



VersiVision

FVTM4ACxA-C0 / FVRM4ACxA-C0

MULTIPLEXER SYSTEM

- 4-CHANNELS DIGITALLY ENCODED VIDEO
- 1-CHANNEL BI-DIRECTIONAL DATA
- 4-CHANNELS BI-DIRECTIONAL AUDIO
- 4-CHANNELS BI-DIRECTIONAL CONTACT

USER'S MANUAL

Revision B

© April 2013
VERSITRON, Inc.
83 Albe Drive ▪ Suite C
Newark, DE 19702
www.versitron.com

PROPRIETARY DATA

All data in this manual is proprietary and may not be disclosed, used or duplicated, for procurement or manufacturing purposes, without prior written permission by **VERSITRON**.

VERSITRON LIFETIME WARRANTY

All VERSITRON products are covered by a **Lifetime Warranty** against defects in materials and workmanship. This coverage is applicable to the original purchaser and is not transferable.

We repair, or at our option, replace parts/products that, during normal usage and operation, are proven to be defective during the time you own the products, provided that said products and parts are still manufactured and/or available. Such repair/replacement is subsequent to receipt of your product at our facility and our diagnostic evaluation and review of the unit. Advance replacements are not provided as part of the warranty coverage.

This warranty does not cover damage to products caused by misuse, mishandling, power surges, accident, improper installation, neglect, alteration, improper maintenance, or other causes which are not normal and customary applications of the products and for which they were not intended. No other warranty is expressed or implied, and VERSITRON is not liable for direct, indirect, incidental or consequential damages or losses.

In the unlikely event a warranty issue should arise, simply contact us at 302-894-0699 or 1-800-537-2296 or via email at fiberlink@versitron.com to obtain a Return Material Authorization (RMA) number, along with instructions for returning your product.

Table of Contents

General Information	3
Introduction	3
Technical Specifications	3
Installation Instructions	6
Installation Procedure	6
Terminal Strip Connections	7
LED Indicators	14
Troubleshooting	15

GENERAL INFORMATION

Introduction:

The VERSITRON *VersiVision* FVTM4ACxA-C0 and FVRM4ACxA-C0 series video and data transmitter and receiver support simultaneous transmission of four channels of 8-bit digitally encoded video, one channel of bi-directional data, four channels of bi-directional audio and four channels of bi-directional contact closure over one strand of multi-mode or single-mode optical fiber. The modules are universally compatible with major camera systems and support RS-485 data protocols. Plug and Play design ensures ease of installation and electronic and optical adjustments are never required.

Model Numbers:

Model	Function	Connector	Fiber Cable	Wavelength	Max Distance
FVTM4AC3A-C0	Transmitter	ST Simplex	MM	850/1310nm	3 Km
FVRM4AC3A-C0	Receiver	ST Simplex	MM	850/1310nm	3 Km
FVTM4AC5A-C0	Transmitter	ST Simplex	SM	1310/1550nm	30 Km
FVRM4AC5A-C0	Receiver	ST Simplex	SM	1310/1550nm	30 Km

Technical Specifications:

VIDEO

Video Input	2.0 volt pk-pk (75 ohms)
Input/Output Channels	4
Bandwidth	6.5MHz
Bit Resolution	8-bit
Differential Gain	< 1%
Differential Phase	< 1°
Tilt	< 1%
Sample Rate	15.36MHz

DATA

Data Interface	RS-485 (RS-422, RS-232 upon request)
Data Channel	1-Channel, Bi-Directional, Half-Duplex
Data Rate	100Kbps
Bit Error Rate	10 ⁻⁹

AUDIO

Audio Impedance	600 Ω
Audio Channel	4-Channels, Bi-Directional, Half-Duplex
Input/Output Level	0dBm (Typical)
Frequency Response	10Hz - 20KHz
Bit Resolution	24-bit
S/N Ratio	95dB

CONTACT CLOSURE

Relay	24VDC/0.5A Max (Normally Open)
Input/Output Channels:	4

WAVELENGTH	850/1310nm Multimode 1310/1550nm Singlemode
-------------------	--

OPTICAL EMITTER:	Laser Diode
-------------------------	-------------

NUMBER OF FIBERS	1
-------------------------	---

CONNECTORS

Optical	ST
Video	BNC
Data/Audio	Terminal Strip with Screws

GENERAL

Power Supply	5VDC@2A
Size	5.98 x 5.12 x 1.95 Inches
Construction	Aluminum
MTBF	> 100,000 hours
Operating Temp	-35° C to + 65° C
Storage Temp	-45° C to + 85° C
Relative Humidity	0% to 95% (non-condensing)

LED INDICATORS

Green	Video Sync Present
Green	Data Sync Present
Green	Power On

OPTICAL POWER BUDGET

Optical transmission distance is limited to optical loss of the fiber and any additional loss caused by connectors, splices, and patch panels.

