



INSTALLATION AND OPERATION MANUAL

FVT/FVR20D2I1C4E

2-CHANNEL 10-BIT DIGITALLY ENCODED VIDEO
+ 2 BI-DIRECTIONAL DATA + AIPHONE™ INTERCOM
+ 4 CONTACT CLOSURE
+ 100MB ETHERNET
+ REDUNDANT POINT-TO-POINT DUAL SFP OPTICAL PORTS

The FVT/FVR20D2I1C4E series utilize 10-bit digital video encoding and decoding for high-quality video transmission that meets the requirements of EIA RS-250C for short-haul video transmission. These environmentally hardened units provide transmission of two independent video channels and two bi-directional data channels. They also provide transmission of one Aiphone™ intercom channel and four contact closure channels with tamper supervision in addition to one 10/100Mb Ethernet channel.

The ComNet™ FVT/FVR20D2I1C4E has dual optical (SFP) ports to provide a redundant point-to-point fail safe topology in the event of loss of one fiber or one optical module.

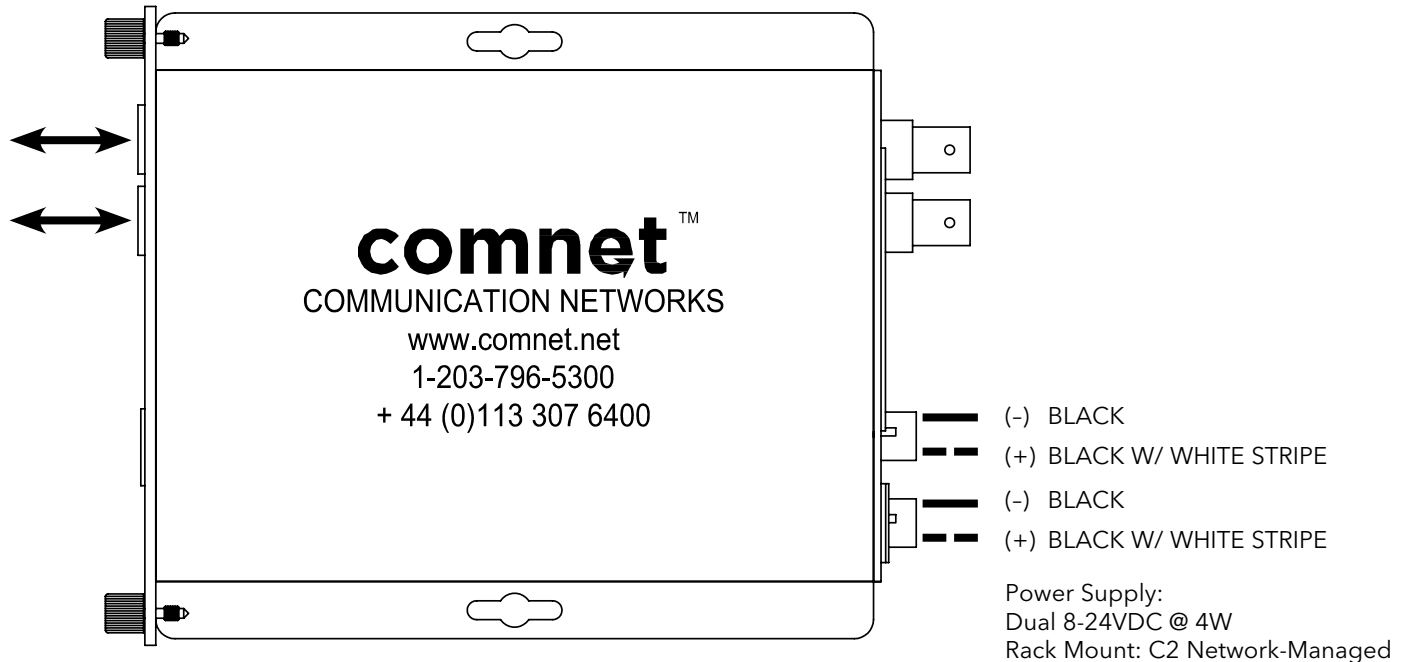
Operational status can be monitored by using the web management interface through the addition of the ComNet network managed chassis and network management interface module.

Bi-color (red/green) LED indicators are provided for confirming operating status in addition to alarm contacts for fault monitoring. See **Figure 15** on **Page 9** for LED explanations.

Packaged in the exclusive ComNet ComFit housing, these units may be either wall or rack-mounted (using ComNet C2 network-managed rack), or may be DIN-rail mounted by the addition of ComNet model DINBKT1 adaptor plate. See **Figure A** on **Page 10** for mounting instructions.

