



*VersiVision*

FVTM4CCx / FVRM4CCx

4-CHANNELS DIGITALLY ENCODED VIDEO,

4-CHANNELS BI-DIRECTIONAL DATA

AND

4-CHANNELS BI-DIRECTIONAL AUDIO

MULTIPLEXER

**USER'S MANUAL**

Revision C

© April 2007

**VERSITRON, Inc.**

83 Albe Drive / Suite C

Newark, DE 19702

[www.versitron.com](http://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**.

## **WARRANTY**

All VERSITRON products purchased after January 2001 carry a limited lifetime warranty against defects in materials and workmanship for the lifetime of the product. Purchases made prior to January 2001 are warranted for a period of one year from date of delivery. VERSITRON reserves the right to repair or, at our option, replace parts which during normal usage prove to be defective during the warranty period provided that:

1. You call VERSITRON at (302) 894-0699 or (800) 537-2296 and obtain a (RMA) Return Authorization Number. Please reference your RMA number on the outside of the box in which the item is returned.

2. Shipping charges are pre-paid.

No other warranty is expressed or implied and we are not liable for consequential damages. For repairs outside of the warranty period, the same procedure must be followed.

## Table Of Contents

General Information.....	3
Introduction.....	3
Technical Specifications.....	3
Installation Instructions.....	6
Installation Procedure.....	6
Indicator LEDs .....	7
System Terminal Block Connections .....	8
Troubleshooting.....	14

## GENERAL INFORMATION

### Introduction:

The VERSITRON *VersiVision* FVTM4CCx and FVRM4CCx Series video, audio and data transmitter and receiver support simultaneous transmission of four channels of 8-bit digitally encoded video, four channels of 24-bit bi-directional digitally encoded audio and four channels of bi-directional data over one single-mode or multi-mode optical fiber. The units 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.

Unit Type	Model Number
4-Channel Digitally Encoded Video/4Channel Bi-Directional Data/ 4-Channel Bi-Directional Audio Transmitter	FVTM-4CCx
4-Channel Digitally Encoded Video/4Channel Bi-Directional Data/ 4-Channel Bi-Directional Audio Receiver	FVRM-4CCx

### Technical Specifications:

#### **VIDEO**

Video Input	1 volt pk-pk (75 ohms)
Bandwidth	5 Hz - 8 MHz
Bit Resolution	8-bit
Differential Gain	< 2%
Differential Phase	< 0.6°
Tilt	< 1%
S/N Ratio	67dB (Weighed)

#### **DATA**

Data Interface	RS-485
Data Rate	100Kbps
Bit Error Rate	10 <sup>-9</sup>

#### **AUDIO**

Audio Impedance	600 ohms
Input/output Level	0dBm(typical)
Frequency Response	10Hz-20KHz
Bit Resolution	24-bit
S/N Ratio	88Db

#### **WAVELENGTH**

850/1310nm Multimode  
1310/1550nm Singlemode

## Technical Specifications (cont):

<b><u>OPTICAL EMITTER</u></b>	Laser Diode
<b><u>NUMBER OF FIBERS</u></b>	1
<b><u>CONNECTORS</u></b>	
Optical	ST
Video	BNC
Data/Audio	Shielded RJ-45 Plug
<b><u>GENERAL</u></b>	
Power Supply	90V-260V AC 50-60Hz
Dimensions	18.98 x 9.76 x 1.77 Inches
Construction	Aluminum
MTBF	> 100,000 hours
Operating Temp	-30° C to +50° C
Storage Temp	-40° C to +85° C
Relative Humidity	0% to 95% (non-condensing)
<b><u>INDICATOR</u></b>	
Module	
Blue	Video Sync Present
Blue	Data Sync Present
Orange	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		
Multimode Singlemode	850/1310nm	FVTM 4CCx	-5 dBm	FVRM 4CCx	-26 dBm	21 dB	30km
Fiber	Wavelength	Receiver		Transmitter		Optical Power Budget	Max Distance
		Model	Output	Model	Sensitivity		
Singlemode	1310/1550nm	FVRM 4CCx	-10 dBm	FVTM 4CCx	-22 dBm	12 dB	30km