CAUTION!

The transmitter unit contains a laser-emitting diode located in the optical connector. This device emits invisible infrared electromagnetic radiation that can be harmful to human eyes. The radiation from this optical connector, if viewed closely without any protection, may cause instantaneous damage to the retina of the eye. Direct viewing of this LED should be avoided at all times.

Multi-Mode	850/1310nm	FVTM 4ACxA -C0	-10 dBm	FVRM 4ACxA -C0	-24 dBm	15 dB	3km
Fiber	Wavelength	Transmitter		Receiver		Optical Power Budget	Max Distance
		Model	Output	Model	Sensitivity		
Single-Mode	1310/1550nm	FVTM 4ACxA -C0	-5 dBm	FVRM 4ACxA -C0	-26 dBm	21 dB	30km

INSTALLATION INSTRUCTIONS

Installation Procedure

The VERSITRON *VersiVision* FVTM4ACxA-C0 and FVRM4ACxA-C0 video transmission systems series are preset for immediate use. There are indicator LEDs on the units for monitoring the real-time status of video, data and power. The following instructions describe the typical installation procedure and the function of the LED indicators located on each unit.

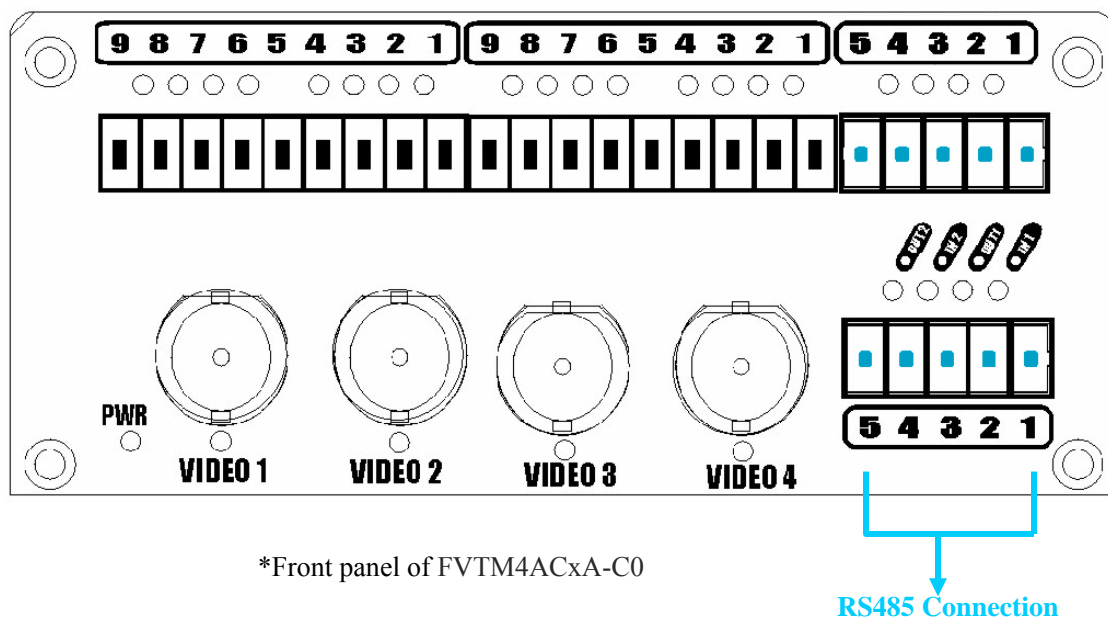
1. Connect the video source (camera) to the video input BNC connector on the transmitter unit (FVTM4ACxA-C0) using coaxial cable.
2. Connect the video output BNC connector on the receiver unit (FVRM4ACxA-C0) to the video monitor using coaxial cable.
3. Connect the fiber optic cable between the transmitter and receiver units.
4. Apply the power supply to both the transmitter and receiver units.
5. When the power is applied, the GREEN POWER LED will light, indicating the presence of operating power. The GREEN VIDEO LED and the GREEN DATA LEDs will give an indication as stated on the following pages.
6. The system should now be operational.