FIGURE 1 - FVT/FVR20D211C4E TRANSMITTER AND RECEIVER

Optical fiber determined by Selection of Small Form-factor Pluggable (SFP) modules.*



* One SFP required for point-to-point operation. Two SFPs required for redundant operation.
Consult factory for compatible SFP Modules.

NOTE: Remove PWR1 Electrical Connector for Rack Mount Units

FIGURE 2 - FVT20D211C4E TRANSMITTER

FRONT PANEL

REAR PANEL

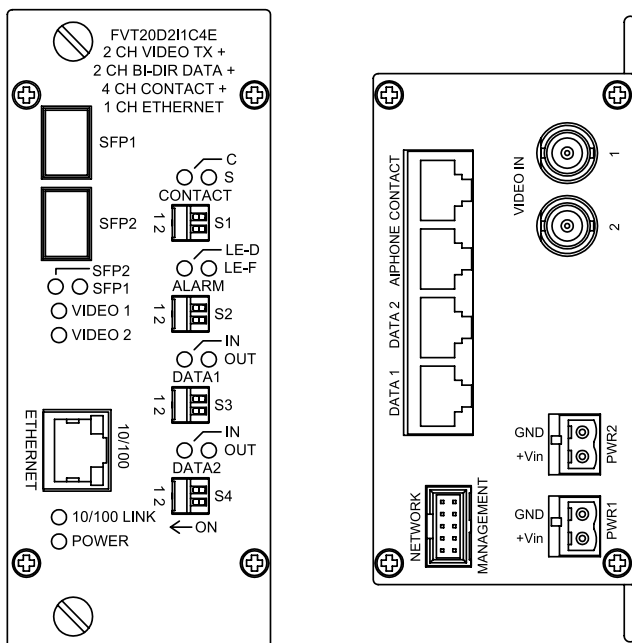


FIGURE 3 - FVR20D211C4E RECEIVER

FRONT PANEL

REAR PANEL

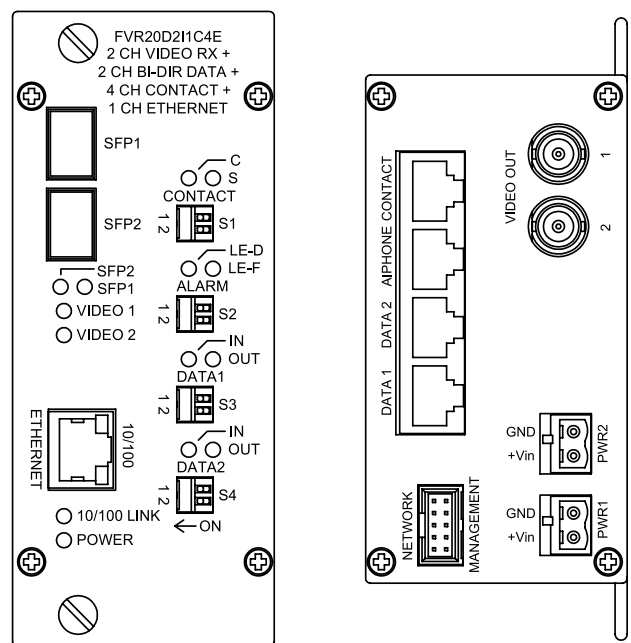
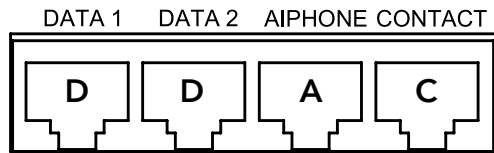


FIGURE 4 - RJ45 BREAK-OUT - FVT20D2I1C4E TRANSMITTER

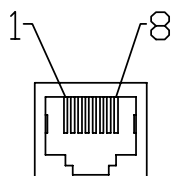
4 pc. Factory Supplied

RJ-45 PORTS

Located on Rear Panel

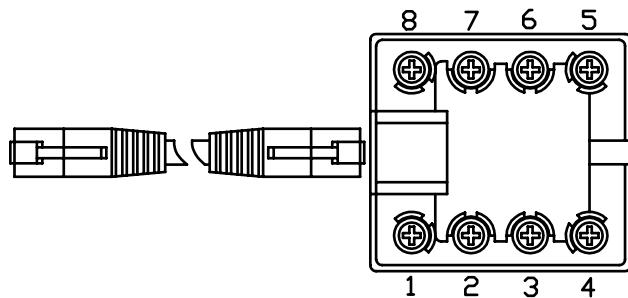


VIEW INSIDE RJ-45 PORT



RJ-45 BREAK-OUT KIT

Screw Number Corresponds to RJ-45 Port Pin Number



D (DATA PORTS)