## INSTALLATION INSTRUCTIONS

### Installation Procedure

The VERSITRON *VersiVision* FVTM4CCx and FVRM4CCx 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 (FVTM4CCx) using coaxial cable.
2. Connect the video output BNC connector on the receiver unit (FVRM4CCx) 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 orange POWER LED will light, indicating the presence of operating power. The blue VIDEO LED and the blue DATA LED will give an indication as stated on the following pages.
6. The system should now be operational.

## Indicator LEDs

The stand-alone units have integral LEDs that are used to monitor the state of the unit. There are four video LEDs, one power LED and one data LED on each unit. The indicator LEDs function as follows:

### **TRANSMITTER and RECEIVER:**

**Power:** ON: (Orange) Indicates that correct power has been applied

#### **Transmitter:**

**Video:** OFF: Indicates no video detected on input BNC connector  
(No Video present on input BNC)  
ON: (blue) Indicates video detected on input BNC connector  
(Video present on input BNC)

**Data:** OFF: Indicates no data detected on the transmit data cable  
Blinking: (Blue) Indicates data transmitted at the rate of the operation data.

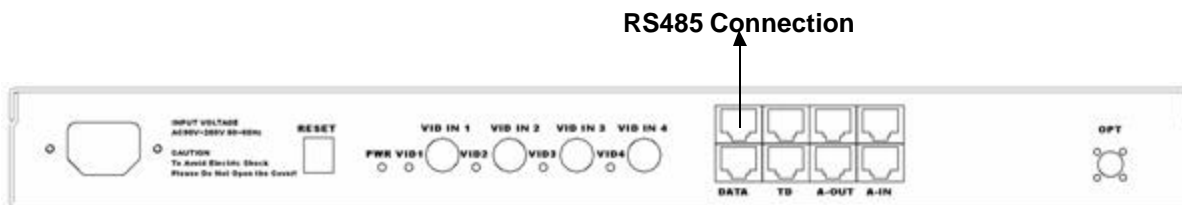
#### **Receiver:**

**Video:** OFF: Indicates no video present on output BNC connector  
(No Video present on output BNC)  
ON: (Blue) Indicates video detected on output BNC connector  
(Video present on input BNC)

**Data:** OFF: Indicates no data detected on the receive data cable  
Blinking: (Blue) Indicates data received at the rate of the operation data.

## System Terminal Block Connections (Transmitter)

The various input and output connections for the transmitter are as follows:



\*Front Panel of FVTM4CCx (Transmitter)

**NOTE: Only the upper row of RJ-45 ports is used for these units. The lower row of ports is for expanded models and is not used on these units. In addition, the two ports above the label "TD" are used for VERSITRON testing.**

### Data RS-485 Connection (Transmitter): (Upper Data RJ45 Port)

#### RS-485 (Channel 1)

Terminal No.1—— RS-485 (+)

Terminal No.2—— RS-485 (-)

#### RS-485 (Channel 2)

Terminal No.3—— RS-485 (+)

Terminal No.4—— RS-485 (-)

#### RS-485 (Channel 3)

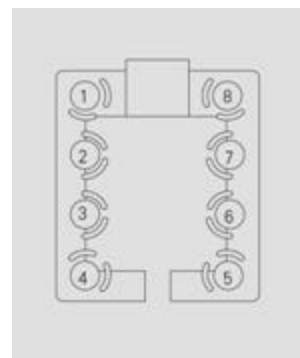
Terminal No.5—— RS-485 (+)

Terminal No.6—— RS-485 (-)

