



## *VersiVision*

FVTM4BCxA-CE / FVRM4BCxA-CE

### MULTIPLEXER SYSTEM

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

### USER'S MANUAL

Revision B

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## **PROPRIETARY DATA**

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## **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](mailto:fiberlink@versitron.com) to obtain a Return Material Authorization (RMA) number, along with instructions for returning your product.

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## Table of Contents

General Information .....	3
Introduction .....	3
Technical Specifications .....	3
Installation Instructions .....	6
Installation Procedure .....	6
Terminal Strip Connections.....	7
Indicator LEDs.....	11
Troubleshooting .....	12

## GENERAL INFORMATION

### Introduction:

The VERSITRON *VersiVision* FVTM4BCxA-CE and FVTR4BCxA-CE Series video and data transmitter and receiver support simultaneous transmission of four channels of 8-bit digitally encoded video, two channels 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. These units also support 1-channel of 10/100Base ethernet. The modules are universally compatible with major camera systems and support RS-485 data protocol. 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
FVTM4BC3A-CE	Transmitter	ST Simplex	MM	850/1310nm	3 Km
FVRM4BC3A-CE	Receiver	ST Simplex	MM	850/1310nm	3 Km
FVTM4BC5A-CE	Transmitter	ST Simplex	SM	1310/1550nm	30 Km
FVRM4BC5A-CE	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	5 Hz – 8MHz
Bit Resolution	8-bit
Differential Gain	< 1%
Differential Phase	< 0.6°
Tilt	< 1%
S/N Ratio	> 60dB (Weighted)

#### **DATA**

Data Interface	RS-485 (RS-422, RS-232 upon request)
Data Channel	2-Channels, Bi-Directional, Half-Duplex
Data Rate	0~300Kbps
Bit Error Rate	10 <sup>-9</sup>

**AUDIO**

Audio Impedance	600 $\Omega$
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 (Weighted)

**CONTACT CLOSURE**

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

**ETHERNET**

Data Rate	10/100Mbps
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<b>WAVELENGTH</b>	850/1310nm Multimode 1310/1550nm Singlemode
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<b>OPTICAL EMITTER:</b>	Laser Diode
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<b>NUMBER OF FIBERS</b>	1
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**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.

Fiber	Wavelength	Transmitter		Receiver		Optical Power Budget	Max Distance
		Model	Output	Model	Sensitivity		
Multi-Mode	850/1310nm	FVTM 4BC3A -CE	-10 dBm	FVRM 4BC3A -CE	-24 dBm	14 dB	3km
Fiber	Wavelength	Transmitter		Receiver		Optical Power Budget	Max Distance
		Model	Output	Model	Sensitivity		
Single-Mode	1310/1550nm	FVTM 4BC5A -CE	-5 dBm	FVRM 4BC5A -CE	-26 dBm	21 dB	30km

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## INSTALLATION INSTRUCTIONS

### Installation Procedure

The VERSITRON *VersiVision* FVTM4BCxA-CE and FVTR4BCxA-CE video transmission series systems 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.

