comnet
Communication Networks

FVT/FVR110(M,S)1[/M]
10-BIT DIGITAL VIDEO WITH
ONE BI-DIRECTIONAL DATA CHANNEL

The ComNet™ FVT/FVR110 series is a video transmitter/receiver and data transceiver that supports the simultaneous transmission of short haul quality 10-bit EIA RS-250C digitally encoded video and bi-directional data over one multimode or single mode optical fiber. The FVT110 also transmits a single bi-directional contact closure signal.

The module is universally compatible with major CCTV camera manufacturers. **Figures 6** and **7** starting on **Page 4** illustrate the specific data connections for RS232, RS422, 2 or 4-wire RS485 data transmission.

The FVT/FVR110 also supports "up-the-coax" data transmission from all major manufacturers, utilizing time-base correction these units can achieve distances of 48km. The FVT/FVR110 supports Panasonic Proteus™, Pelco Coaxitron™ and Bosch Bilinx™ Up-the-Coax systems.

Bi-color (Red/Green) LED indicators are provided for rapidly ascertaining equipment operating status. **Figure 10** on **Page 6** describes the LED indicators for each light on the unit.

The FVT110 and FVR110 units are interchangeable between stand-alone or card mount configurations, or may be DIN-rail mounted by the addition of ComNet model DINBKT1 adaptor plate. The FVT110M is stand-alone only. See **Figure A** on **Page 8** for mounting instructions.
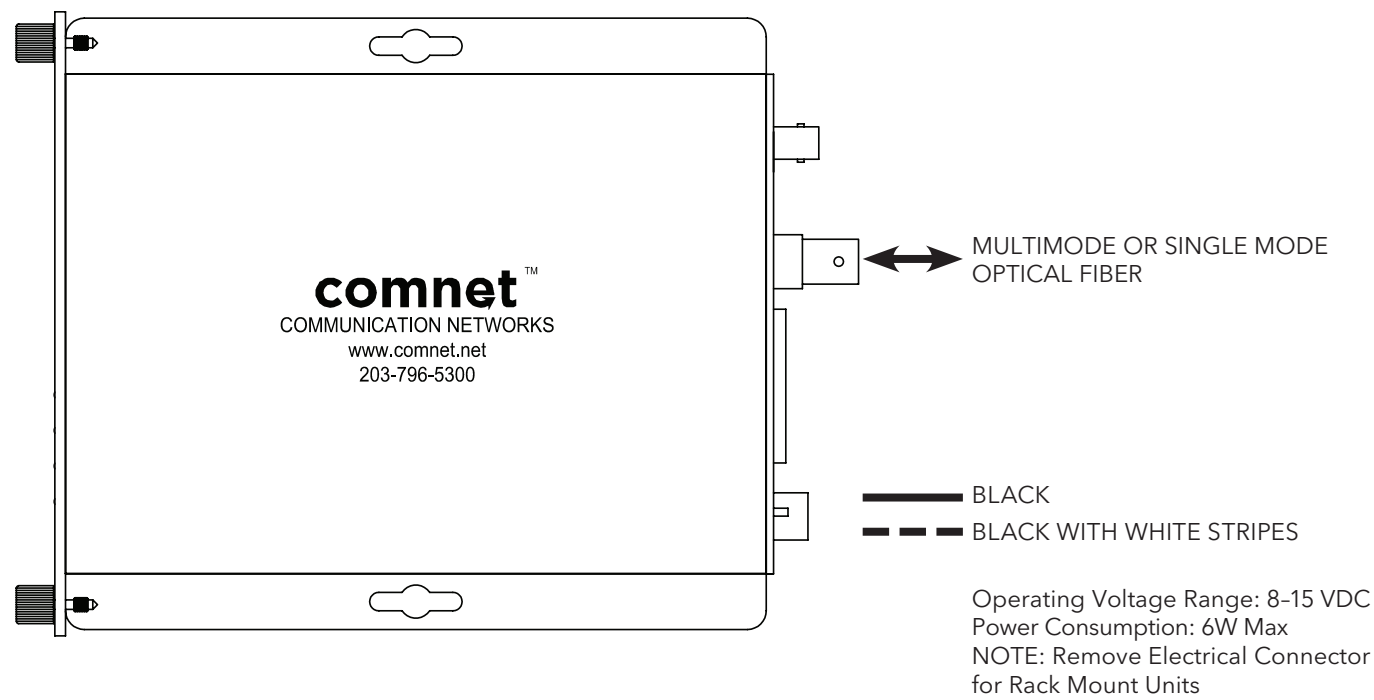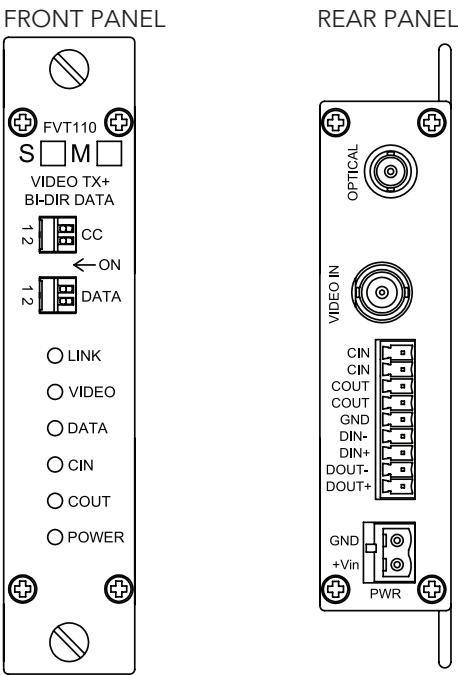
FIGURE 1 – FVT/FVR110 TRANSMITTER AND RECEIVER

