



HD-CVI / AHD / HD-TVI Video

+

Bi-Directional Data

USER'S MANUAL

v2.0

© January 2017
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PROPRIETARY DATA

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CAUTION!

The fiber optic transmitters contain 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.

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GENERAL INFORMATION

Introduction:

The VersiVision HD Series video transmitters and receivers support the highest quality of 8-bit digitally encoded HD-CVI, AHD or HD-TVI video + one channel of bi-directional data over one strand of single-mode or multi-mode fiber. Optimized optical modules; which are compatible with 1280H/25F, 1280H/30F, 1280H/50F, and 1280H/60F, ensure the highest performance for the most demanding applications. The hot-pluggable and adjustment-free design ensures the convenience of the installation and operation. The modules are available in either standalone or rack mount versions.

Model Numbers:

HD-CVI Video + Bi-Directional Data

Model	Function	Connector	Fiber Cable	Wavelength	Max Distance
HDCVIT1A03	1-Channel Transmitter	ST Simplex	MM	850/1310nm	2 Km
HDCVIR1A03	1-Channel Receiver	ST Simplex	MM	850/1310nm	2 Km
HDCVIT1A05	1-Channel Transmitter	ST Simplex	SM	1310/1550nm	30 Km
HDCVIR1A05	1-Channel Receiver	ST Simplex	SM	1310/1550nm	30 Km
HDCVIT2A03	2-Channel Transmitter	ST Simplex	MM	850/1310nm	2 Km
HDCVIR2A03	2-Channel Receiver	ST Simplex	MM	850/1310nm	2 Km
HDCVIT2A05	2-Channel Transmitter	ST Simplex	SM	1310/1550nm	30 Km
HDCVIR2A05	2-Channel Receiver	ST Simplex	SM	1310/1550nm	30 Km
HDCVIT4A03	4-Channel Transmitter	ST Simplex	MM	850/1310nm	1 Km
HDCVIR4A03	4-Channel Receiver	ST Simplex	MM	850/1310nm	1 Km
HDCVIT4A05	4-Channel Transmitter	ST Simplex	SM	1310/1550nm	30 Km
HDCVIR4A05	4-Channel Receiver	ST Simplex	SM	1310/1550nm	30 Km

AHD Video + Bi-Directional Data

Model	Function	Connector	Fiber Cable	Wavelength	Max Distance
AHDT1A03	1-Channel Transmitter	ST Simplex	MM	850/1310nm	2 Km
AHDR1A03	1-Channel Receiver	ST Simplex	MM	850/1310nm	2 Km
AHDT1A05	1-Channel Transmitter	ST Simplex	SM	1310/1550nm	30 Km
AHDR1A05	1-Channel Receiver	ST Simplex	SM	1310/1550nm	30 Km
AHDT2A03	2-Channel Transmitter	ST Simplex	MM	850/1310nm	2 Km
AHDR2A03	2-Channel Receiver	ST Simplex	MM	850/1310nm	2 Km
AHDT2A05	2-Channel Transmitter	ST Simplex	SM	1310/1550nm	30 Km
AHDR2A05	2-Channel Receiver	ST Simplex	SM	1310/1550nm	30 Km
AHDT4A03	4-Channel Transmitter	ST Simplex	MM	850/1310nm	1 Km
AHDR4A03	4-Channel Receiver	ST Simplex	MM	850/1310nm	1 Km
AHDT4A05	4-Channel Transmitter	ST Simplex	SM	1310/1550nm	30 Km
AHDR4A05	4-Channel Receiver	ST Simplex	SM	1310/1550nm	30 Km

HD-TVI Video + Bi-Directional Data

Model	Function	Connector	Fiber Cable	Wavelength	Max Distance
HDTVIT1A03	1-Channel Transmitter	ST Simplex	MM	850/1310nm	2 Km
HDTVIR1A03	1-Channel Receiver	ST Simplex	MM	850/1310nm	2 Km
HDTVIT1A05	1-Channel Transmitter	ST Simplex	SM	1310/1550nm	30 Km
HDTVIR1A05	1-Channel Receiver	ST Simplex	SM	1310/1550nm	30 Km
HDTVIT2A03	2-Channel Transmitter	ST Simplex	MM	850/1310nm	2 Km
HDTVIR2A03	2-Channel Receiver	ST Simplex	MM	850/1310nm	2 Km
HDTVIT2A05	2-Channel Transmitter	ST Simplex	SM	1310/1550nm	30 Km
HDTVIR2A05	2-Channel Receiver	ST Simplex	SM	1310/1550nm	30 Km
HDTVIT4A03	4-Channel Transmitter	ST Simplex	MM	850/1310nm	1 Km
HDTVIR4A03	4-Channel Receiver	ST Simplex	MM	850/1310nm	1 Km
HDTVIT4A05	4-Channel Transmitter	ST Simplex	SM	1310/1550nm	30 Km
HDTVIR4A05	4-Channel Receiver	ST Simplex	SM	1310/1550nm	30 Km