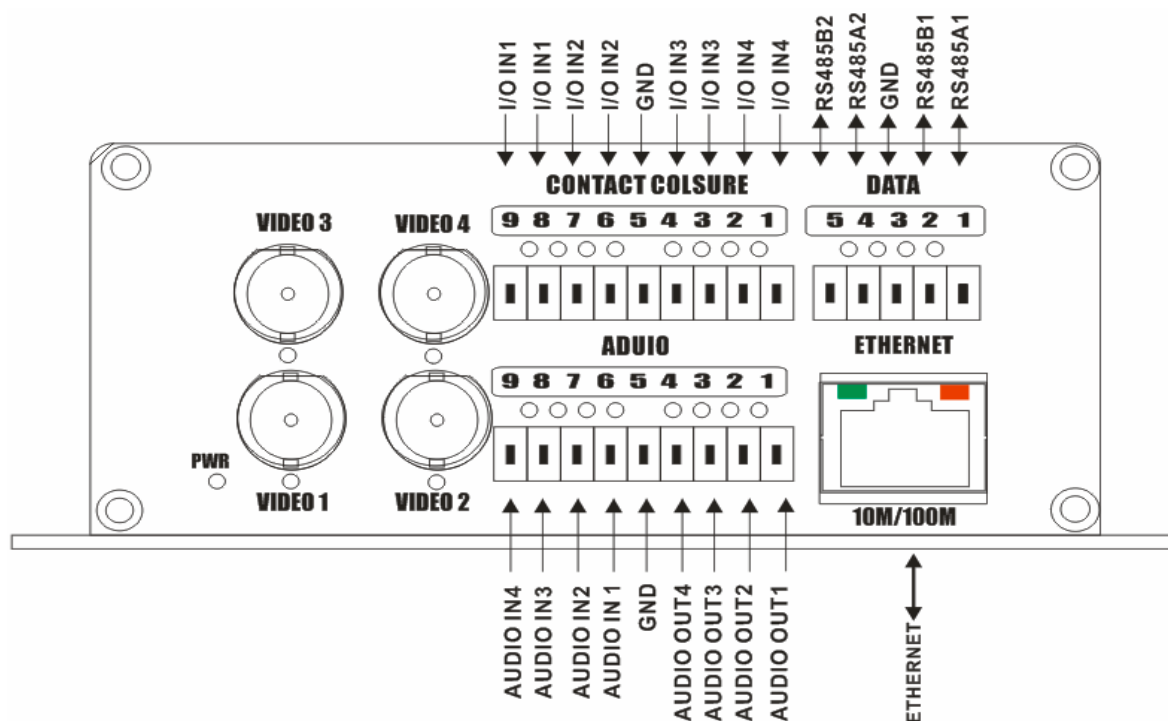
1. Connect the video source (camera) to the video input BNC connector on the transmitter unit (FVTM4BCxA-CE) using coaxial cable.
2. Connect the video output BNC connector on the receiver unit (FVRM4BCxA-CE) to the video monitor using coaxial cable.
3. Connect the fiber optic cable between the transmitter 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 and 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 FVTM4BCxA-CE and FVRM4BCxA-CE Series systems are as follows:

**Video Input or Output:** BNC Connectors

**System Connection** — **Camera Site (Transmitter):**



\*Front panel of FVTM4BCxA-CE

### Data RS-485 2-Wire Connection (2-Channel Bi-directional)

- Pin 1—RS485A1
- Pin 2—RS485B1
- Pin 3—GND
- Pin 4—RS485A2
- Pin 5—RS485B2

### Audio Input Connection (4-Channel Bi-directional)

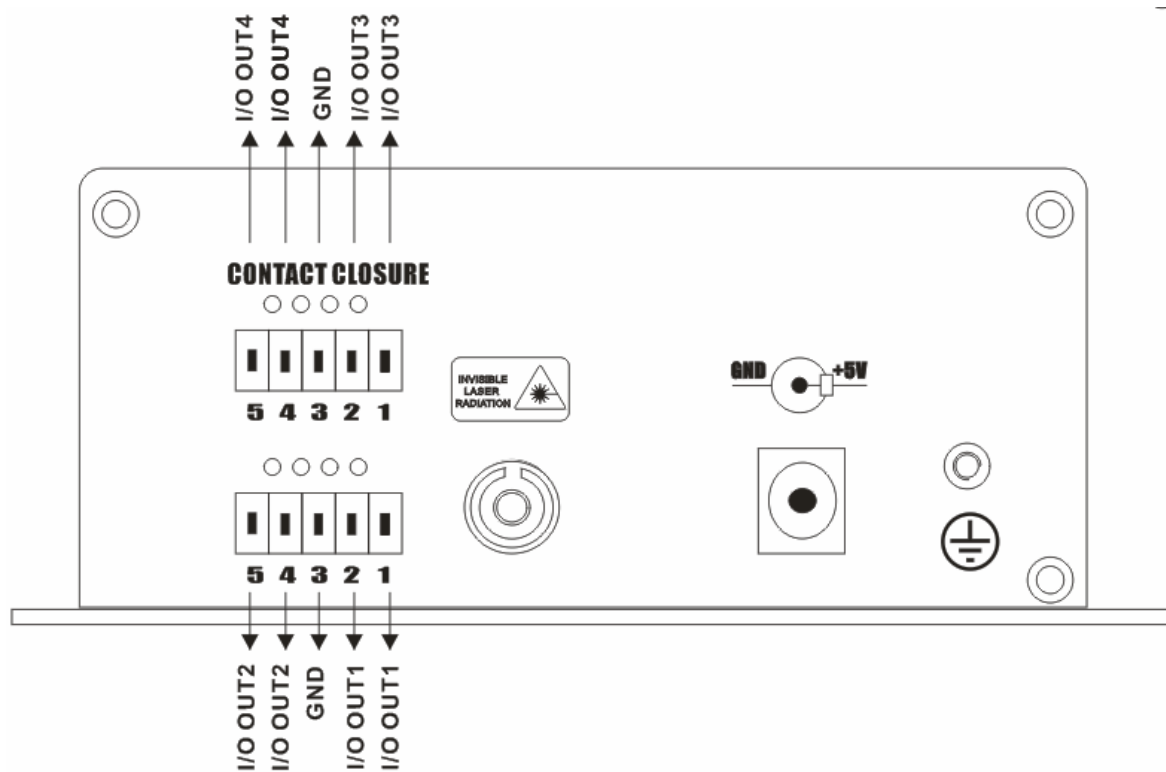
- Pin 1—Audio Output 1
- Pin 2—Audio Output 2
- Pin 3—Audio Output 3