System Terminal Block Connections

The various input and output connections for FVTM4ACxA-C0 and FVRM4ACxA-C0 series systems are as follows:

Video Input or Output: BNC Connectors

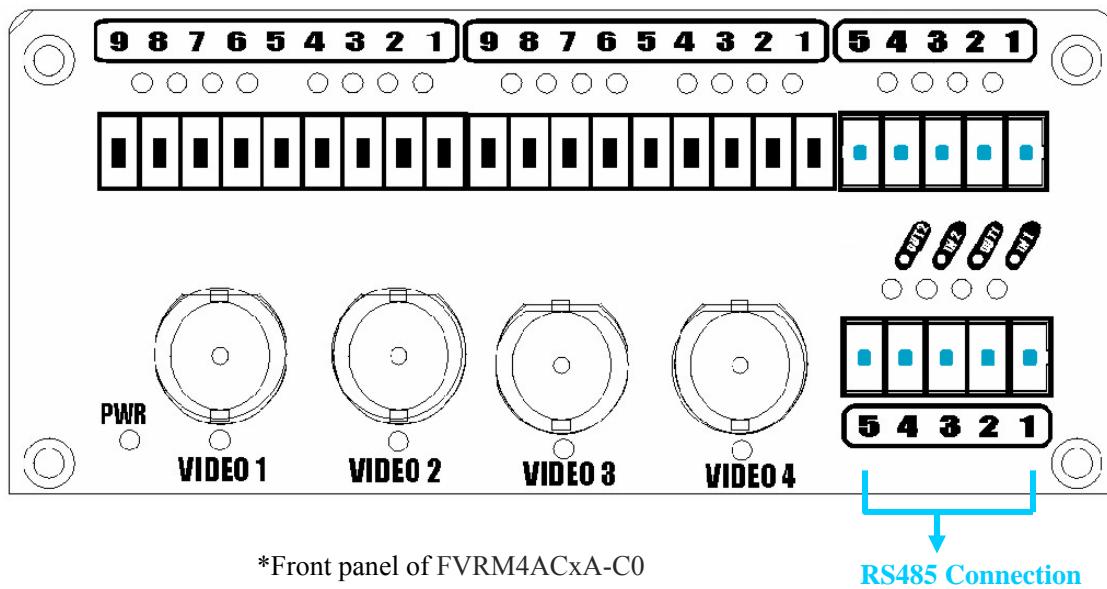
Data Connection — Camera Site (Transmitter):



RS-485 2-Wire Connection (1-Channel Bi-directional)

- Pin 1 — RS485A
- Pin 2 — RS485B
- Pin 3 — GND

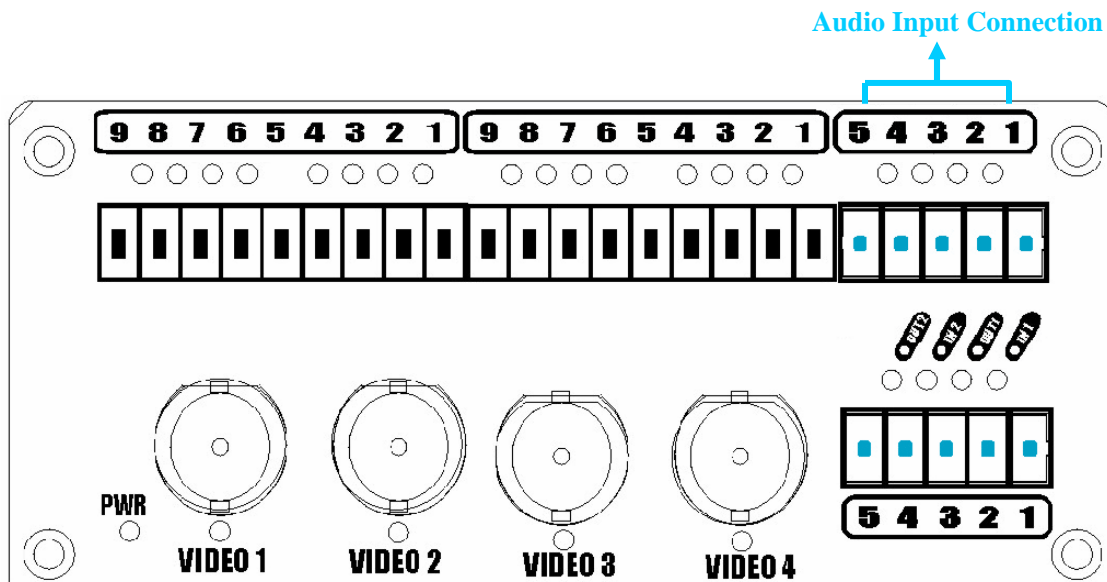
Data Connection — Control Site (Receiver):