MULTIMODE OR SINGLE MODE OPTICAL FIBER
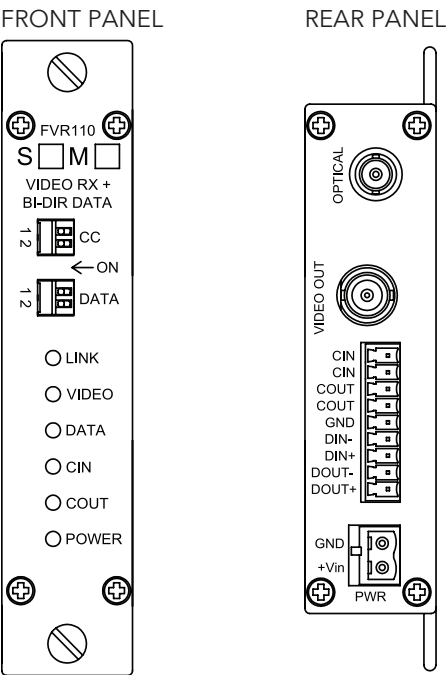
━━━━ BLACK
━ ━ ━ BLACK WITH WHITE STRIPES

Operating Voltage Range: 8–15 VDC
Power Consumption: 6W Max
NOTE: Remove Electrical Connector
for Rack Mount Units

FIGURE 2 – FVT110 TRANSMITTER

FIGURE 3 – FVR110 RECEIVER

FIGURE 4 – FVT110/M TRANSMITTER

FVT110
S☐ M☐
MINI VIDEO TX +
BI-DIR DATA + CONTACT

VIDEO IN

BOT	TOP
DOUT+	CIN
DOUT-	CIN
DIN+	NC
DIN-	COUT
GND	COUT

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OPTICAL

DATA FORMAT -2 -1

DATA LINK-○○○
VIDEO GND
+Vin

MULTIMODE OR SINGLE MODE OPTICAL FIBER

BLACK
BLACK WITH WHITE STRIPES

Operating Voltage Range: 8–15 VDC
Power Consumption: 6W Max

FIGURE 5 – FVT110M TRANSMITTER

FRONT PANEL   REAR PANEL

VIDEO IN

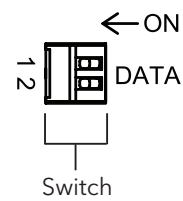| BOT	TOP
DOUT+	CIN
DOUT-	CIN
DIN+	NC
DIN-	COUT
GND	COUT

OPTICAL

DATA FORMAT

LEDs: LINK VIDEO DATA

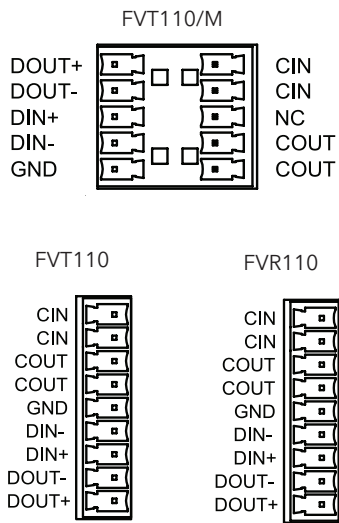GND
+Vin

FIGURE 6 – DATA SWITCH POSITIONS

The mode for each data channel is configured using a pair of switches on the front panel of the unit.

