Fiber Optic Data Transmission System

Installation Instructions

Part Numbers:

NXA / NXB–1G/1G-x (one fiber)

(Multi-Protocol Data Transceiver)

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07/30/13 – Rev 1.1

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1.0 Product Description

Meridian's NXA/NXB-1G/1G-x products are fiber optic modems that transmit one bi-directional, user-selectable RS-232, RS-422 and RS-485 (2 & 4 wire) data signals over one optical fiber using digital transmission technologies. The NXA/NXB-1G/1G-x is the stand-alone model. This product is powered by internal switching power supply and will accept 12-24VAC or DC. (Part # WP-24A customer supplied)

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 while the FC optical interface are available only on singlemode products. Optional conformal coating provides an additional level of protection from environments with high humidity.

2.0 Installation

The NXA/NXB-1G/1G-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. Meridian recommends the WP-24A transformer for proper operation of this module.

3.0 Product Part Number Description

The NXA/NXB-1G/1G-x series products are available in one fiber version. In addition, both singlemode and multimode fiber are supported. The table below lists the various part numbers and their optical transmission characteristics:

Module Part #		# Fibers	Fiber Type	Optical Connector
NXA-1G/1G-2	NXB-1G/1G-2	1	Multimode	ST
NXA-1G/1G-5	NXB-1G/1G-5	1	Singlemode	FC
NXA-1G/1G-5/ST	NXB-1G/1G-5/ST	1	Singlemode	ST

4.0 Product Signal Format & Specifications

The NXA/NXB-1G/1G-x series products transmit and receive the following signals:

Signal Type	Channels	Transmit	Receive
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.

Data	
Formats	RS-232
Date Rate (RS-232)	DC to 125 Kb/s
Data Rate (RS-422 & RS-485)	DC to 250 Kb/s
Bit Error Rate (BER)	Better than 10^{-9}

Connectors	
Data	5 pin terminal strip
Power	2 pin terminal strip
Optical	Singlemode – ST or FC Multimode - ST

4.1 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	-5	-28	23	1300/850	ST	24
Singlemode (FP Laser) 9 / 125	-5	-28	23	1310/1550	ST, FC	24

5.0 Data Connector Pin Assignment

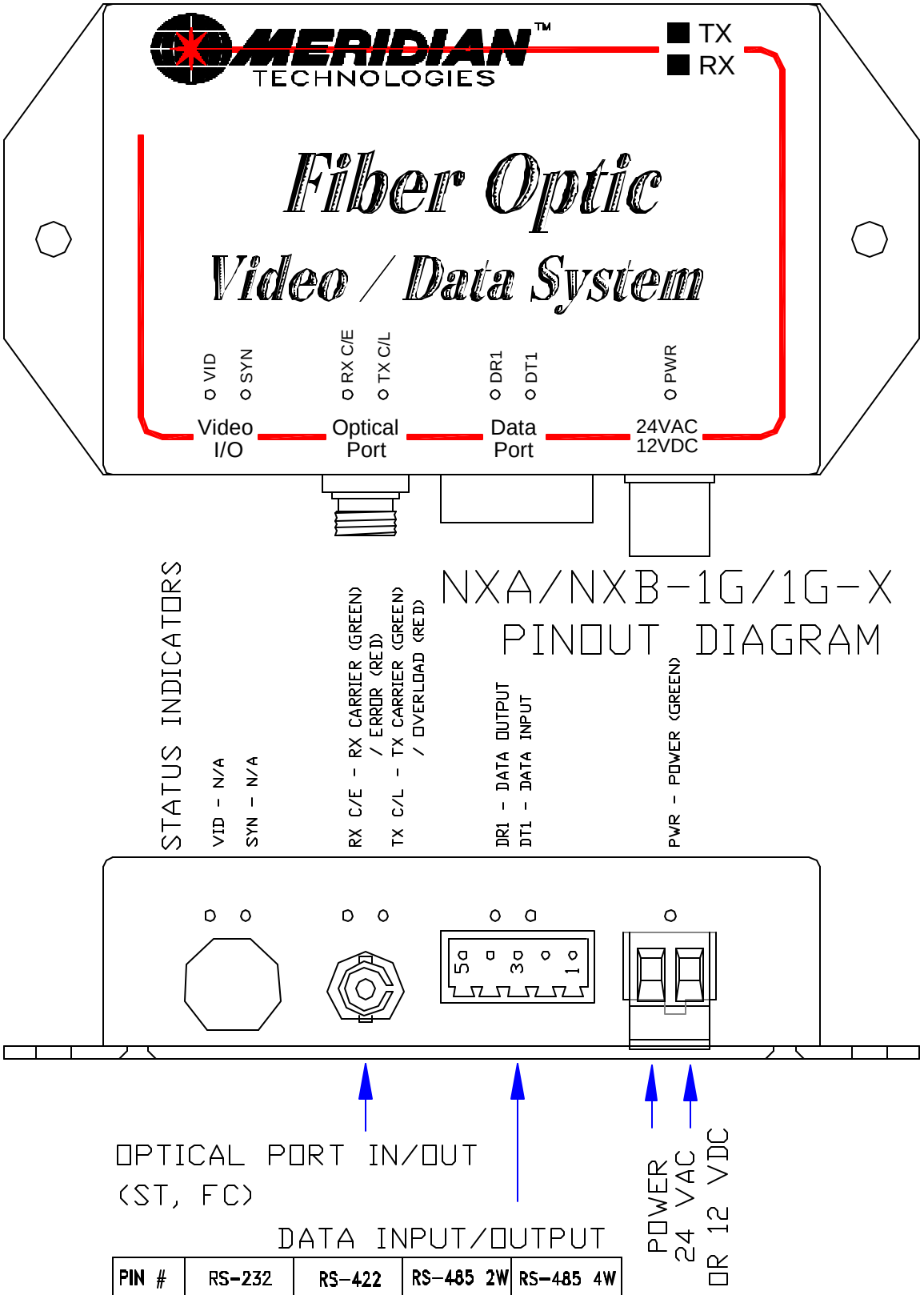
The 5 pin terminal block connector on the front of the module are used for all data interfaces. This module supports the following data formats:

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

The RS-232 channel is used for transmitting/receiving one channel of RS-232 (Tx/Rx). In addition to the RS-232, this module independently 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 (RD)	Ch 1 IN (+)	Ch 1 IN/OUT (+)	Ch 1 IN (+)
2	Ch 1 IN (DTR)	Ch 1 IN (-)	Ch 1 IN/OUT (-)	Ch 1 IN (-)
3	Ch 1 OUT (TD)	Ch 1 OUT (+)		Ch 1 OUT (+)
4	Ch 1 OUT (DSR)	Ch 1 OUT (-)		Ch 1 OUT (-)
5	GND	GND	GND	GND

Figure 5.1
NXA/NXB-1G-1G-x Front Layout Diagram



PIN #	RS-232	RS-422	RS-485 2W	RS-485 4W
1	CH1 IN (RD)	CH1 IN+	CH1 IN/OUT+	CH1 IN+
2	CH1 IN (HS)	CH1 IN-	CH1 IN/OUT-	CH1 IN-
3	CH1 OUT (TD)	CH1 OUT+		CH1 OUT+
4	CH1 OUT (HS)	CH1 OUT-		CH1 OUT-
5	GND	GND	GND	GND

5.1 Operation LED Indicators

There are a number of indicator lights that provide visual operational status of the modules and link (see Figure 5.1)

The function of these LED indicators is as follows:

VID - N/A
SYN - N/A
RX C/E - Rx Carrier present - Green (OK), Red (Error)
TX C/L - Tx Carrier present - Green (OK), Red (Alarm)
DR1 - Data output - Green
DT1 - Data input - Green
PWR - Power - Green (ON)

6.0 Data Format Selection

A group of 10 switches is located on the bottom corner of the module's circuit card (see figure below). The left two (2) 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 #1-2 OFF (up)).

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

The remaining Switches 3 through 10 should be in the OFF (up) position.

6.1 Data Selection jumpers

There are three (3) 2-pin jumpers located directly behind the 5-pin terminal front-panel mounted connector. The 3 jumpers are used to select appropriate data driver. The illustration below describes the function of each of these data jumpers. The factory-supplied default setting is for RS-232 data.