RS-485 2-Wire Connection (1-Channel Bi-directional)

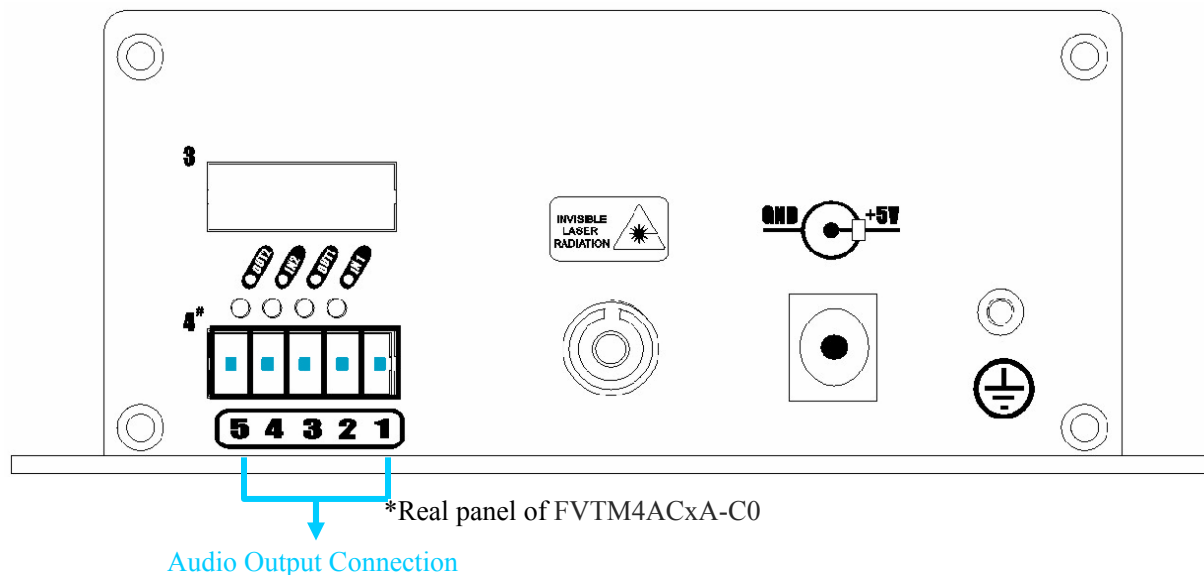
- Pin 1 — RS485A
- Pin 2 — RS485B
- Pin 3 — GND

AUDIO Connection — Camera Site (Transmitter):



Audio Input Connection (4-Channel Bi-directional)

