



INSTALLATION AND OPERATION MANUAL

FDC80 Series

8-CHANNEL SUPERVISED CONTACT CLOSURE

This manual serves the following ComNet Model Numbers:

FDC80TM1
FDC80RM1
FDC80NLRM1
FDC80TS1
FDC80RS1
FDC80NLR51
FDC80T485
FDC80R485
FDC80NLR485

The FDC80 contact closure transmitter and receiver provide transmission of up to eight independent supervised contact closures over either one optical fiber or two wire RS-485 link. Microprocessor-based logic sends the contact information in packets that are ordered and encoded, ensuring extremely robust transmission. Packets that are garbled, packets out of sequence, and transmission bit errors will not cause random changes of state on the contact relays. The receiver unit is offered in both latching and non-latching relay configurations.

Multiple levels of supervision and receiver alarm control can be selected. See **Figure 7** on **Page 4** for switch settings.

Each module incorporates power and individual status indicating LED's for monitoring confirmation of contact closure of each of the eight channels. See **Figure 8** on **Page 4** for an explanation of the LED indicators.

These units are interchangeable between stand-alone or card mount configurations. See **Figure A** on **Page 7** for mounting instructions.

See **Figures 1 - 11** for complete installation information, following the Application Note on **Page 6**.

FIGURE 1 - FDC80 OPTICAL

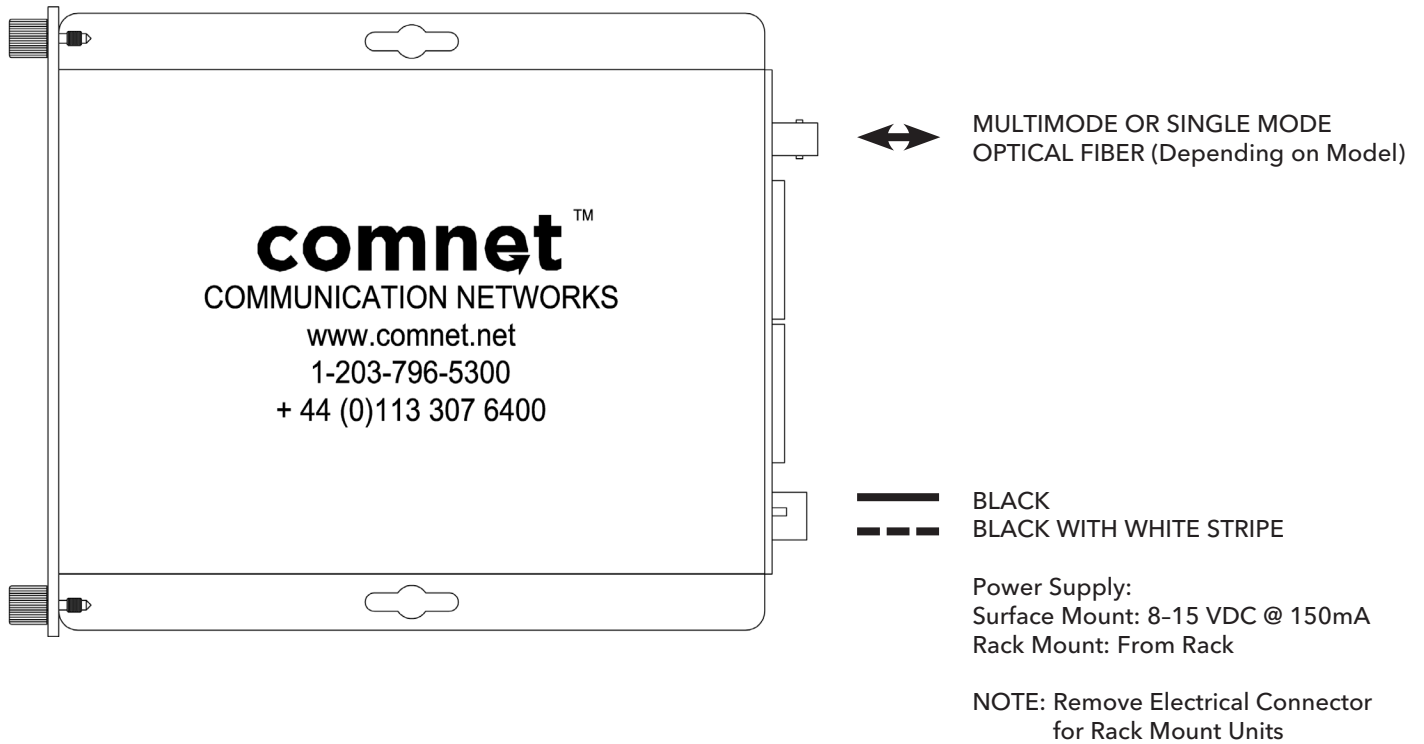


FIGURE 2 - FDC80 TRANSMITTER

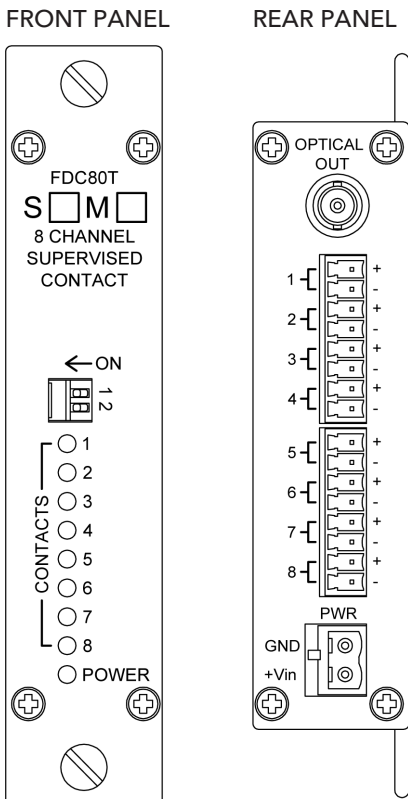


FIGURE 3 - FDC80 RECEIVER

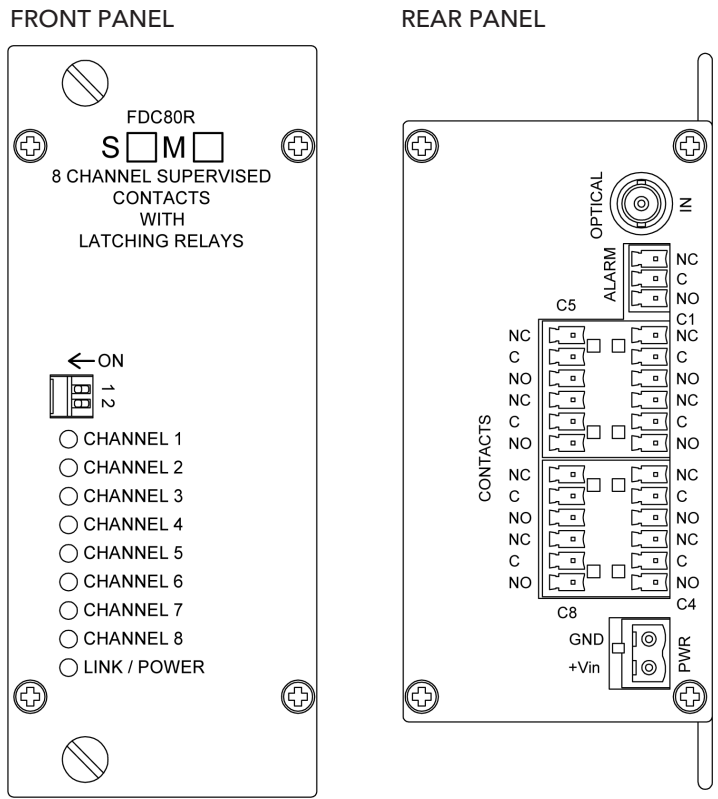


FIGURE 4 - FDC80 RS-485

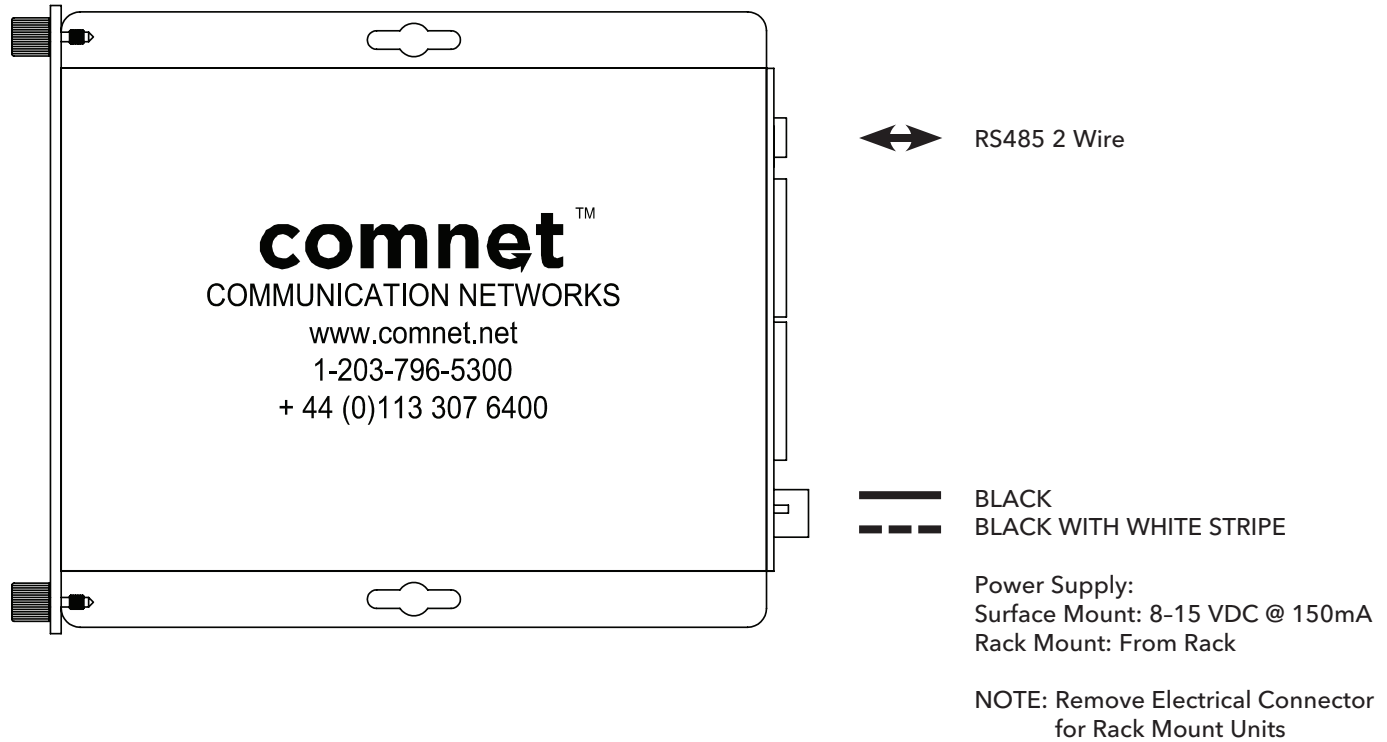


FIGURE 5 - FDC80 RS-485 TRANSMITTER