PIN #	Wire Color	Data Connections
1	Blue	DATA OUT -
2	Orange	DATA OUT +
3	Black	DATA IN +
4	Red	RELAY OUT
5	Green	RELAY OUT
6	Yellow	DATA IN -
7	Brown	GND
8	White	+5V (BIAS)

C (CONTACT PORT)

PIN #	Wire Color	TX Connections
1	Blue	IN 1+
2	Orange	IN 1-
3	Black	IN 2+
4	Red	IN 3+
5	Green	IN 3 -
6	Yellow	IN 2-
7	Brown	IN 4+
8	White	IN 4-

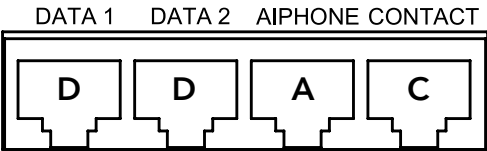
A (AIPHONE™ PORT)

PIN #	Wire Color	Aiphone Connections
1	Blue	LE-D 'I' TERMINAL
2	Orange	LE-D '1' TERMINAL
3	Black	LE-D 'E' TERMINAL
4	Red	RELAY OUTPUT COM
5	Green	RELAY OUTPUT N.C.
6	Yellow	RELAY OUTPUT N.O.
7	Brown	GND
8	White	GND

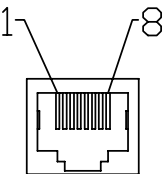
FIGURE 5 - RJ45 BREAK-OUT - FVR20D2I1C4E RECEIVER

4 pc. Factory Supplied

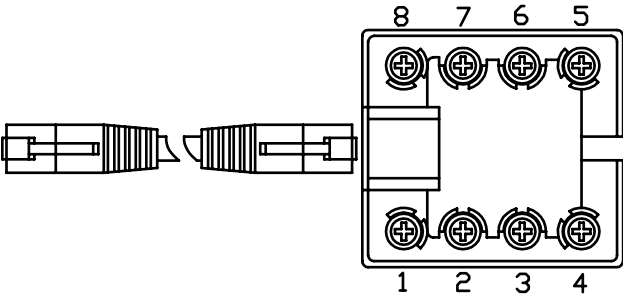
RJ-45 PORTS
Located on Rear Panel



VIEW INSIDE RJ-45 PORT



RJ-45 BREAK-OUT KIT
Screw Number Corresponds to RJ-45 Port Pin Number



D (DATA PORTS)

PIN #	Wire Color	Data Connections
1	Blue	DATA OUT -
2	Orange	DATA OUT +
3	Black	DATA IN +
4	Red	RELAY OUT
5	Green	RELAY OUT
6	Yellow	DATA IN -
7	Brown	GND
8	White	+5V (BIAS)

C (CONTACT PORT)

PIN #	Wire Color	RX Connections
1	Blue	OUT1 +
2	Orange	OUT1 -
3	Black	OUT2 +
4	Red	OUT3 +
5	Green	OUT3 -
6	Yellow	OUT2 -
7	Brown	OUT4 +
8	White	OUT4 -

A (AIPHONE™ PORT)

PIN #	Wire Color	Aiphone Connections
1	Blue	LEF 'E' TERMINAL
2	Orange	LEF '1' TERMINAL
3	Black	LEF '-' TERMINAL
4	Red	NC
5	Green	CONTACT INPUT +
6	Yellow	NC
7	Brown	GND
8	White	GND

NC = No Connection

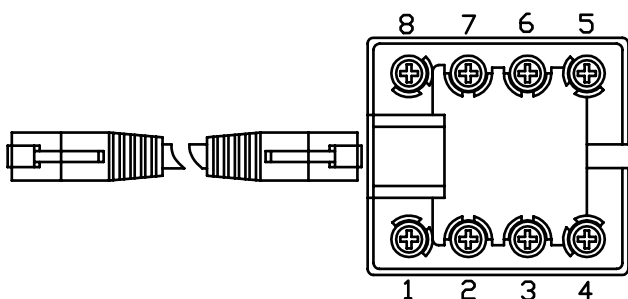
FIGURE 6 - DATA SWITCH POSITIONS

The mode for each data channel is configured using a set of two switches labeled DATA1 (S3) and DATA2 (S4), located on the front panel of the unit.