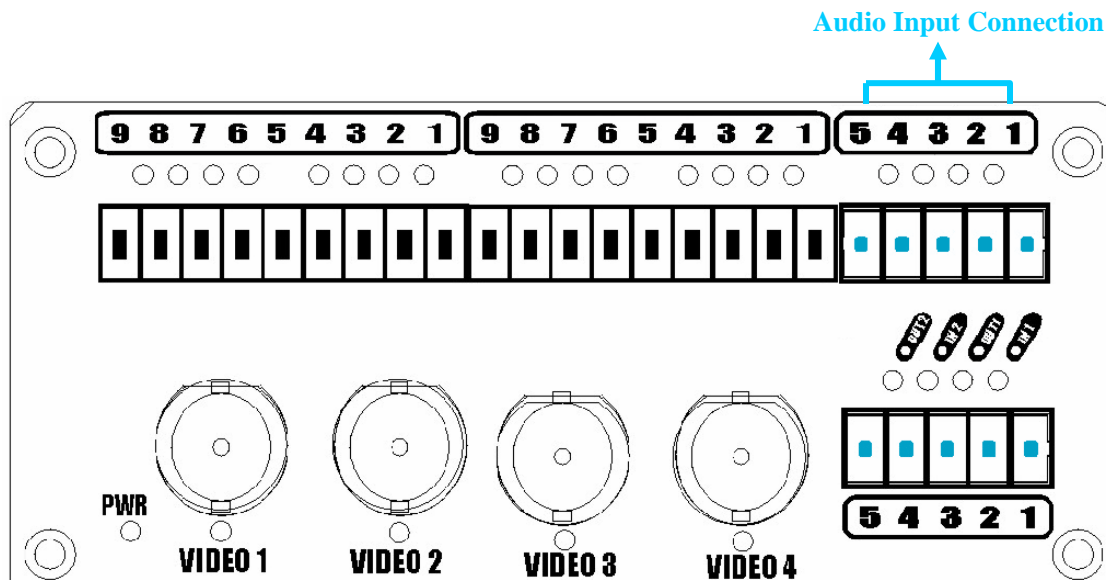
- Pin 1—AUDIO IN1
- Pin 2—AUDIO IN2
- Pin 3—GND
- Pin 4—AUDIO IN3
- Pin 5—AUDIO IN4



Audio Output Connection (4-Channel Bi-directional)

- Pin 1—AUDIO OUT1
- Pin 2—AUDIO OUT2
- Pin 3—GND
- Pin 4—AUDIO OUT3
- Pin 5—AUDIO OUT4

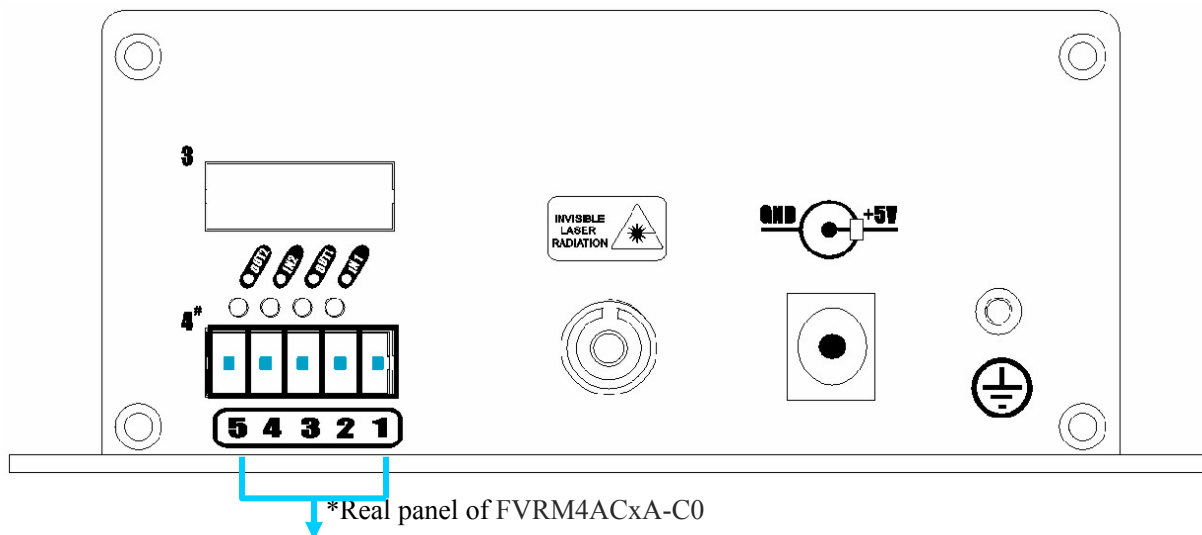
AUDIO Connection — Control Site (Receiver):



*Front panel of FVRM4ACxA-C0

Audio Input Connection (4-Channel Bi-directional)

- Pin 1—AUDIO IN1
- Pin 2—AUDIO IN2
- Pin 3—GND
- Pin 4—AUDIO IN3
- Pin 5—AUDIO IN4