#### RS-485 (Channel 4)

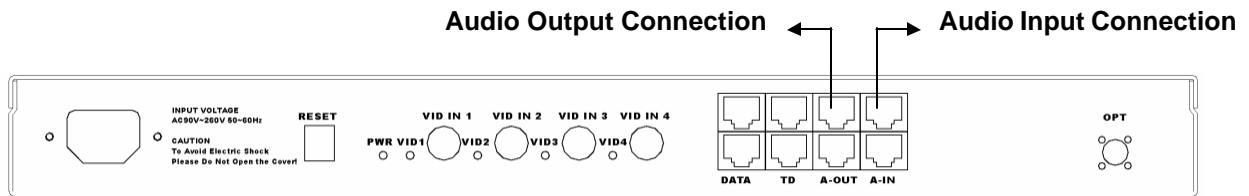
Terminal No.7—— RS-485 (+)

Terminal No.8—— RS-485 (-)



Terminal Block for Data Connections

## Audio Input/Output Connection (Transmitter)



\*Front Panel of FVTM4CCx (Transmitter)

### “A-IN” Connection (Upper A-IN Port)

#### Channel 1

Terminal No.1— Audio Input 1

Terminal No.2— Ground

#### Channel 2

Terminal No.3— Audio Input 2

Terminal No.4— Ground

#### Channel 3

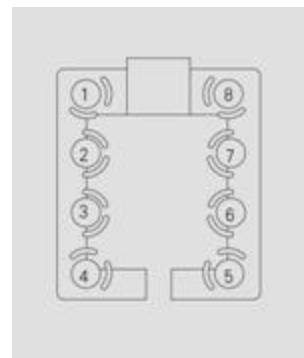
Terminal No.5— Audio Input 3

Terminal No.6— Ground

#### Channel 4

Terminal No.7— Audio Input 4

Terminal No.8— Ground



Terminal Block for Audio Connections

**“A-OUT” Connection  
(Upper A-OUT Port)**

**Channel 1**

Terminal No.1—— Audio Output 1

Terminal No.2—— Ground

**Channel 2**

Terminal No.3—— Audio Output 2

Terminal No.4—— Ground

**Channel 3**

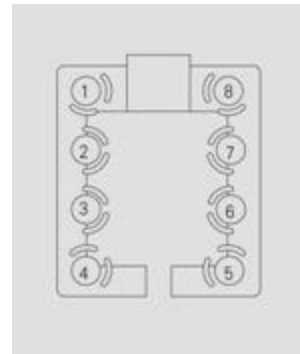
Terminal No.5—— Audio Output 3

Terminal No.6—— Ground

**Channel 4**

Terminal No.7—— Audio Output 4

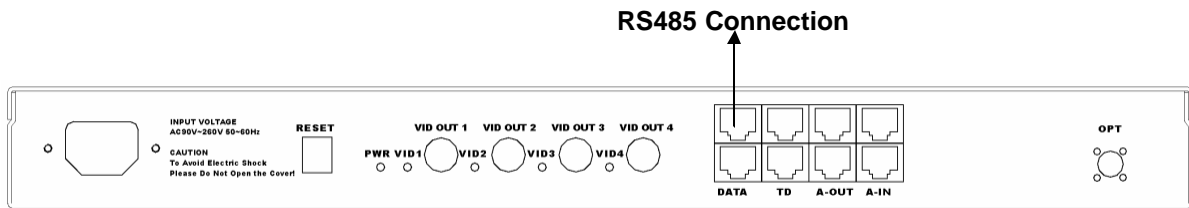
Terminal No.8—— Ground



Terminal Block for Audio Connections

## System Terminal Block Connections (Receiver)

The various input and output connections for the receiver are as follows:



\*Front Panel of FVRM4CCx (Receiver)

**NOTE: Only the upper row of RJ-45 ports is used for these units. The lower row of ports is for expanded models and is not used on these units. In addition, the two ports above the label “TD” are used for VERSITRON testing.**