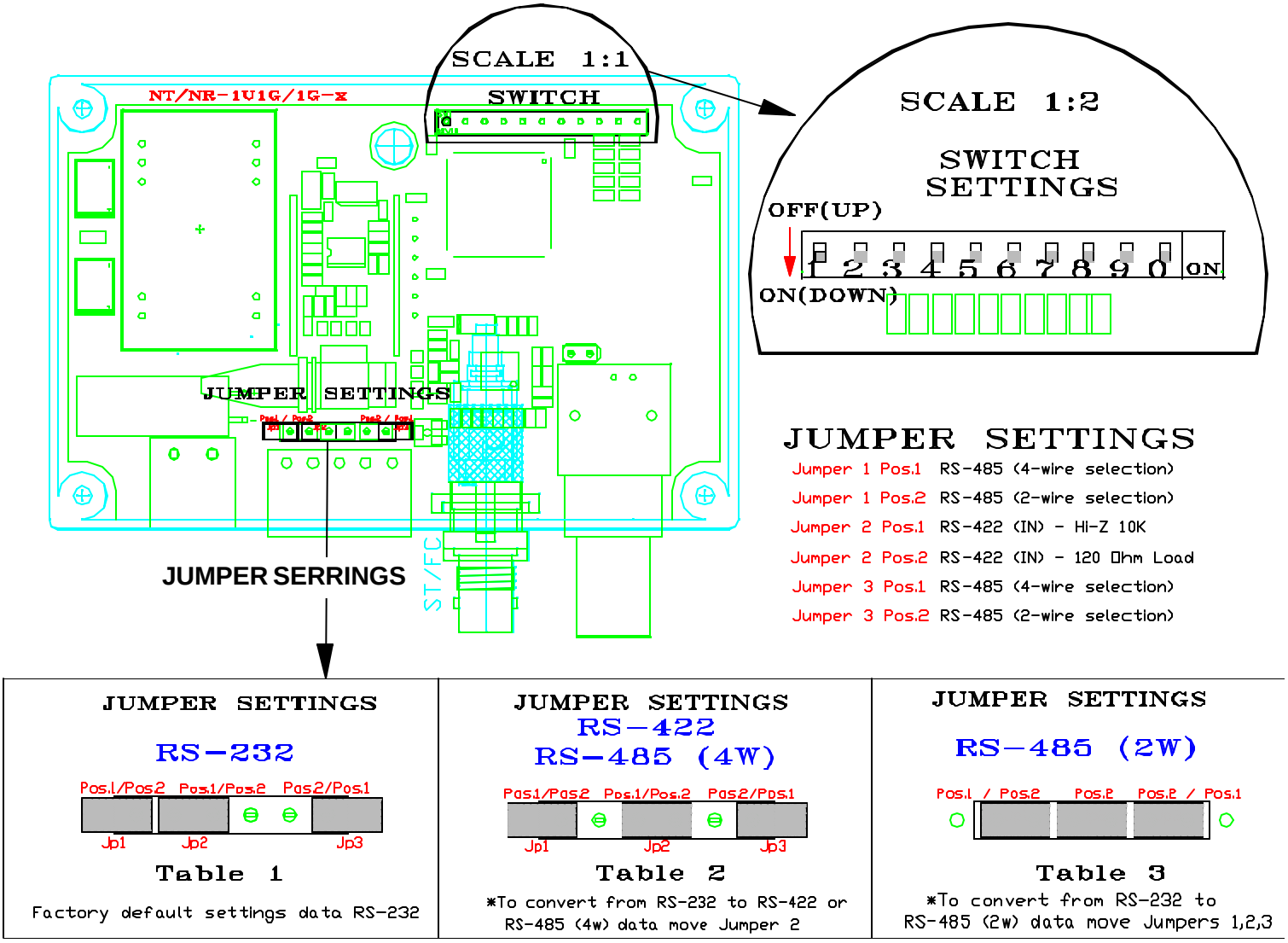


Figure 6.1
Module Switch and Jumper Location

1. Position the module as shown in the above photograph and remove the bottom cover by removing the 4 screws in the corners of the side cover.
2. Locate the jumpers. These will be directly behind the 5-pin connector and pull directly upwards (away from the circuit board) being careful not to bend the pins on the circuit board.
3. Move the jumpers according to the data selected in Figure 6.1, being careful not to bend the jumper leads on the circuit board. Seat firmly on the leads.
4. Replace side cover and secure with the 4 screws.
5. Repeat, as required, with the other unit.

7.0 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: *Card power LED does not light when power to the module is applied or power indicator turns on and off*
Action: Check power supply to ensure that it is plugged in and turned on.

Problem: *No Data*
Action: Check to ensure that an NT unit is optically connected to an NR unit. An NT or an NR will not communicate with a module of the same type NT or NR. Check that both of the modules have the data jumpers set correctly for the application.

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

Physical dimensions

Length ……3.6“ (9.2 cm)
Width …….. 2.4“ (6 cm)
Depth…….. 1“ (2.5 cm)
Weight ……0.34 lb (150 gm)

Notes:

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