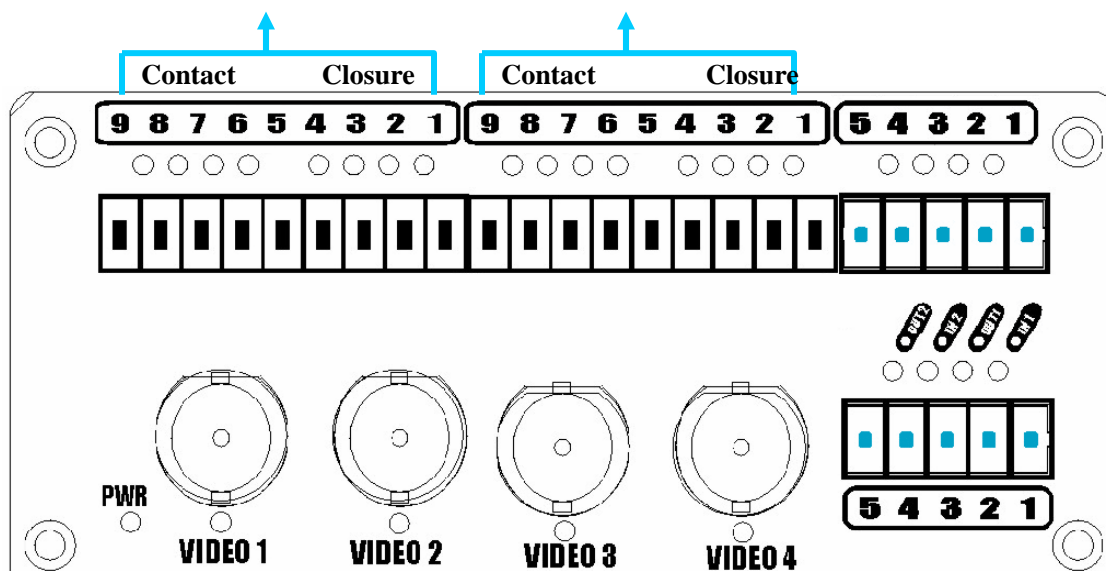


*Real panel of FVRM4ACxA-C0

Audio Output Connection (4-Channel Bi-directional)

- Pin 1—AUDIO OUT1
- Pin 2—AUDIO OUT2
- Pin 3—GND
- Pin 4—AUDIO OUT3
- Pin 5—AUDIO OUT4

Contact Closure Connection — Camera Site (Transmitter):



*Front panel of FVTM4ACxA-C0

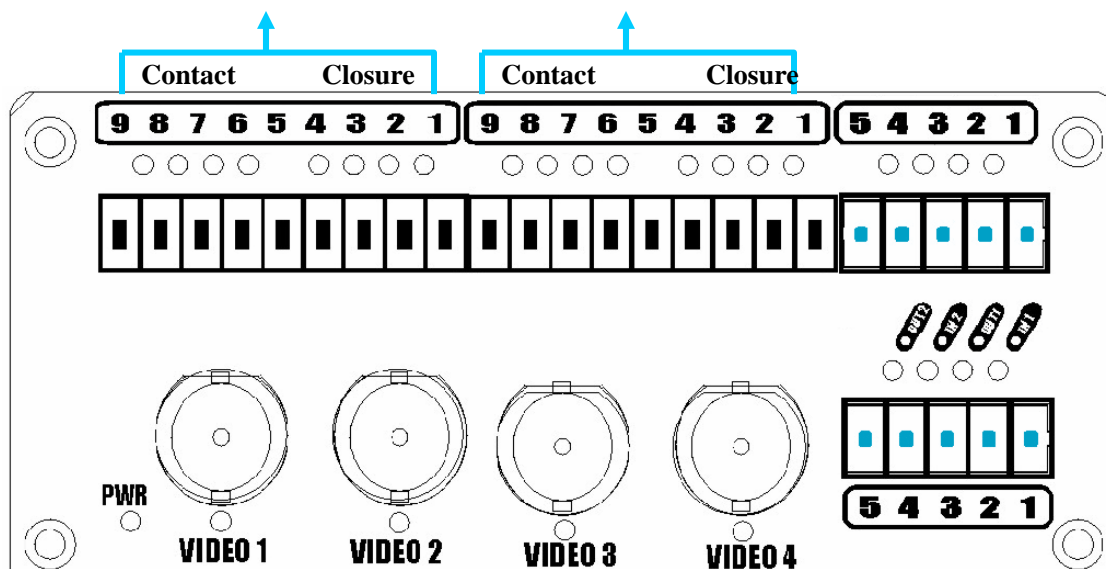
Contact Closure Input Connection (4-Channel Bi-directional)