Switch 1	Switch 2	Resulting Mode
ON	ON	RS232
ON	OFF	RS422, Bi-Phase or Manchester
OFF	ON	RS485 2W, Sensornet
OFF	OFF	RS485 4W

FVT110/M

DOUT+   CIN
DOUT-   CIN
DIN+   NC
DIN-   COUT
GND   COUT

FVT110

CIN
CIN
COUT
COUT
GND
DIN-
DIN+
DOUT-
DOUT+

FVR110

CIN
CIN
COUT
COUT
GND
DIN-
DIN+
DOUT-
DOUT+

	GND	DIN–	DIN+	DOUT–	DOUT+
RS232	●	●		●	
RS422, Bi-Phase, Manchester	●	●	●	●	●
RS485 2W, Sensornet	●	●	●		
RS485 4W	●	●	●	●	●

FIGURE 7 – DATA CONNECTIONS

	Customer Equipment	FVT110		FVR110	Customer Equipment

UTC Control

| Up-the-Coax Control Receiver | ↔ | VIDEO IN | ○ | VIDEO OUT | ↔ | Up-the-Coax Control Transmitter |

RS232

Data Transmit →	DIN(–)
Data Receive ←	DOUT(–)
Signal Ground →	GND

DOUT(–)	→ Data Receive
DIN(–)	← Data Transmit
GND	→ Signal Ground

RS422

Data Out (+) →	DIN(+)
Data Out (–) →	DIN(–)
Data In (+) ←	DOUT(+)
Data In (–) ←	DOUT(–)

DOUT(+)	→ Data In (+)
DOUT(–)	→ Data In (-)
DIN(+)	← Data Out (+)
DIN(–)	← Data Out (-)

Bi-phase or Manchester

| Data Out (+) → | DIN(+) |
| Data Out (–) → | DIN(–) |

| DOUT(+) | → Data In (+) |
| DOUT(–) | → Data In (-) |

2-Wire RS485

| Data (A) ↔ | DIN(+) |
| Data (B) ↔ | DIN(–) |

| DIN(+) | ↔ Data (A) |
| DIN(–) | ↔ Data (B) |

4-Wire RS485

Data Out (A) →	DIN(+)
Data Out (B) →	DIN(–)
Data In (A) ←	DOUT(+)
Data In (B) ←	DOUT(–)