- Pin 4—Audio Output 4
- Pin 5—GND
- Pin 6—Audio Input 1
- Pin 7—Audio Input 2
- Pin 8—Audio Input 3
- Pin 9—Audio Input 4

**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



\*Rear panel of FVTM4BCxA-CE

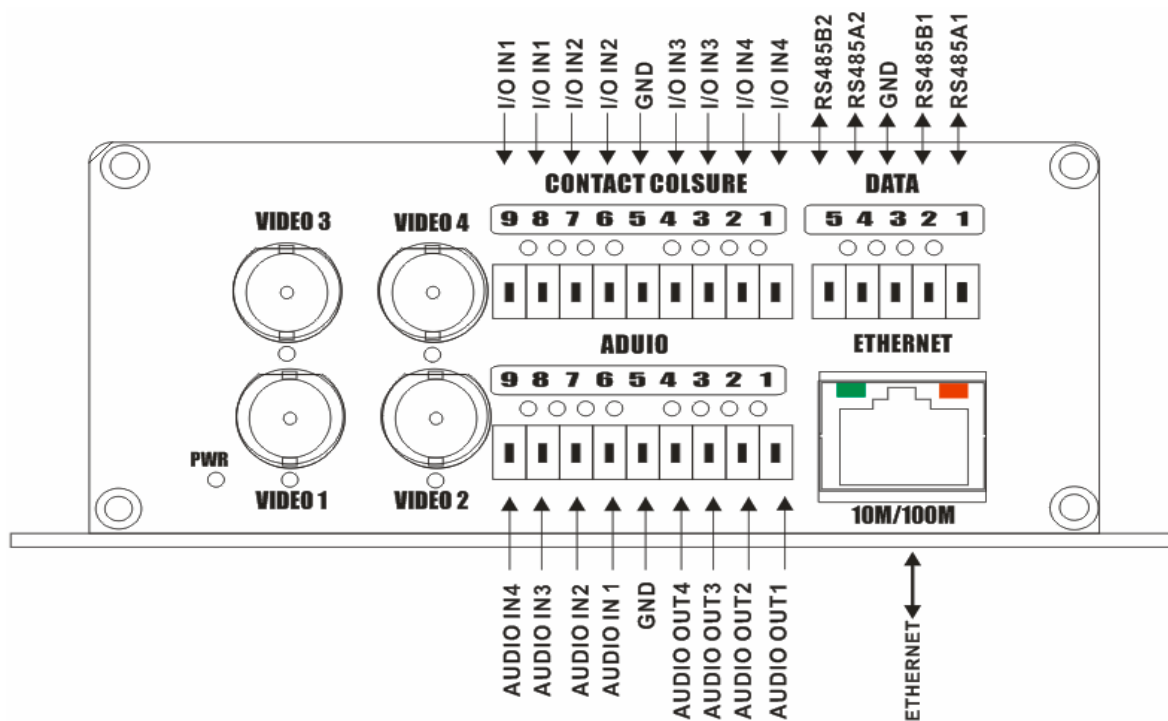
### Contact Closure Output Connection (4-Channel Bi-directional) Upside 5-pin Terminal Screws

- Pin 1——Contact Closure Output 3
- Pin 2——Contact Closure Output 3
- Pin 3——GND
- Pin 4——Contact Closure Output 4
- Pin 5——Contact Closure Output 4

### Contact Closure Output Connection (4-Channel Bi-directional) Downside 5-pin Terminal Screws

- Pin 1——Contact Closure Output 1
- Pin 2——Contact Closure Output 1
- Pin 3——GND
- Pin 4——Contact Closure Output 2
- Pin 5——Contact Closure Output 2