DATA1 (S3)		DATA2 (S4)		Resulting Mode
1	2	1	2	
ON	ON	ON	ON	RS232
ON	OFF	ON	OFF	RS422, Bi-Phase or Manchester
OFF	ON	OFF	ON	RS485 2-Wire, Sensornet
OFF	OFF	OFF	OFF	RS485 4-Wire

FIGURE 7 - RJ-45 PIN OUT



PIN #	Wire Color	Data Connections
1	Blue	DATA OUT -
2	Orange	DATA OUT +
3	Black	DATA IN +
4	Red	RELAY OUT
5	Green	RELAY OUT
6	Yellow	DATA IN -
7	Brown	GND
8	White	+5V (BIAS)

PIN #	RS232	RS422	RS485 2-Wire	RS485 4-Wire
1	NC	RS422 OUTPUT -	NC	RS485 OUTPUT -
2	RS232 - OUTPUT	RS422 OUTPUT +	NC	RS485 OUTPUT +
3	NC	RS422 INPUT +	RS485 INPUT +	RS485 INPUT +
4	RELAY OUT	RELAY OUT	RELAY OUT	RELAY OUT
5	RELAY OUT	RELAY OUT	RELAY OUT	RELAY OUT
6	RS232 - INPUT	RS422 INPUT -	RS485 INPUT -	RS485 INPUT -
7	GND	GND	GND	GND
8	+5V (BIAS)	+5V (BIAS)	+5V (BIAS)	+5V (BIAS)