### Data RS-485 Connection (Receiver): (Upper RJ-45 Port)

#### RS-485 (Channel 1)

Terminal No.1—— RS-485 (+)

Terminal No.2—— RS-485 (-)

#### RS-485 (Channel 2)

Terminal No.3—— RS-485 (+)

Terminal No.4—— RS-485 (-)

#### RS-485 (Channel 3)

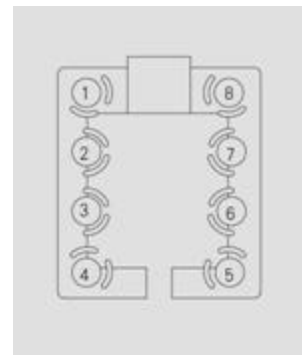
Terminal No.5—— RS-485 (+)

Terminal No.6—— RS-485 (-)

#### RS-485 (Channel 4)

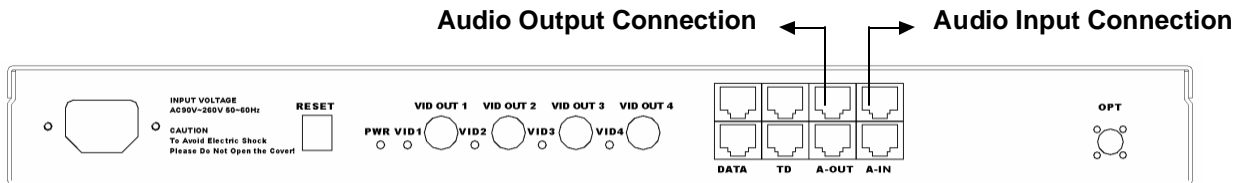
Terminal No.7—— RS-485 (+)

Terminal No.8—— RS-485 (-)



Terminal Block for Data Connections

## Audio Input/Output Connection (Receiver)



\*Front Panel of FVRM4CCx (Receiver)

### “A-IN” Connection (Upper A-IN Port)

#### Channel 1

- Terminal No.1 — Audio Input 1
- Terminal No.2 — Ground

#### Channel 2

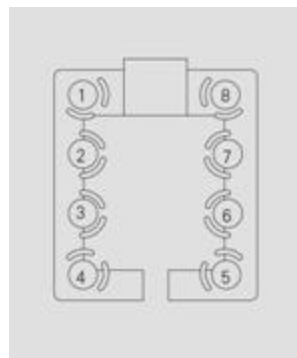
- Terminal No.3 — Audio Input 2
- Terminal No.4 — Ground

#### Channel 3

- Terminal No.5 — Audio Input 3
- Terminal No.6 — Ground

#### Channel 4

- Terminal No.7 — Audio Input 4
- Terminal No.8 — Ground



Terminal Block for Audio Connections

## “A-OUT” Connection (Upper A-OUT Port)

### Channel 1

Terminal No.1— Audio Output 1

Terminal No.2— Ground

### Channel 2

Terminal No.3— Audio Output 2

Terminal No.4— Ground

### Channel 3

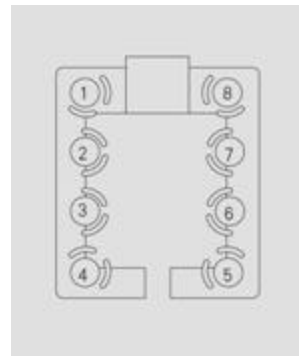
Terminal No.5— Audio Output 3

Terminal No.6— Ground

### Channel 4

Terminal No.7— Audio Output 4

Terminal No.8— Ground



Terminal Block for Audio Connections

## TROUBLESHOOTING

### Optical Fiber

The VERSITRON *VersiVision* FVTM4CCx and FVRM4CCx Series is available with 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 mode 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 connected 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 position

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

### Data Link

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 the data cable, and then check whether the data cable connector is firmly inserted into the RJ-45 port.

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