



Fiber Optic Video/Data Transmission System

Installation Instructions

Part Number:

ST-1W2C1G/2C1G-xS (ST/FC)

(Video transmitter, bi-directional contact closure and data)

SR-1W2C1G/2C1G-Xs (ST/FC)

(Video receiver, bi-directional contact closure and data)

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ST / SR-1W2C1G/2C1G-xS

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1.0 Product Description

Meridian's ST/SR-1W2C1G/2C1G-xS products are fiber optic modems that transmit one channel of uni-directional 10-bit video, two channels of bi-directional contact closure and bi-directional RS-232, RS-422 and RS-485 data signals over one optical fiber using digital transmission technologies. This product series uses Meridian's standard 1-slot wide chassis mount card assembly and plugs into the following Meridian chassis: SR-500/S, SR-1000, SR-1000/S, SR-1200/S, SR-1500/S, and SR-2001 & SR-2000 series 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 singlemode fiber applications. The FC optical interface is available only for singlemode products. Conformal coating provides an additional level of protection from environments with high humidity.

2.0 Installation

Series ST/SR-1W2C1G/2C1G-xS products are one-slot wide cards and, as such, occupy one slot in Meridian's standard chassis (SR-500/S, SR- 1000, SR- 1000/S, SR- 1200/S, SR- 1500/S, and SR-2001 & SR-2000 series 19" equipment chassis). To install in these 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 loaded 19" subrack should have forced-air cooling to avoid excessive heat generation inside the chassis. A fan assembly tray (P/N FA-2000) with three (3) fans is available and should be installed under the 19" SR-2000/1 whenever possible.

3.0 Product Signal Format & Specifications

The ST/SR-1W2C1G/2C1G-xS series products transmit and receive the following signals:

Signal Type	Channels	Transmit	Receive
NTSC/PAL video	1	ST-1W2C1G/2C1G-X	SR-1W2C1G/2C1G-X
Contact Mapping	2	Yes	Yes
RS-232 (Tx & Rx data)	1	Yes	Yes
RS-422 (Tx & Rx data)	1	Yes	Yes
RS-485 (2 & 4-wire)	1	Yes	Yes

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, 1.5Vp-p (max)
Differential Gain	<1 %
Differential Phase	<0.7°
SNR	>67dB (weighted)
Return Loss	>30dB
Field Tilt	<0.5%

Contact Mapping	
Contact type	Relay, normally-open, normally-closed, jumper selectable, Isolated contacts
Contact rating	0.3amps, 30 VAC/VDC
Contact bounce	5 msec
Max switching rate	10Hz

Data	
Formats	RS-232
Date Rate (RS-232)	DC to 125Kb/s
Data Rate (RS-422 & RS-485)	DC to 300Kb/s
Bit Error Rate (BER)	Better than 10^{-9}

Connectors	
Video	75 Ohm BNC w/gold center pin
Contact Mapping	14 pin terminal strip (two 4 pin connectors)
Data	14 pin terminal strip (one 5 pin connectors)
Optical	Singlemode – ST or FC Multimode - ST

4.0 Data Connector Pin Assignment

The 14 pin terminal block connector on the front of the module are used for the Contact interfaces and all data interfaces. Figures 7.1 below show the front panel layout, connector location and pinout assignment for both the ST & SR modules.

This module supports the following data formats:

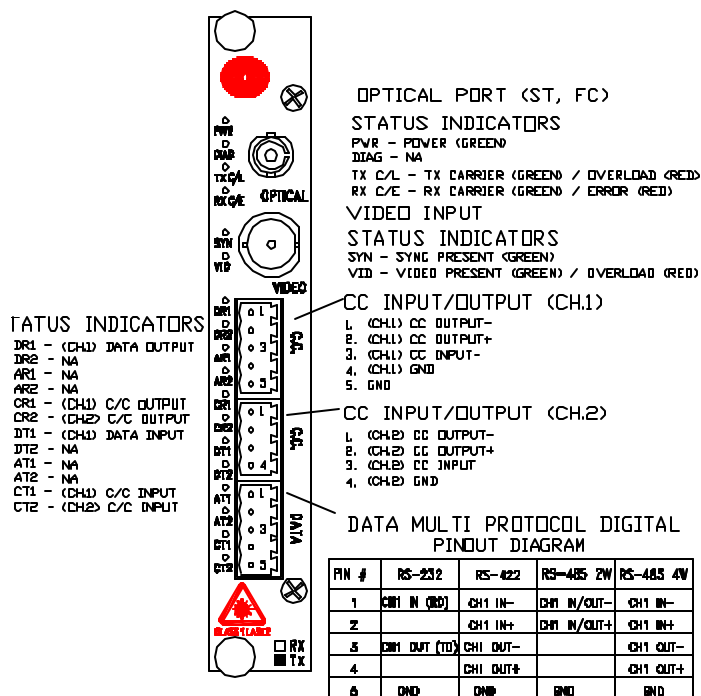
RS-232	One full speed (Tx/Rx)
RS-422	One channel
RS-485	One channel (either 2 or 4 wire)

The RS-232 channel is used for transmitting/receiving one channel of 2-wire RS-232 (Tx/Rx). In addition to the RS-232, this module supports both RS-422 and 2 or 4-wire RS-485 signals. User-settable switches on the module's motherboard are used to select the appropriate data format as required.

Data Connector Pinout Assignment				
Pin #	RS-232	RS-422	RS-485 (2-wire)	RS-485 (4-wire)
1	Ch 1 IN	Ch 1 IN (-)	IN/OUT (-)	IN (-)
2		Ch 1 IN (+)	IN/OUT (+)	IN (+)
3	Ch 1 OUT	Ch 1 OUT (-)		OUT (-)
4		Ch 1 OUT (+)		OUT (+)
5	GND	GND	GND	GND

ST-1W2C1G/2C1G-X

PINOUT DIAGRAM



SR-1W2C1G/2C1G-X

PINOUT DIAGRAM

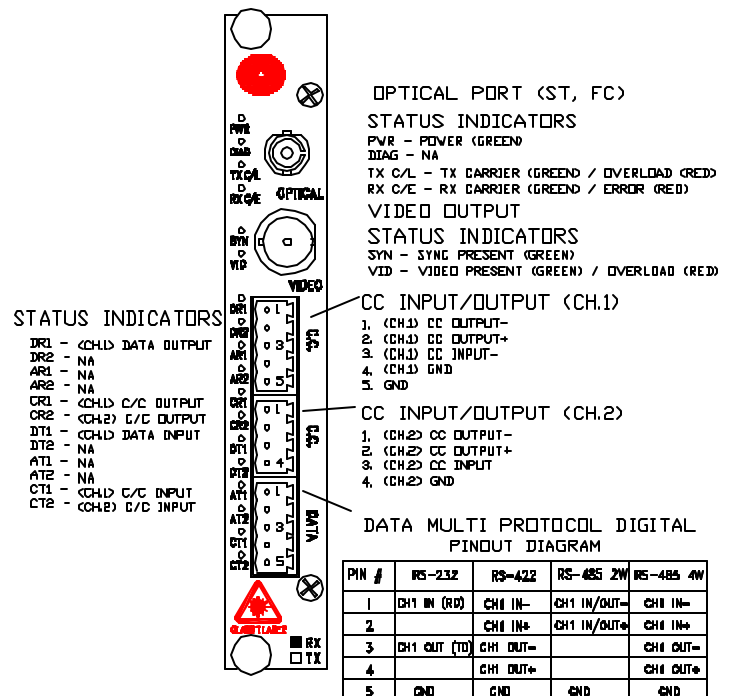


Figure 4.1
ST/SR-1W2C1G/2C1G-XS

5.0 Signal Conditioning Switch/Jumper Settings

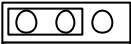
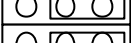
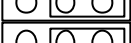
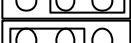
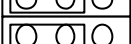
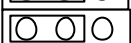
The sections below illustrate how to change the various contact mapping conditions.