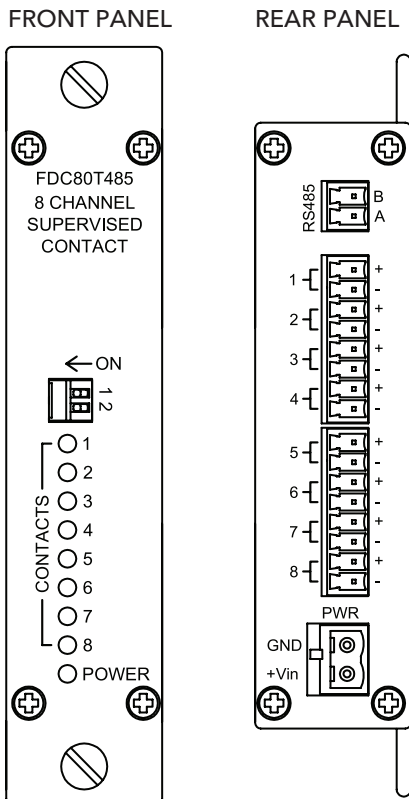


FIGURE 6 - FDC80 RS-485 RECEIVER

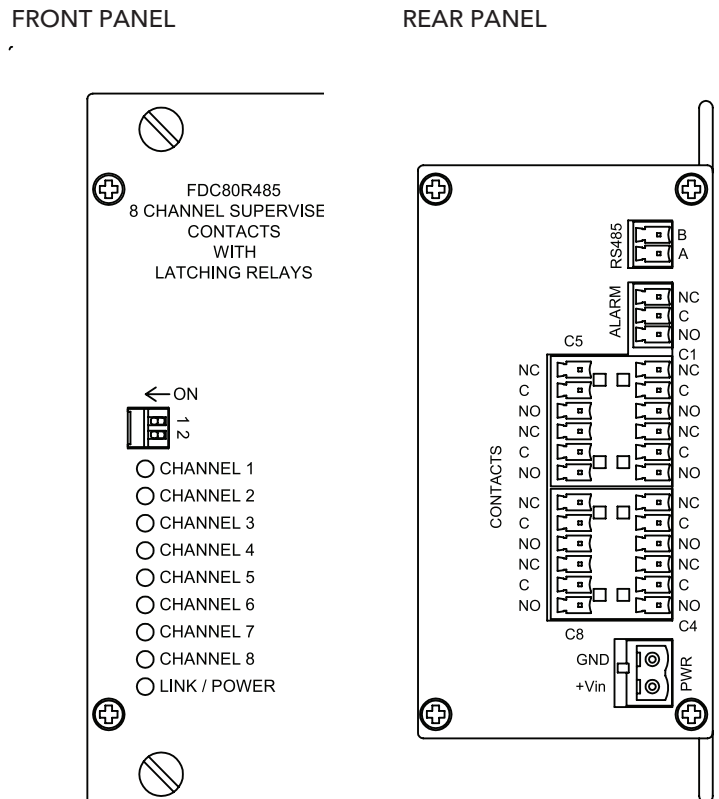
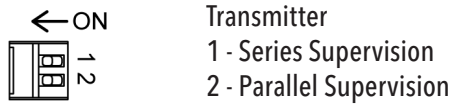
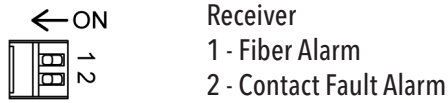


FIGURE 7 - SWITCH SETTINGS

The switch is located on the front panel of each unit.



Transmitter
 1 - Series Supervision
 2 - Parallel Supervision



Receiver
 1 - Fiber Alarm
 2 - Contact Fault Alarm

TX: The transmitter switch selects the supervision method, and this information is automatically transmitted to the receiver module.

There are four levels of supervision.

NONE: S1-OFF, S2-OFF. No supervision is active. The contact will show as closed when the inputs are shorted, and open when the input are open. The associated LED will be either GREEN (closed) or OFF (open).

Series: S1-ON, S2-OFF. Series termination is when a 1K resistor is connected in series with the relay input. In this mode, shorts across the contact inputs can be detected. When the relay is closed normally, the LED indicator will be GREEN, when open it will be OFF, when shorted, the LED will flash RED slow.

Parallel: S1-OFF, S2-ON. Parallel termination is when a 1K resistor is connected in parallel, across the contact input. In this mode, cut wires can be detected. When the relay is closed normally, the LED indicator will be GREEN, when open it will be OFF, and when cut, it will flash RED fast.

Full Supervision: S1-ON, S2-ON. Full Supervision is when a 1K resistor is connected in series with the contact input, and a 1K resistor is connected in parallel across the contact input. It can detect cuts (fast red flash), shorts (slow red flash) as well as normal contact closures (GREEN) or opens (OFF).