Technical Specifications

VIDEO

Video Input:	0.6 ~ 2.0 Volt pk-pk (75 Ohms)
Input/Output Channels:	1
Bandwidth:	5 Hz - 8MHz
Bit Resolution:	8-Bit
Differential Gain:	< ±1%
Differential Phase:	< ±1°
Tilt:	< 1%
S/N Ratio:	60dB (Weighted)

WAVELENGTH

Multi-Mode:	850/1310nm
Single-Mode:	1310/1550nm

OPTICAL EMITTER

Laser Diode	
Number of Fibers:	1

DATA

Data Interface:	RS-485*
Data Rate:	Up to 300 Kbps
Data Channels:	(1) Bi-Directional
Bit Error Rate:	10 ⁹
	*RS-232 or RS-422 Optional

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CONNECTORS

Optical:	ST
Video:	BNC
Data Contact:	Screw Terminal Strip

GENERAL

Power Supply:	5VDC, 2A
Dimensions (Inches):	1-Channel Units: 4.33 x 4.09 x 1.10 2-Channel Units: 5.98 x 5.12 x 1.13 4-Channel Units: 5.98 x 5.12 x 1.13
MTBF:	> 100,000 Hours
Operating Temperature:	-35° C to +65° C
Storage Temperature:	-45° C to +85° C
Relative Humidity:	0% to 95% (non-condensing)

Optical Power Budget

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

Fiber	Wavelength	Transmitter Output	Receiver Sensitivity	Optical Power Budget
Single-mode	1310nm/1550nm	-5 dBm	-26 dBm	21 dB
Multi-mode	850nm/1310nm	-10 dBm	-24 dBm	14 dB

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INSTALLATION INSTRUCTIONS

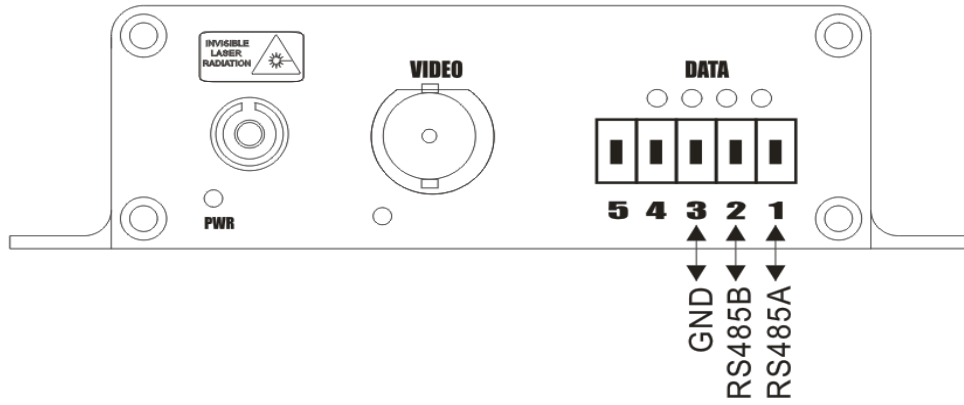
Installation Procedure:

The HD series units are preset for immediate use. There are indicator LEDs on the units for monitoring the real-time status of power and video. The following instructions describe the typical installation procedure and the function of the LED indicators located on each unit.