5.1 Contact Mapping and Data Selection jumpers

Contact Mapping - The output state of each of the contacts can be changed from Normally-Open (NO) to Normally-Closed (NC) by properly selecting the jumpers. A NO contact (output side) closes when the contact input on the input module's side is closed to ground. The default contact setting is NO (normally-open).

There are sixteen (16) 3-pin jumpers located directly behind the 14-pin front-panel mounted connector. The top 9 jumpers are n/c. The 10 & 11 jumpers used to select the power-on state of the contacts (NO or NC). The bottom 6 jumpers are used for 2 & 4-wire RS-485 selection and removing the default 120 Ohm load on the RS-422 input channels.

The illustration below describes the function of each of these 16 jumpers. The jumpers are shown in their default condition.

Jumper 1		N/C
Jumper 2		N/C
Jumper 3		N/C
Jumper 4		N/C
Jumper 5		N/C
Jumper 6		N/C
Jumper 7		N/C
Jumper 8		N/C
Jumper 9		N/C
Jumper 10		Contact Ch 2 (OUT) – Normally Open (NO) - default
Jumper 11		Contact Ch 1 (OUT) – Normally Open (NO) - default
Jumper 12		RS-485 (4-wire/2-wire selection) – 4-wire default
Jumper 13		RS-485 (4-wire/2-wire selection) – 4-wire default
Jumper 14		RS-422 Ch 1 (IN) – 120 Ohm load – ON default
Jumper 15		Reserved
Jumper 16		Reserved
		RS-422 Ch 2 (IN) – 120 Ohm Load – ON default

