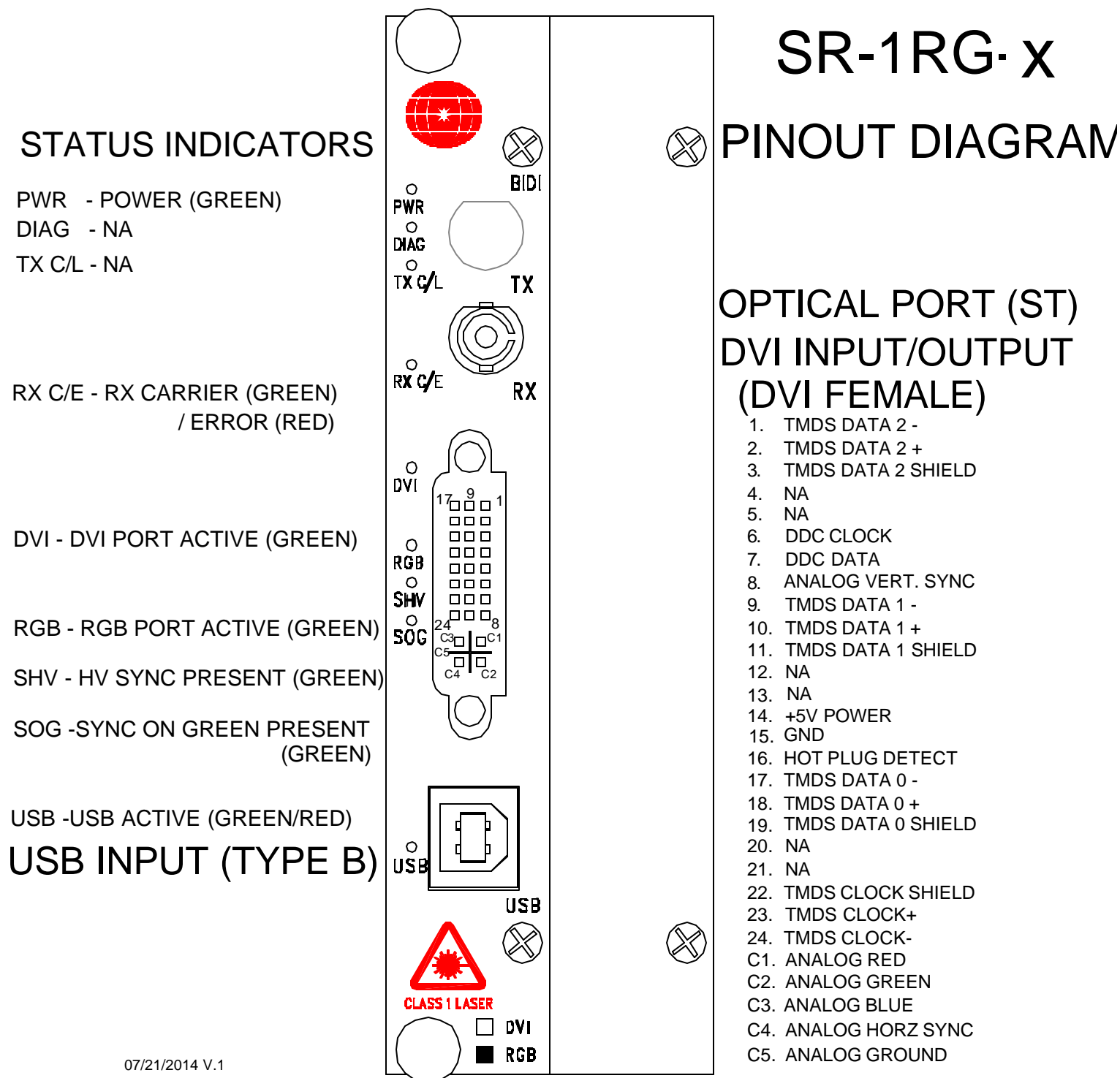


Figure 4.4
SR-1RG-20 or SR-1RG-21 Front Panel Layout Diagrams

4.1 Status Indicators

There are function status indicator lights associated these modules. They are identified as follows:

Power:	Green (ON)
Diagnostic:	Green (OK), Red (alarm)
Tx Carrier (transmitter only):	Green (OK), Red (alarm)
Rx Carrier (receiver only):	Green (Present)/Red (Error)
DVI active:	Green
RGB active:	Green
SHV (sync H&V):	Green (present)
SOG (sync on green):	Green (present)
USB active:	Green (Rx-data), Red (Tx-data)

5.0 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: *Module does not fit in chassis slots*

Action: Check module orientation. Meridian “Globe” must be oriented on the top left hand side of the module. Make sure the card guides in the chassis are aligned with the extrusion on the module

Problem: *Card power LED does not light when power to the module/subrack is applied or power indicator turns on and off*

Action: Check power supply to ensure that it is plugged in and turned on. If flashing continues, move module to another chassis or location in the same chassis, if available.

Problem: *No Video*

Action: 1 - Check the modem locations to ensure that the ST-1RG-x module is connected to the video source (computer, camera, etc) while the receiver module (SR-1RG-x) is connected to the video output device (monitor, etc.)
2 – Check to ensure that the modules are in the proper mode of operation (RGB or DVI) – onboard switch #1 (see section 3.4)

If the problem still persists after reviewing the above items, please contact Meridian technical support (+1-516-285-1000).

Appendix 1 – Supported Video Resolutions & Refresh Rates

The table below lists the presently-supported video resolutions and refresh rates. Meridian continues to expand the supported variations and will update this list as they become available. If you have any questions about other resolution/refresh rates, please call our technical service personnel.

Video Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Video Resolution	Horizontal Frequency (kHz)	Vertical Frequency (Hz)
640x480	31.47	60	1152x864	53.70	60
640x480	35.16	70	1152x864	63.17	70
640x480	37.86	72	1152x864	64.94	72
640x480	37.50	75	1152x864	67.50	75
640x480	43.27	85	1152x864	77.30	85
640x480	50.90	100	1152x864	91.84	100
640x480	61.80	120	1152x864	110.8	120
640x480	72.92	140	1152x864	131.5	140
640x480	75.00	144	1152x864	135.0	144
640x480	78.30	150	1152x864	141.7	150
640x480	90.6	170			
640x480	108.0	200	1280x720	44.6	60
			1280x720	52.6	70
800x600	37.88	60	1280x720	53.9	72
800x600	43.81	70	1280x720	56.4	75
800x600	48.08	72	1280x720	64.0	85
800x600	46.88	74	1280x720	76.1	100
800x600	53.67	85	1280x720	92.9	120
800x600	63.60	100	1280x720	109.3	140
800x600	77.16	120	1280x720	112.5	144
800x600	90.74	140	1280x720	117.6	150
800x600	94.10	144			
800x600	98.23	150	1280x960	60.0	60
800x600	112.5	170	1280x960	70.0	70
800x600	134.5	200	1280x960	71.9	72
			1280x960	75.0	75
1024x768	48.36	60	1280x960	85.9	85
1024x768	56.48	70	1280x960	101.4	100
1024x768	57.91	72	1280x960	123.1	120
1024x768	60.02	75			
1024x768	68.68	85	1280x1024	64.0	60
1024x768	81.40	100	1280x1024	74.7	70
1024x768	98.9	120	1280x1024	76.9	72
1024x768	116.9	140	1280x1024	80.0	75
1024x768	119.9	144	1280x1024	91.2	85
1024x768	125.8	150	1280x1024	108.0	100
1024x768	143.8	170			
			1920x1200	75.0	60
			1920x1080	67.3	60

Part Number Variations

The table below indicates the part numbers and product description that are included in this manual.

Transmitt	Receiver	Description
ST-1RG-0	SR-1RG-0	RGBHV & DVI video transmitter/receiver pair, 850nm multimode
ST-1RG-20	SR-1RG-20	RGBHV & DVI video transmitter/receiver pair, 1310nm singlemode
ST-1RG-21	SR-1RG-21	RGBHV & DVI video transmitter/receiver pair, 1550nm singlemode

Note: Shelf mount and rack mount units can communicate with each other.

* - Part number have bin changed from RGB-T/R-0 to ST/SR-1RG-x on 11/2007.



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