- Pin 9—Contact Closure Input 1
- Pin 8—Contact Closure Input 1
- Pin 7—Contact Closure Input 2
- Pin 6—Contact Closure Input 2
- Pin 5—GND
- Pin 4—Contact Closure Input 3
- Pin 3—Contact Closure Input 3
- Pin 2—Contact Closure Input 4
- Pin 1—Contact Closure Input 4

Contact Closure Output Connection (4-Channel Bi-directional)

- Pin 9——Contact Closure Output 1
- Pin 8——Contact Closure Output 1
- Pin 7——Contact Closure Output 2
- Pin 6——Contact Closure Output 2
- Pin 5——GND
- Pin 4——Contact Closure Output 3
- Pin 3——Contact Closure Output 3
- Pin 2——Contact Closure Output 4
- Pin 1——Contact Closure Output 4

Contact Closure Connection —— Control Site (Receiver):



*Front panel of FVRM4ACxA-C0

Contact Closure Input Connection (4-Channel Bi-directional)

Pin 9——Contact Closure Input 1
Pin 8——Contact Closure Input 1
Pin 7——Contact Closure Input 2
Pin 6——Contact Closure Input 2
Pin 5——GND
Pin 4——Contact Closure Input 3
Pin 3——Contact Closure Input 3
Pin 2——Contact Closure Input 4
Pin 1——Contact Closure Input 4

Contact Closure Output Connection (4-Channel Bi-directional)

Pin 9——Contact Closure Output 1
Pin 8——Contact Closure Output 1
Pin 7——Contact Closure Output 2
Pin 6——Contact Closure Output 2
Pin 5——GND
Pin 4——Contact Closure Output 3
Pin 3——Contact Closure Output 3
Pin 2——Contact Closure Output 4
Pin 1——Contact Closure Output 4

Indicator LEDs

The units have integral LEDs that are used to monitor the state of the unit. The indicator LEDs function as follows:

Transmitter:

LED	STATUS	COLOR	DESCRIPTION
POWER	ON	GREEN	Power has been applied.
LINK	ON	GREEN	Optical signal has been established.
VIDEO	OFF		No video detected on input BNC connector.
VIDEO	ON	GREEN	Video detected on input BNC connector.
DATA (TX)	OFF		Indicates no data detected.
DATA (TX)	BLINKING	GREEN	Indicates data being transmitted.
DATA (RX)	OFF		Indicates no data detected.
DATA (RX)	BLINKING	GREEN	Indicates data being received.

Receiver:

LED	STATUS	COLOR	DESCRIPTION
POWER	ON	GREEN	Power has been applied.
LINK	ON	GREEN	Optical signal has been established.
VIDEO	OFF		No video detected on output BNC connector.
VIDEO	ON	GREEN	Video detected on output BNC connector.
DATA (TX)	OFF		Indicates no data detected.
DATA (TX)	BLINKING	GREEN	Indicates data being transmitted.
DATA (RX)	OFF		Indicates no data detected.
DATA (RX)	BLINKING	GREEN	Indicates data being received.

TROUBLESHOOTING

Optical Fiber

The VERSITRON *VersiVision* FVTM4ACxA-C0 and FVRM4ACxA-C0 video transmission series is available for most applications using multi-mode or single-mode optical fibers. Please be certain that the correct size and type of the fiber is being used for the particular transmitter/receiver combination.

Also be certain that the attenuation and bandwidth of the fiber optic cable being used is within the range of the system's loss budget specifications.

General

Any dirt or dust may easily pollute or block the fiber from accepting or radiating light. Therefore, please try to keep the optical connector clear and always use the dust caps whenever the connector is exposed to air. It is suggested that the tip of the optical connector should be carefully cleaned with a lint-free cloth moistened with alcohol from time to time.

The status of any of the VIDEO LED should provide the first clue as to the origin of any operational failure. If the VIDEO LED on the receiver unit is off, it usually means that the fiber is broken or has too much attenuation.

Please also make sure that the transmitter and the receiver are not used in opposite positions.

If the system is still not working after examining the above possibilities, please contact our Customer Service Department for further assistance

Data Links

Even when installed exactly as directed, it is possible that the data/audio function may fail to operate properly. If this problem occurs, first please check all data connections.

If the system is still not working after examining the above possibilities, please contact our Customer Service Department for further assistance