NC = No Connection

FIGURE 8 - DATA CONNECTIONS

See Page 5 for Switch Settings

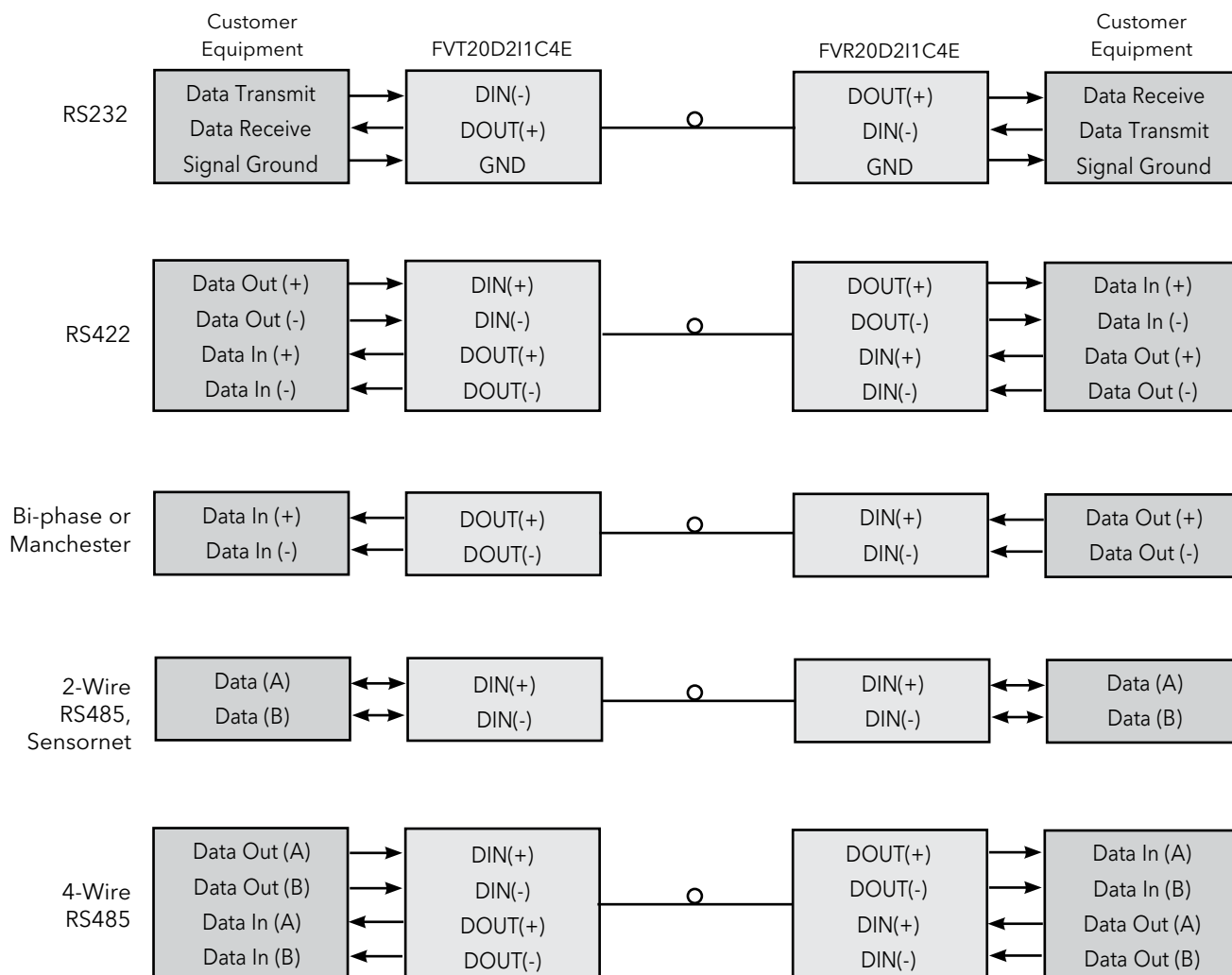


FIGURE 9 - POSSIBLE ETHERNET CONFIGURATION

Ethernet IEEE 802.3 Network Element determined by user.

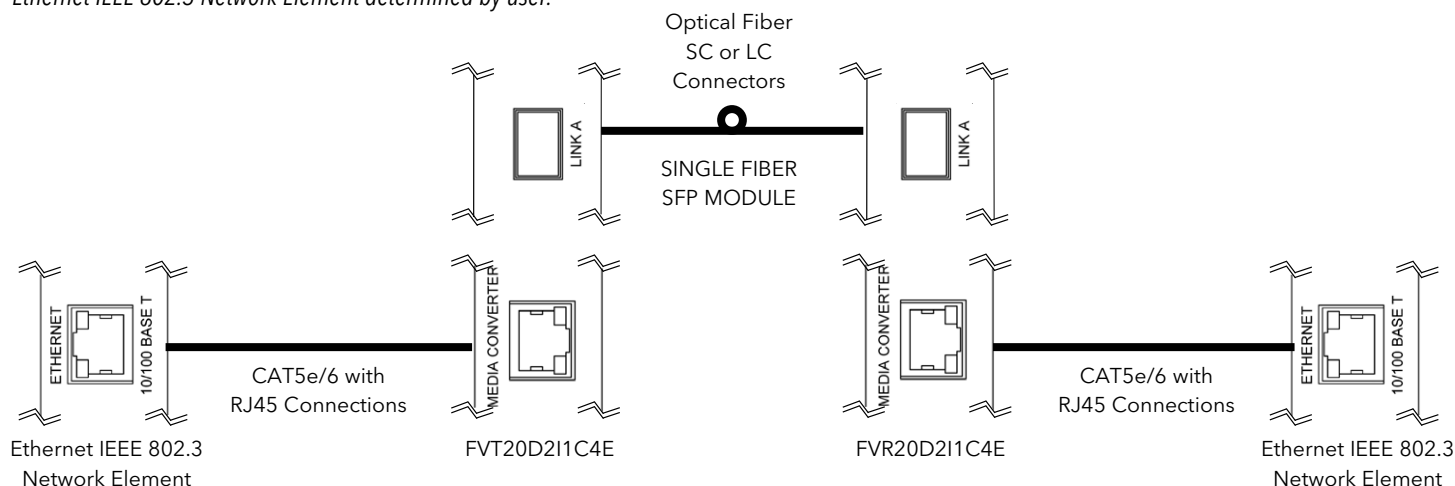


FIGURE 10 - SFP CONNECTIONS

Number of fibers and type of fiber connectors will be determined by selected SFP modules and if point-to-point or redundant modes are required.