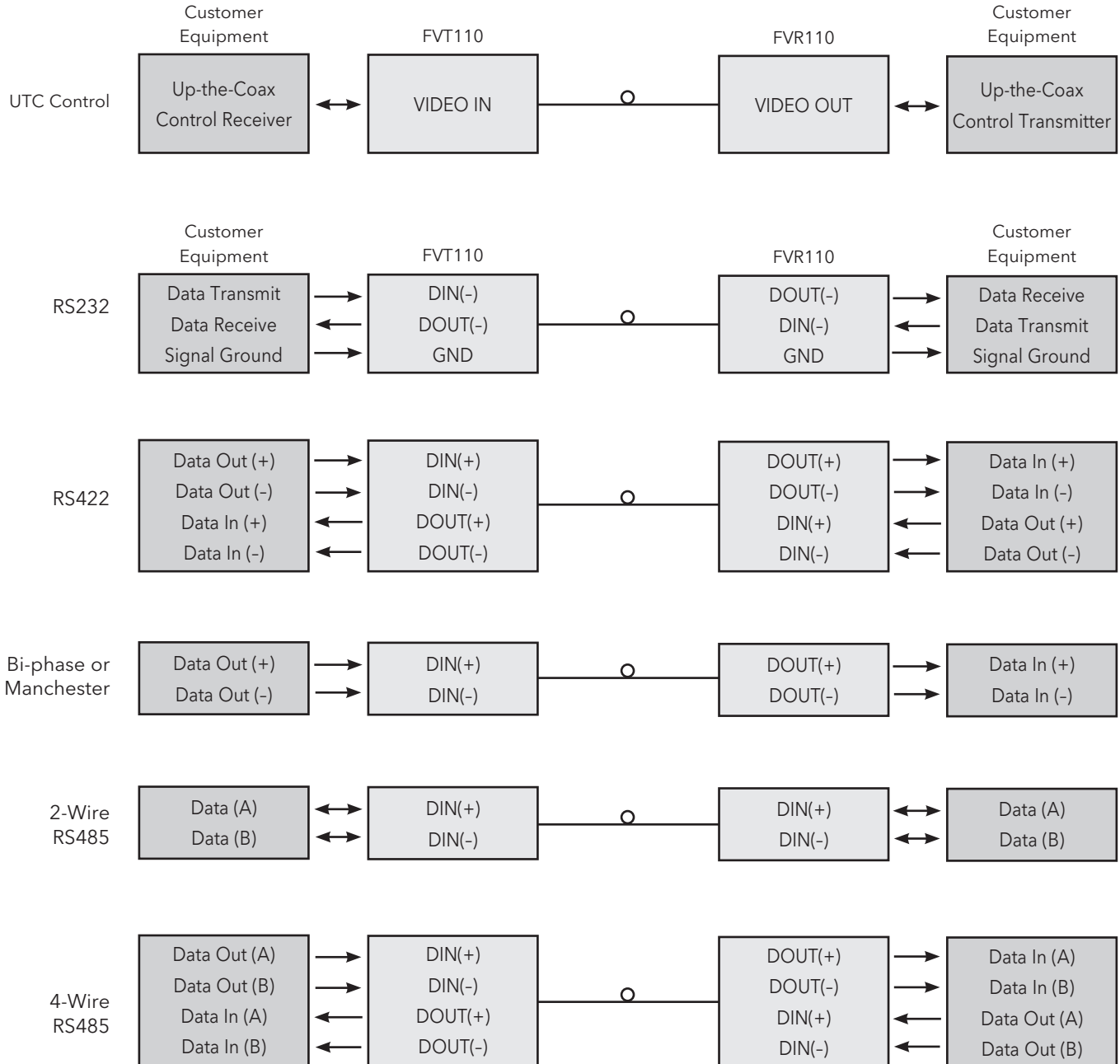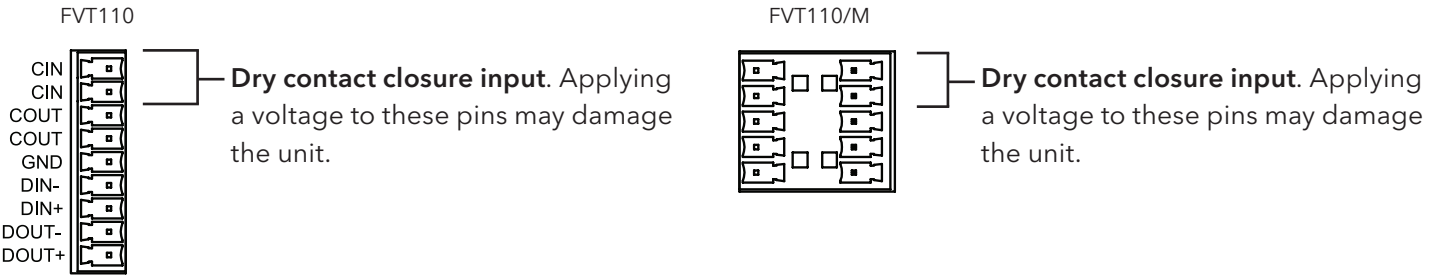| DOUT(+) | → Data In (A) |
DOUT(–)	→ Data In (B)
DIN(+)	← Data Out (A)
DIN(–)	← Data Out (B)

FIGURE 8 – CONTACT CLOSURE

The FVT110 transmits the state of a contact closure input over fiber to an output relay on the FVR110.

FVT110

CIN
CIN
COUT
COUT
GND
DIN-
DIN+
DOUT-
DOUT+

Dry contact closure input. Applying a voltage to these pins may damage the unit.

FVT110/M

Dry contact closure input. Applying a voltage to these pins may damage the unit.

NOTE: It is possible to configure the FVR110 output relay to indicate the link status instead of the contact closure input when linked to a FVT110.

FIGURE 9 – CONTACT CLOSURE SWITCH SETTINGS

The switch is located on the front of the standard size units. The FVT110M small-size unit only supports the CIN mode.

The FV110 series includes support for bi-directional contacts. The FVT110 and the FVR110 have 4 different modes to set their COUT contact, set by the CC dipswitches:

1
2
CC

← ON

Switch 1	Switch 2	Resulting Mode
ON	ON	CIN
OFF	ON	Negative CIN
ON	OFF	Negative Link
OFF	OFF	Link

The CIN and Negative CIN modes transmit the status or negative status of a contact device, such as an alarm, from the source to sink. The source takes the contact state from the CIN pins and turns the state into digital information to be transmitted through the fiber connection to the sink. The sink then interprets the received digital information back into the contact state, or negative contact state to the COUT pins, depending on what mode is selected by the sink.