### System Connection —— Control Site (Receiver):



\*Front panel of FVRM4BCxA-CE

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**Data RS-485 2-Wire Connection (2-Channel Bi-directional)**

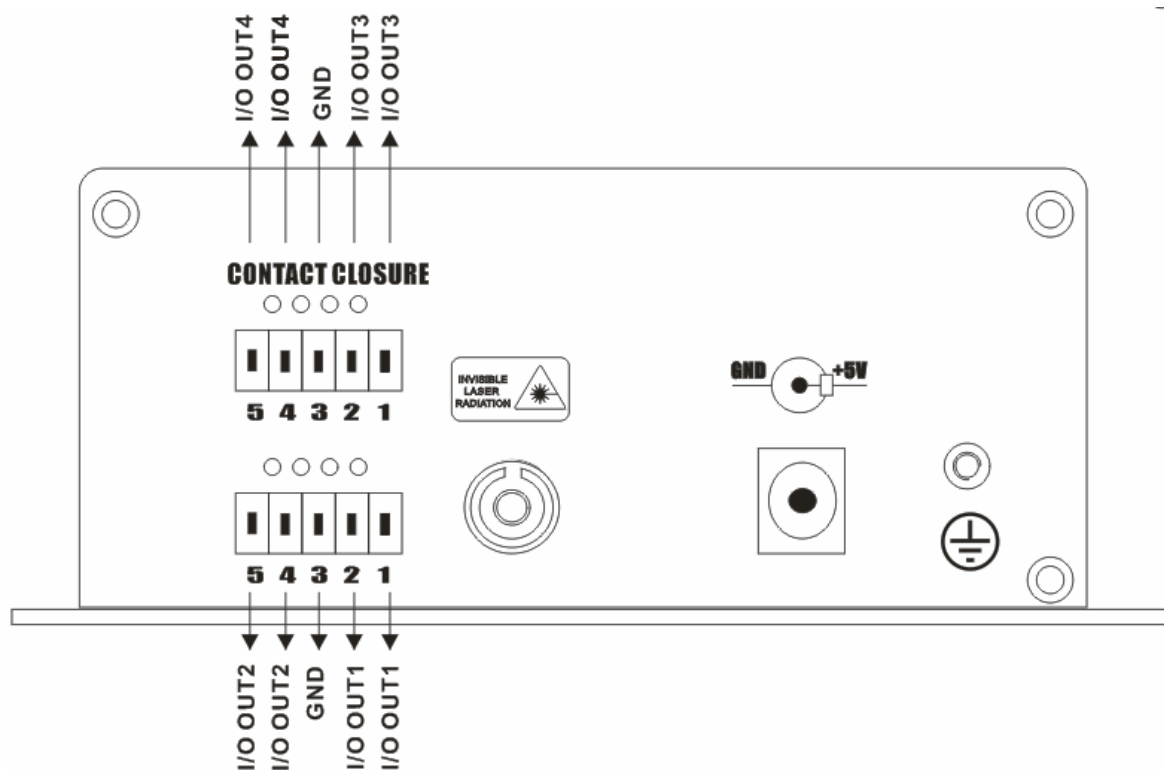
Pin 1——RS485A1  
Pin 2——RS485B1  
Pin 3——GND  
Pin 4——RS485A2  
Pin 5——RS485B2

**Audio Input Connection (4-Channel Bi-directional)**

Pin 1——Audio Output 1  
Pin 2——Audio Output 2  
Pin 3——Audio Output 3  
Pin 4——Audio Output 4  
Pin 5——GND  
Pin 6——Audio Input 1  
Pin 7——Audio Input 2  
Pin 8——Audio Input 3  
Pin 9——Audio Input 4

**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



\*Rear panel of FVRM4BCxA-CE

### **Contact Closure Output Connection (4-Channel Bi-directional) Upside 5-pin Terminal Screws**

- Pin 1——Contact Closure Output 3
- Pin 2——Contact Closure Output 3
- Pin 3——GND
- Pin 4——Contact Closure Output 4
- Pin 5——Contact Closure Output 4

### **Contact Closure Output Connection (4-Channel Bi-directional) Downside 5-pin Terminal Screws**

- Pin 1——Contact Closure Output 1
- Pin 2——Contact Closure Output 1
- Pin 3——GND
- Pin 4——Contact Closure Output 2
- Pin 5——Contact Closure Output 2

## 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.

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## TROUBLESHOOTING

### Optical Fiber

The VERSITRON *VersiVision* FVTM4BCxA-CE and FVRM4BCxA-CE video transmission systems 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