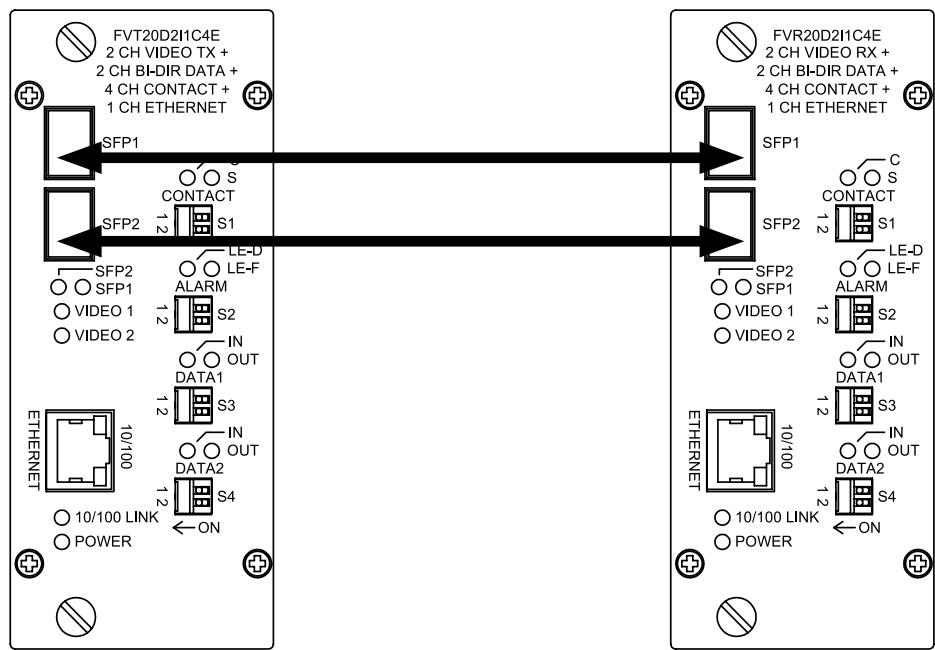


FIGURE 11 - AIPHONE™ INTERCOM CONNECTIONS

The units are designed to operate with the Aiphone™ LE-D and LEF intercom system.

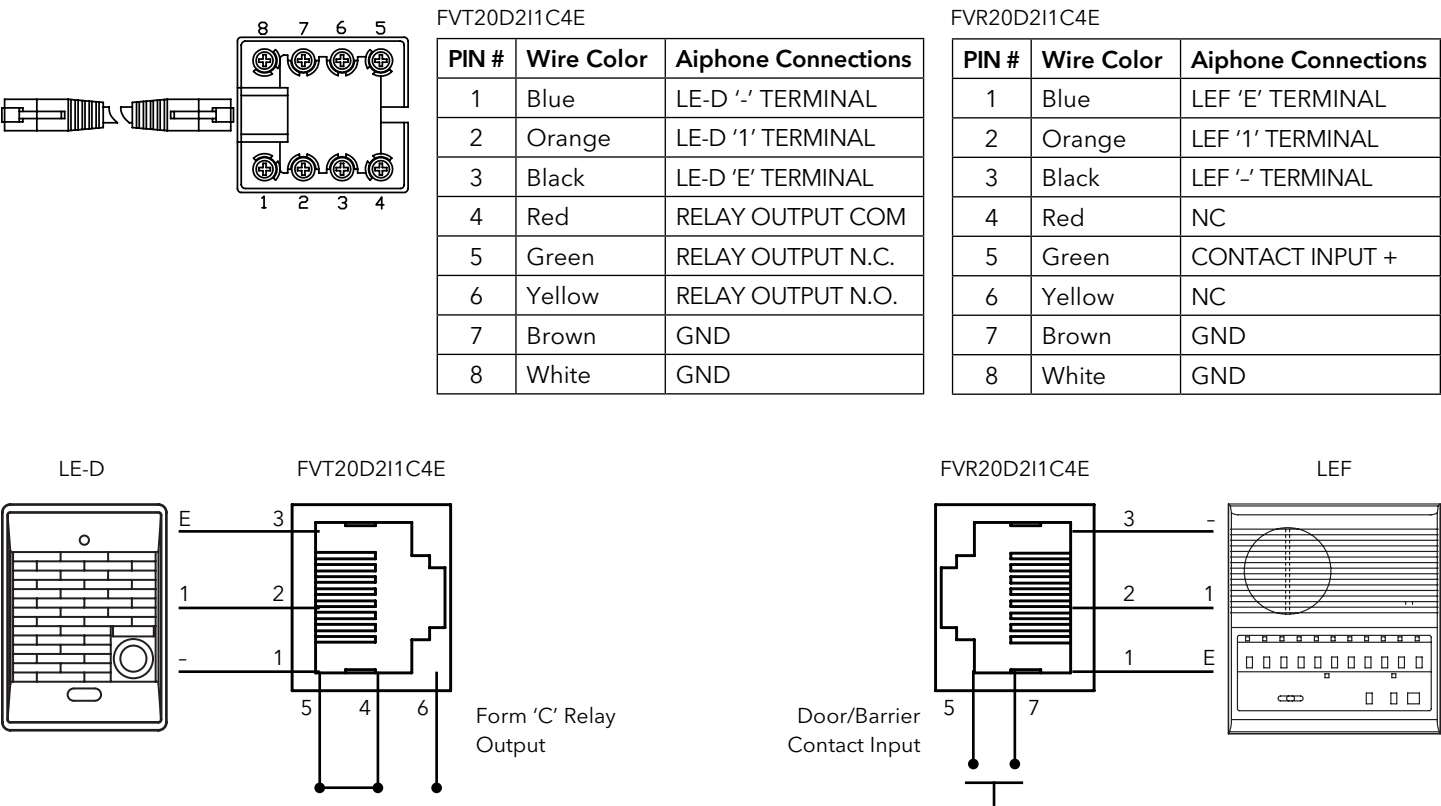
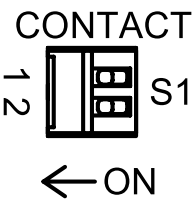