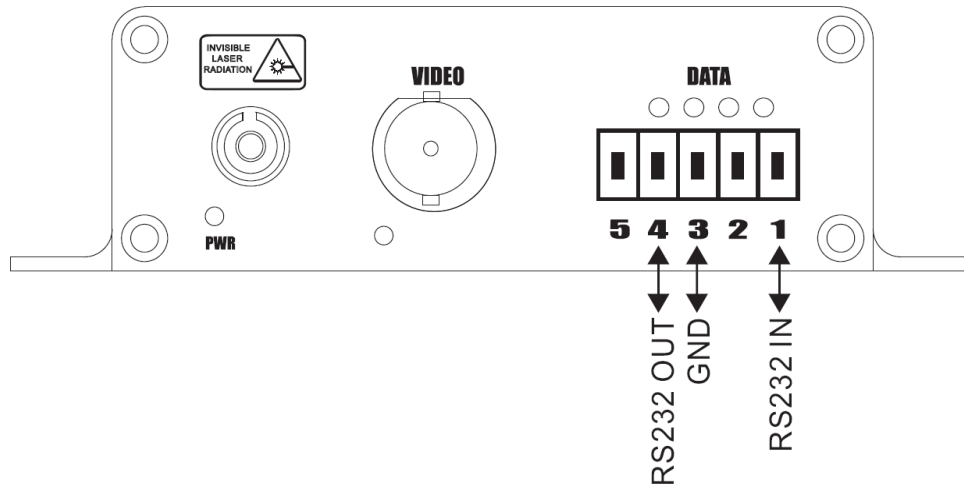
1. Connect the HD video source to the BNC connector on the **transmitter** using coaxial cable.
2. Connect the BNC connector on the **receiver** unit to HD video monitor using coaxial cable.
3. If using the bi-directional data option, please refer to the next section.
4. Connect the fiber optic cable between the transmitter and receiver.
5. Apply the power supply to both the transmitter and receiver.
6. The system should now be operational.

Bi-Directional Data Wiring:

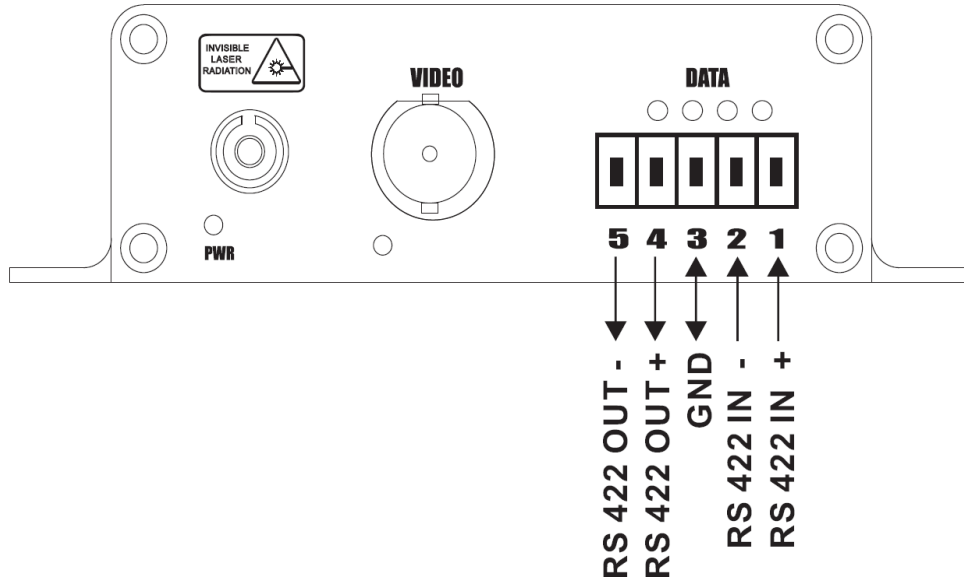
1-Channel Units with RS-485



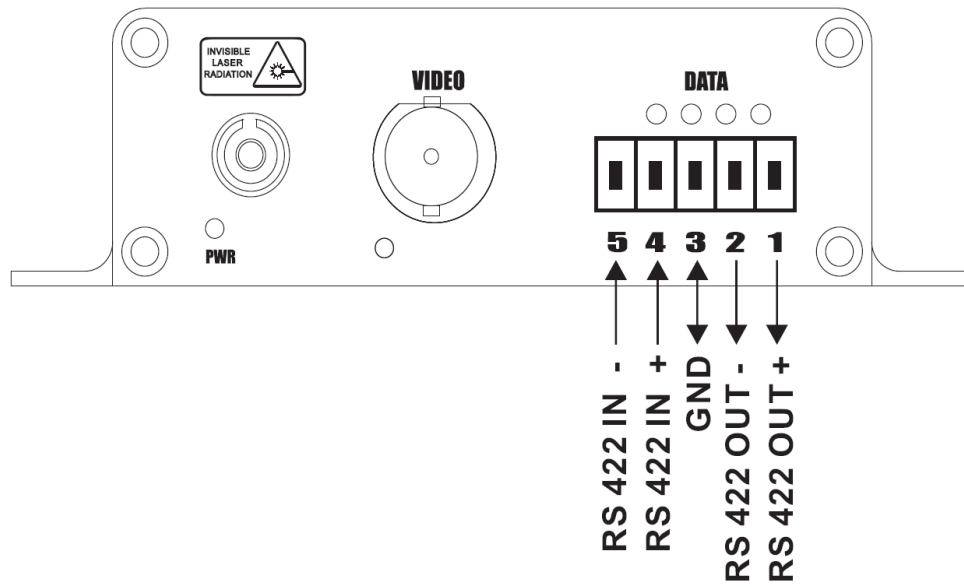
1-Channel Units with RS-232



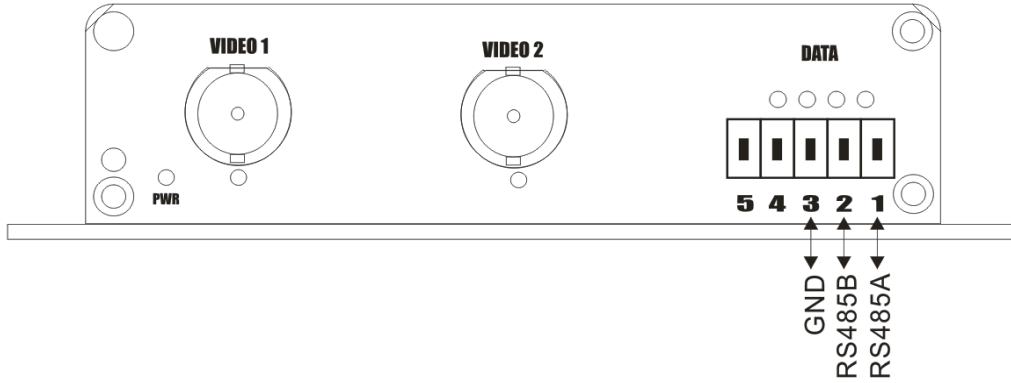
1-Channel Transmitter with RS-422



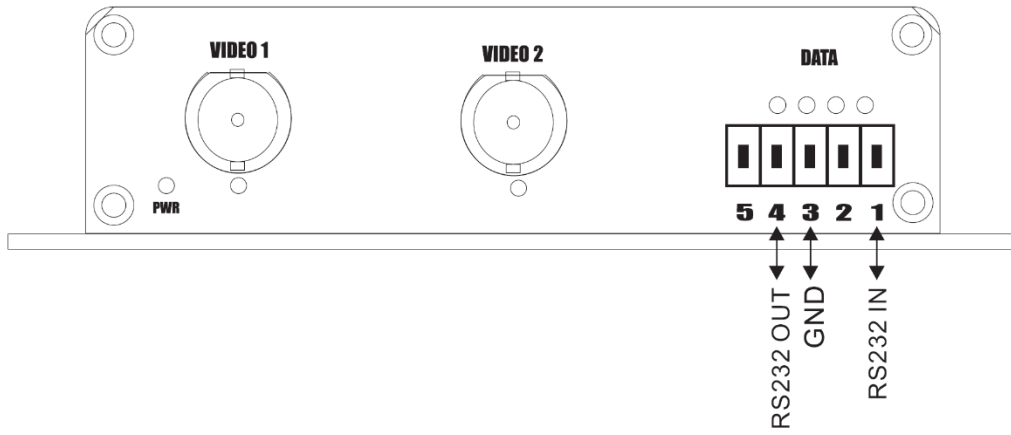
1-Channel Receiver with RS-422



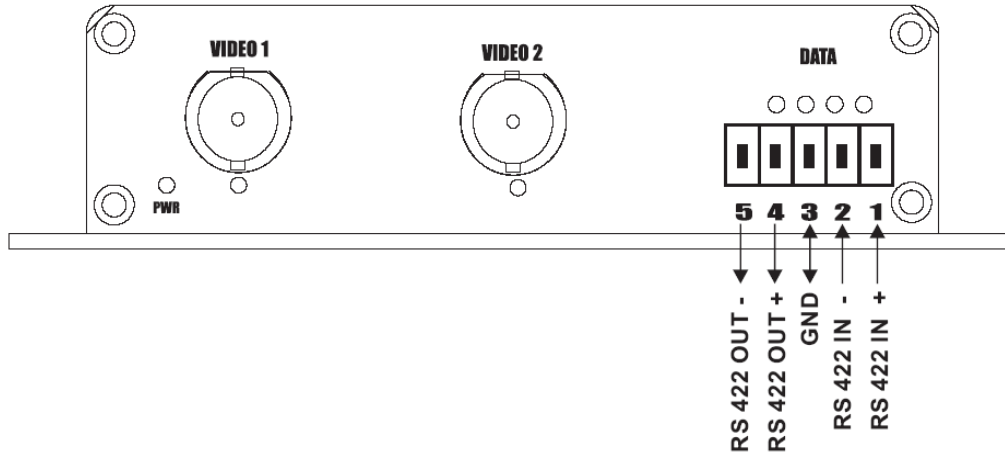
2-Channel Units with RS-485



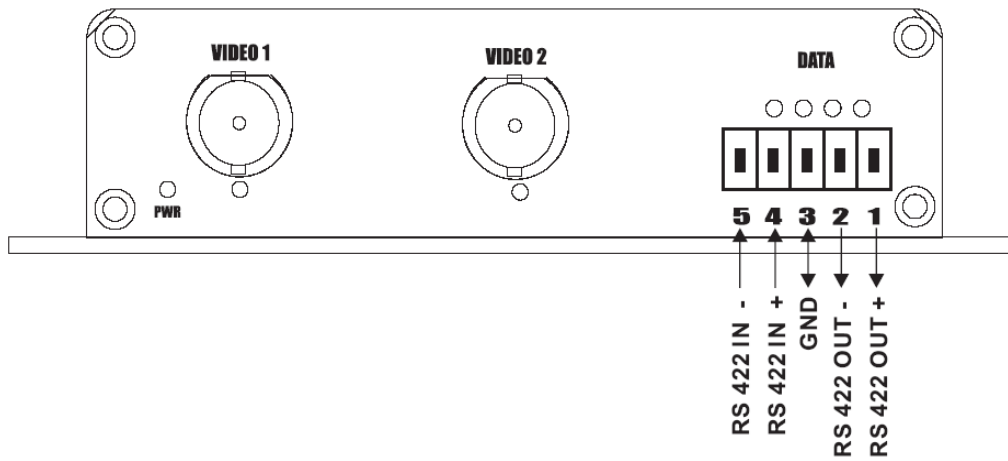
2-Channel Units with RS-232



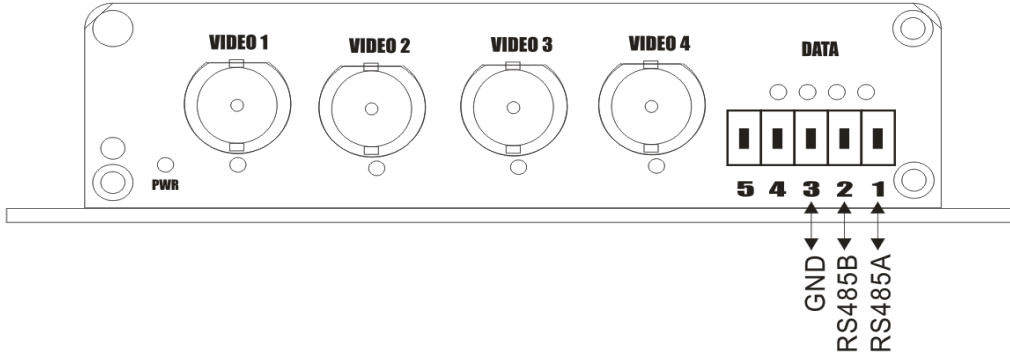
2-Channel Transmitter with RS-422



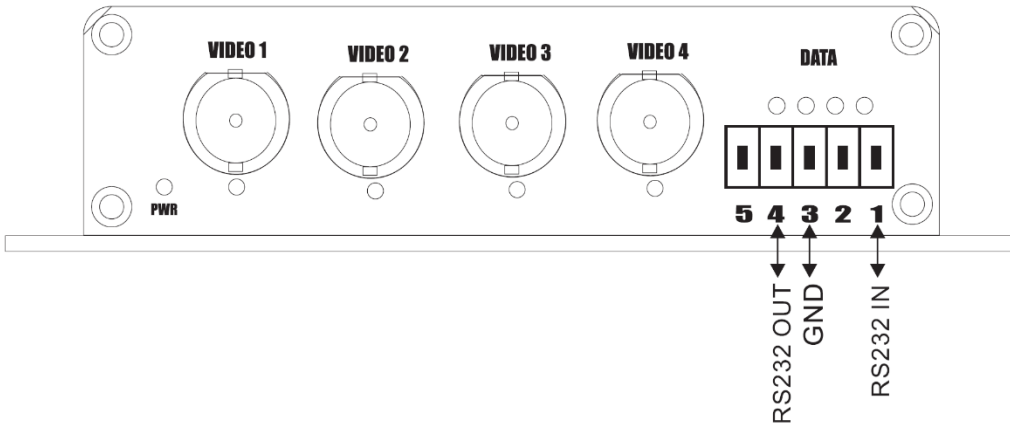
2-Channel Receiver with RS-422



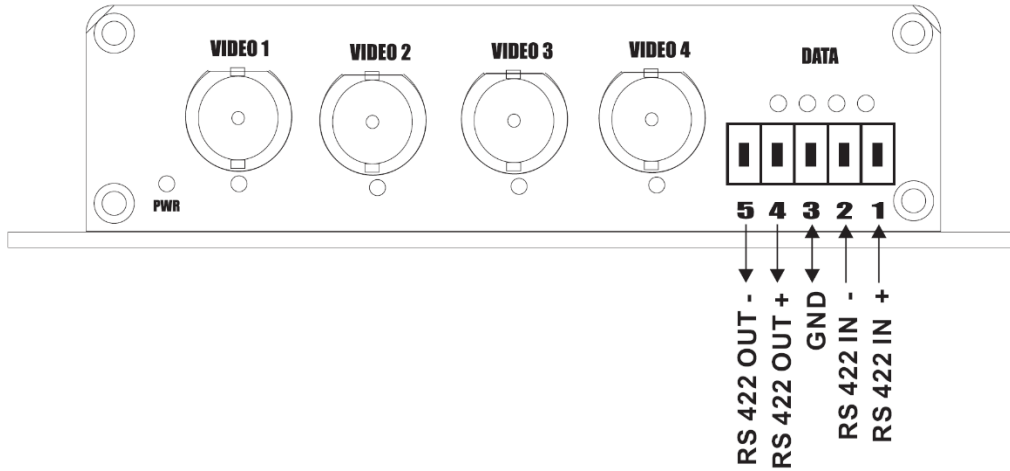