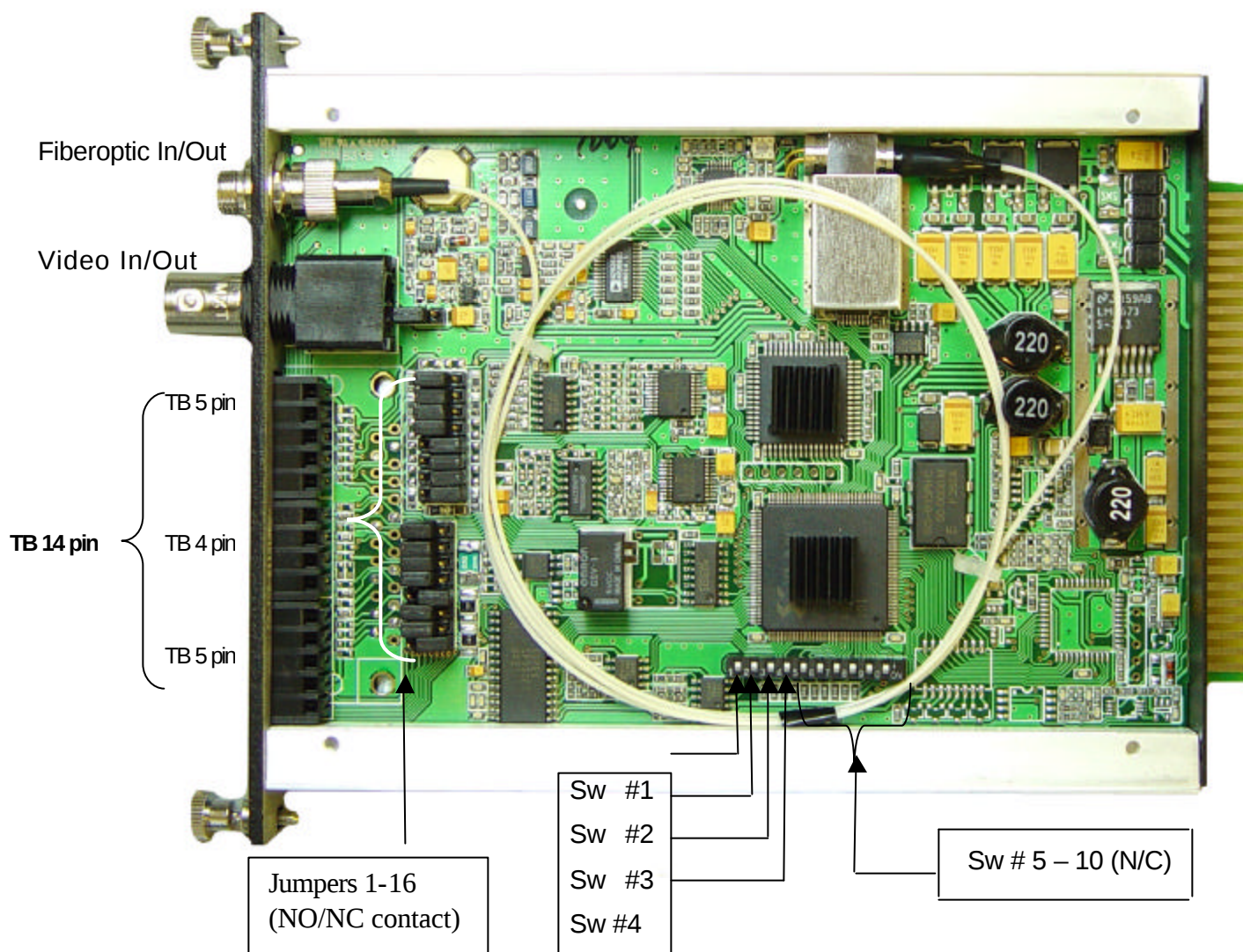
5.2 Data Format Selection

A group of 10 switches is located on the bottom center of the module's circuit card (see figure below). The left four (4) of these switches control the data format that is transmitted/received. These switches on both the transmitter and receiver must be set the same in order to have proper data communications format between them. The figure and table below illustrates these switch locations on the board and how they are configured for the proper data format options. The factory-supplied default setting is for RS-232 data (Switch #1-4 OFF (up)).

Data Format Selection Switch Settings				
	Switch #1	Switch #2	Switch #3	Switch #4
RS-232	OFF (up)	OFF (up)	OFF (up)	OFF (up)
RS-422	ON (down)	ON (down)	OFF (up)	OFF (up)
RS-485 (2-wire)	OFF (up)	ON (down)	ON (down)	OFF (up)
RS-485 (4-wire)	OFF (up)	ON (down)	OFF (up)	OFF (up)

The remaining Switches 5 through 10 should be in the OFF (up) position.

1-Slot Module Data Format Selection Switch Location



6.0 SpectraView™ Network Diagnostics

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

SpectraView 1.0 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	"Fiber Broken"
Loss of video signal at CCTV (Tx) side	"Video Lost"

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.

7.0 Optical Specifications

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

Optical Specifications						
Fiber Type/Size (um)	Optical Output (dBm)	Rx Sensitivity (dBm)	Optical Budget (dB)	Wavelength (nm)	Optical connector	Optical Dynamic Range (dB)
Multimode (FP Laser) 62.5/125	-3	-24	21	1300/850	ST	24
Singlemode (FP Laser) 9/125	-3	-24	21	1310/1550	ST, FC	24
Singlemode (DFB Laser) 9/125	+3	-24	27	1310/1550	ST, FC	24

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: *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 at output of module*

Action: Check the SpectraView display on the monitor for an indication of what the problem may be. Also, check to ensure that the video channel-specific LEDs are on (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.

Problem: *Contact closure not working*

Action: Input side – Ensure that the input contact is connected between the appropriate input connection and ground
Output side – Ensure that the terminal device is connected to the proper output contact pinouts and that the individual contact channel jumpers are set to the appropriate normally-open or normally-closed position.

Problem: *No Data*

Action: Check that both the transmit and receive modules are set to transmit/receive the same data format (see section 5.0 for switch settings). Confirm that the data connections are correct (see section 4.0 for data pinout connections). Check to ensure that the data source is operating properly.

If the problem still persists after reviewing the above items, please contact Meridian technical support (5 16- 285-1000).