FIGURE 12 - CONTACT SWITCH POSITIONS

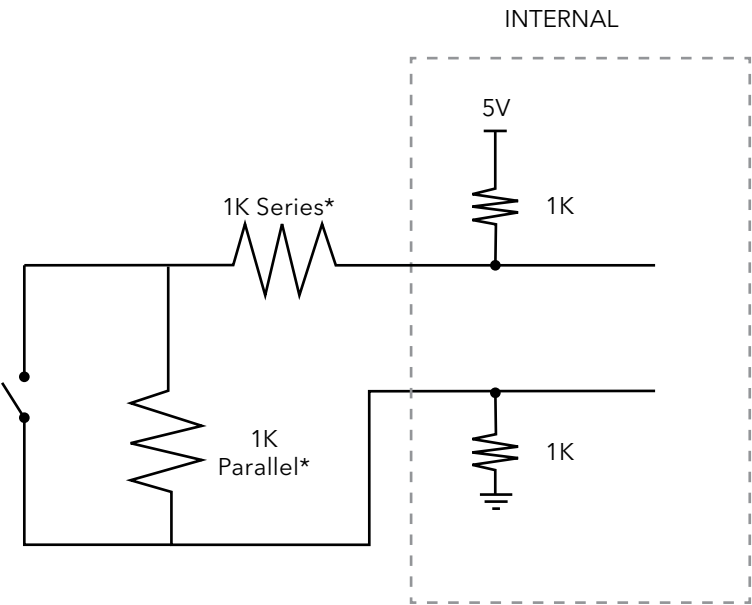
The mode for contact closure operation is configured using a set of two switches labeled CONTACT (S1) located on the front panel of the unit. There are four supervised contacts in the forward (video) direction.



NOTE: These switch settings refer to the transmitter (FVT20D2I1C4E). On the receiver (FVR20D2I1C4E), S1 SWITCH 1 inverts the contact outputs. S1 SWITCH 2 is not used.

CONTACT (S1)		Resulting Mode
1	2	
ON	ON	Full Supervision - When a 1K resistor is connected in series with the contact closure input, and a 1K resistor is connected in parallel across the contact closure input. Both open circuits and short circuits can be detected as well as normal opens and closes.
ON	OFF	Series Supervision - When a 1K resistor is connected in series with the contact closure input. In this mode, shorts across the contact inputs can be detected but open circuits cannot be detected.
OFF	ON	Parallel Supervision - When a 1K resistor is connected in parallel across the contact closure input. In this mode, open circuits can be detected but short circuits cannot be detected.
OFF	OFF	No Supervision - The contacts will behave as normal contacts with no Supervision.

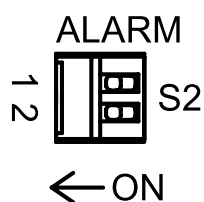
FIGURE 13 - CONTACT CLOSURE SUPERVISED INPUT CIRCUIT



* Optional external resistors (provided) are required for supervision. Place close to the switch for optimal results.

FIGURE 14 - ALARM SWITCH POSITIONS

The mode for alarm operation is configured using a set of two switches labeled ALARM (S2) located on the front panel of the unit. There are two alarm outputs on each unit. One on each RJ45 data connector. See Figures 4 & 5 on Pages 3 & 4.