The Link and Negative Link modes affect the COUT pins of the sink based on the status of the fiber link between the source and the sink. In the Link mode, if a fiber link is present between the sink and the source, the sink will close the COUT pins. If a Fiber Link is not present in Link mode, the sink will open the COUT pins. The converse of this is true if the mode is Negative Link.

FIGURE 10 – LED INDICATORS

	LINK	VIDEO	DATA IN	POWER	CIN	COUT
GREEN	Communication link has been established over optical fiber	An active video signal is present on the BNC connector.	An active data signal is present on the pins of the data connector.	Unit powered up	Contact Closed	Contact Closed
RED	Communication link has not been established.	No active video signal present on the BNC connector.	–	–	–	–
OFF	Unit powered down.	Unit powered down.	No active data signal is present on the pins of the data connector.	Unit powered down.	Contact Open	Contact Open

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.

C1-US, C1-EU, C1-AU OR C1-CH CARD CAGE 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 (Tma) 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.

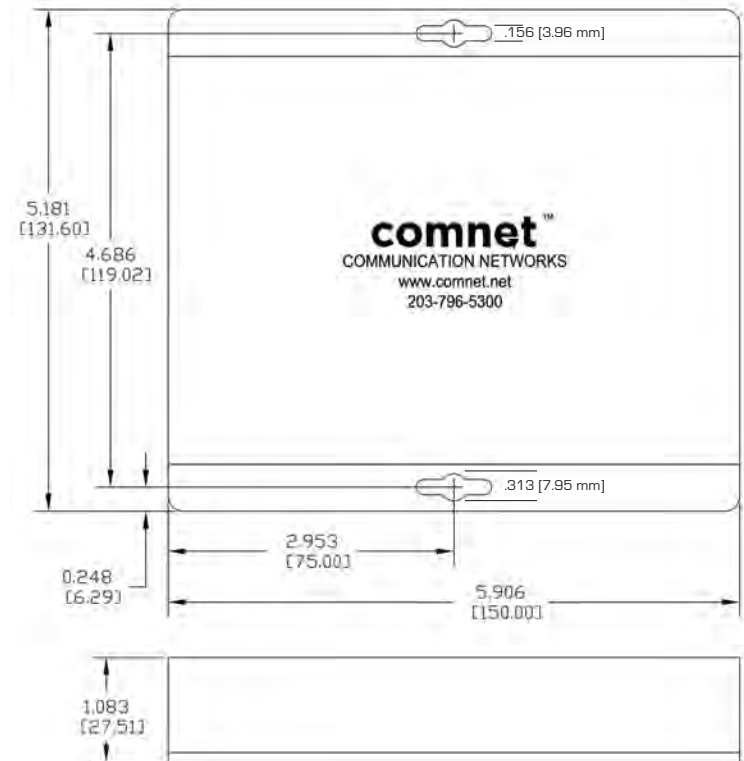FVT/FVR110(M,S)[/M] Part Ordering Options:

(M,S): Fiber Type
            M: Multimode
            S: Singlemode
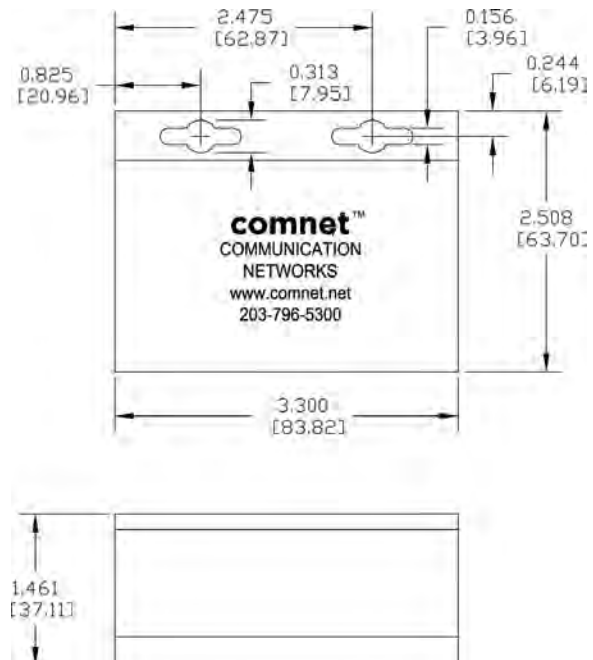[/M]:   Mini Long Tall Enclosure (optional)

MADE IN THE
USA

FIGURE A
Dimensions are for a standard ComNet™ one slot module

FIGURE B
Dimensions are for a ComNet™ mini long tall module