RX: The switch on the Receiver module is used to add indications to the Alarm relay output. The Non-Latching ALARM output is released when a power fault has occurred. Additionally, Fiber Loss and Contact Faults can induce the Alarm to trigger as follows:

S1-ON: Add Fiber Loss to the Alarm output

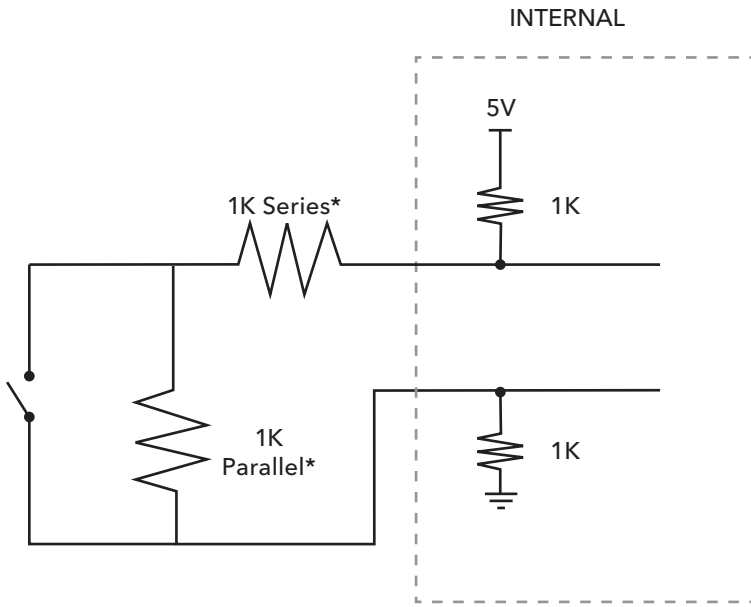
S2-ON: Add contact fault (any channel) to the alarm output (supervisory modes only)

If any contact is in fault (either Cut or Shorted) and S2 is ON, the Alarm will be triggered.

FIGURE 8 - LED INDICATORS

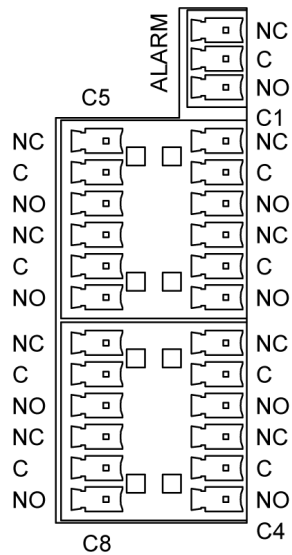
	LINK/POWER	CHANNEL (1 - 8)
GREEN	Link Present	Contact Closed
RED	Link Loss	Slow Flash: Shorted Fast Flash: Cut
OFF	Unit powered down	Contact Open

FIGURE 9 - CONTACT INPUT CIRCUIT (Typ. 8)



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

FIGURE 10 - RELAY OUTPUTS

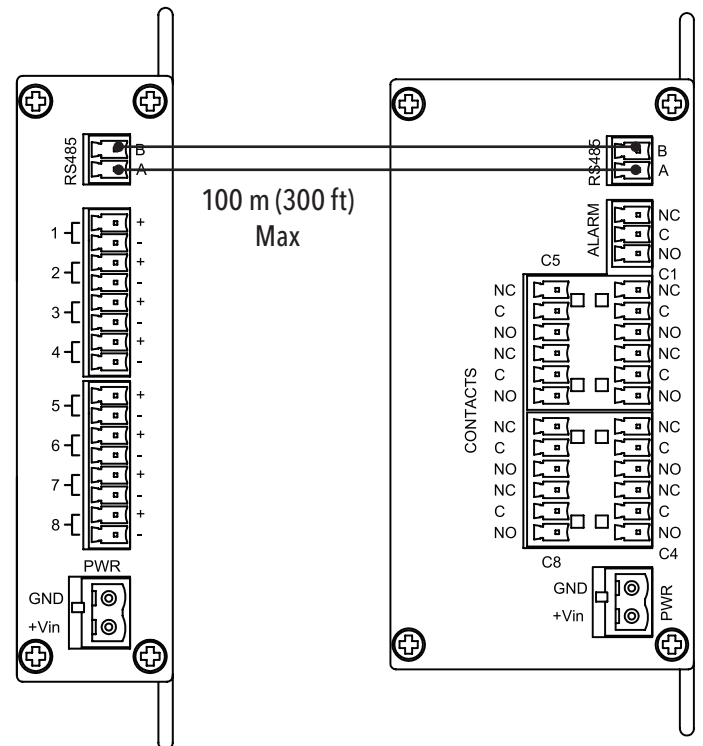


CONTACTS	Input open	NC
		C
	Input closed	NO
		C

ALARM	Fault	NC
		C
	No fault	NO
		C

FIGURE 11 - RS-485 CONTACTS

In RS-485 products (FDC80(T,R)485), the contacts can be transmitted over a pair of wire instead of fiber. Since communication is simplex only, just two wires are needed: A and B. Connect as shown:



APPLICATION NOTE

LATCHING RELAYS:

Latching relays are typically used when the application must insure that the contact outputs will not change state when either power is lost or the fiber is broken. This is a common requirement at high security gate entrance locations, where the gates must not open under any abnormal operating condition. In other words, they must open **ONLY** when commanded via the contact input state. Alarm conditions detected by the wire supervision circuits will therefore leave the relays in their current state.

NON-LATCHING RELAYS:

Non-latching relays are utilized if the contact outputs must switch to a known state when the power is lost or the fiber is broken. This is a common requirement in applications that require a known failsafe state during abnormal operating conditions. Alarm conditions detected by the wire supervision circuits will therefore leave the relays in their default failsafe state.

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.

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.

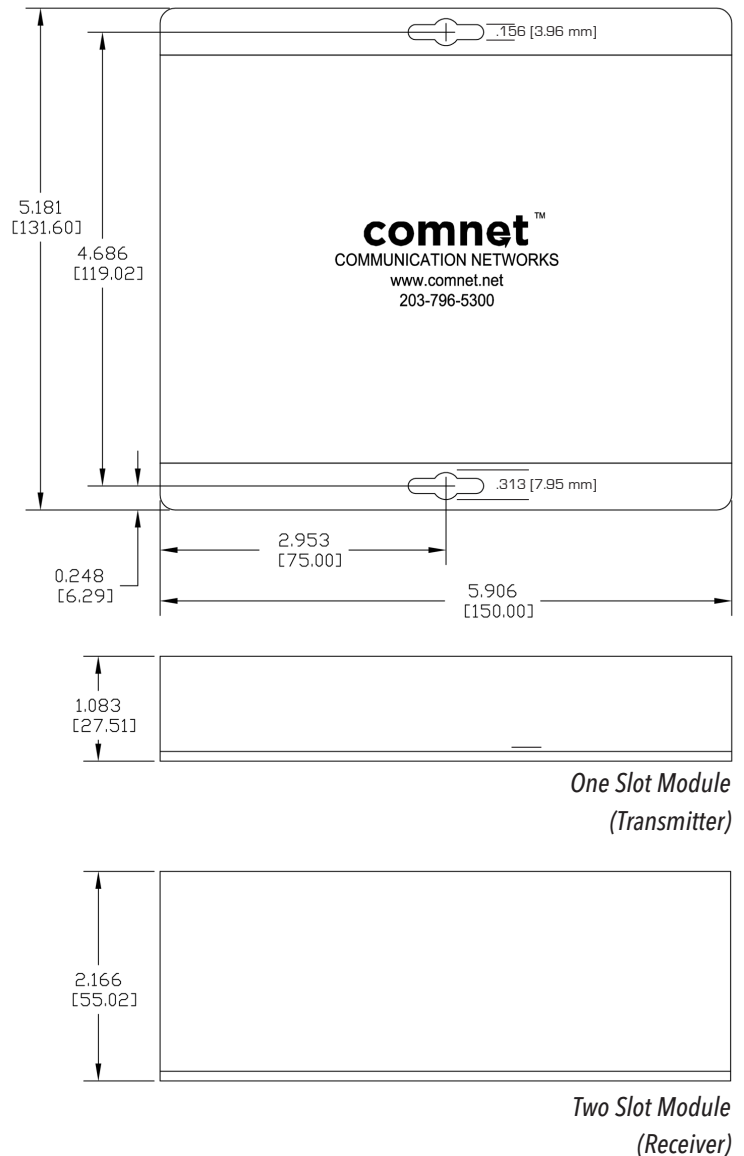
WARNING: Unit is to be used with a Listed Class 2 power supply.

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™ module



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