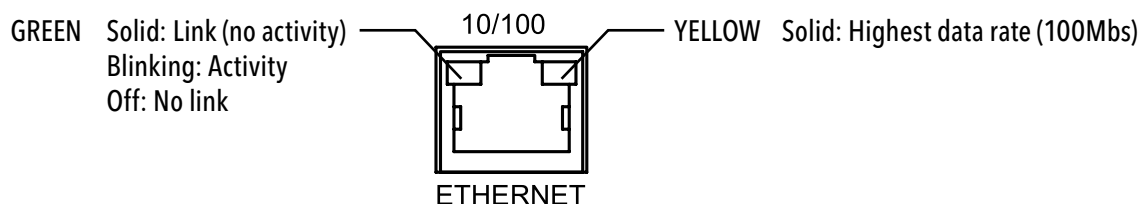


ALARM (S2)		Resulting Mode
1	2	
ON	ON	Alarm 1 - SFP 1 Failure Alarm 2 - SFP 2 Failure
ON	OFF	Alarm 1 - SFP 1 or SFP 2 Failure Alarm 2 - Not Used
OFF	ON	Reserved For Future Use
OFF	OFF	Reserved For Future Use

NOTE: The ALARM will also open when Fiber Link on either SFP port is lost or if Power is lost on either unit.

FIGURE 15 - LED INDICATORS

	OFF	RED	GREEN	FLASHING
SFP	SFP not installed	No optical link	Link is good and is in use	Link is good but is not in use
VIDEO	-	No video signal	An active video signal is present	-
10/100 LINK	-	No Ethernet signal	Ethernet signal linked	-
CONTACT (C)	One or more contacts are open	Fiber link failed	All four contacts are closed	-
CONTACT (S)	-	Supervised contact alarm or fiber link failed	No supervised contacts in alarm state	-
LE-D	-	Quiet / No Audio	Audio Present	Call button active
LE-F	-	Quiet / No Audio	Audio Present	-
DATA IN	Tri-state	Low state	High state	Data activity
DATA OUT	Tri-state	Low state	High state	Data activity
POWER	Unit powered down	-	Unit powered up	-



MECHANICAL INSTALLATION INSTRUCTIONS

INSTALLATION CONSIDERATIONS

This fiber-optic link is supplied as a Standalone/Rack module. Units should be installed in dry locations protected from extremes of temperature and humidity.

C2 NETWORK MANAGED RACKS

CAUTION: Although the units are hot-swappable and may be installed without turning power off to the rack, ComNet recommends that the power supply be turned off and that the rack power supply is disconnected from any power source. **Note:** Remove electrical connector before installing in card cage rack.

1. Make sure that the card is oriented right side up, and slide it into the card guides in the rack until the edge connector at the back of the card seats in the corresponding slot in the rack's connector panel. Seating may require thumb pressure on the top and bottom of the card's front panel.

CAUTION: Take care not to press on any of the LEDs.

2. Tighten the two thumb screws on the card until the front panel of the card is seated against the front of the rack.

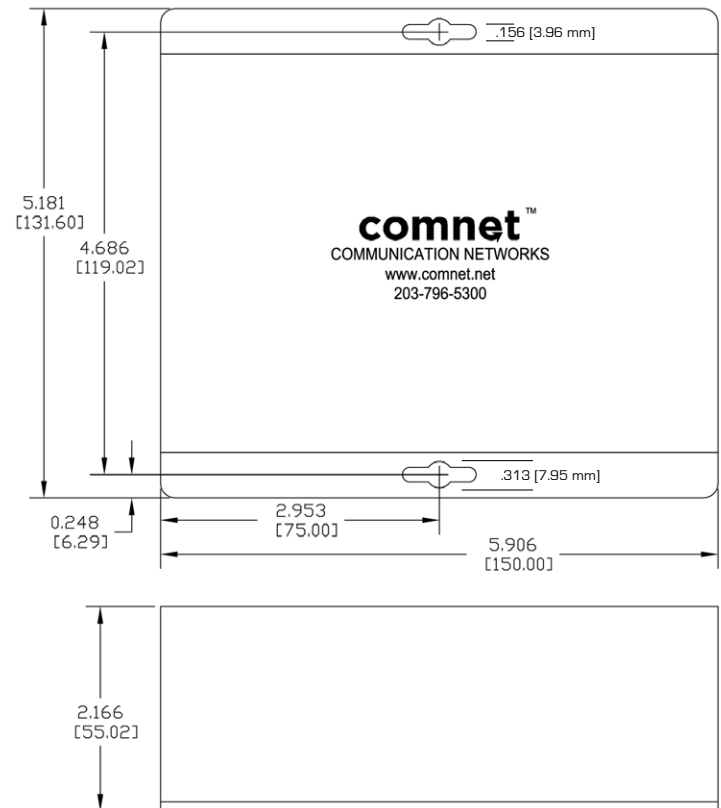
WARNING: Unit is to be used with a Listed Class 2 power supply.

IMPORTANT SAFEGUARDS:

- A) Elevated Operating Ambient** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- B) Reduced Air Flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

FIGURE A

Dimensions are for a standard ComNet™ two slot module



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