4-Channel Units with RS-485



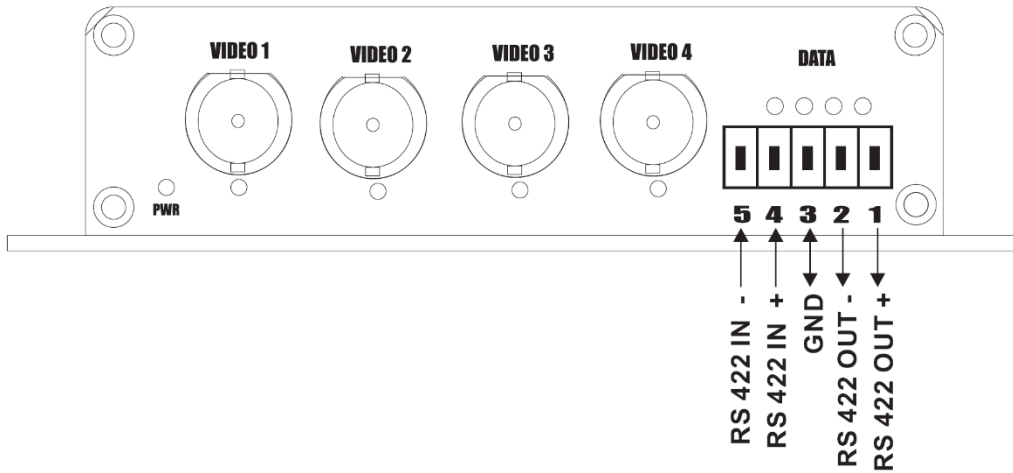
4-Channel Units with RS-232



4-Channel Transmitter with RS-422



4-Channel Receiver with RS-422



Indicator LEDs:

Each unit has integral LEDs that are used to monitor the state of the unit. Below are descriptions for each.

TRANSMITTER and RECEIVER:

Power:	ON (Green):	Indicates power has been applied.
Video:	OFF:	Indicates no video signal present on the BNC connector.
	ON (Green):	Indicates video signal present on the BNC connector.
Data:	OFF:	Indicates no data signal activity on the data connector.
	BLINKING (Green):	Indicates data signal activity on the data connector.

TROUBLESHOOTING

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

Optical Fiber

The HD Series is available for most applications using multi-mode or single-mode optical fiber.

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.

Data

Refer to the wiring diagrams in this manual; and the documentation of the devices connected to the VERSITRON products, to be certain that the data wiring is correct.

General

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

The status of any of the LEDs should provide the first clue as to the origin of any operational failure.