



## INSTALLATION AND OPERATION MANUAL

### FDX70E(A,B)(M,S)1 MULTI-PROTOCOL RS232/422/485 POINT-TO-POINT DATA TRANSCEIVER

The ComNet™ FDX70E(A,B)(M,S)1 series Transceiver unit is a fully-digital transceiver designed for implementing full RS232, RS422 or RS485 2 or 4-wire traffic signalization/communications data networks of the highest possible reliability. A pair of FDX70E units (as FDX70EA and FDX70EB) can support one full-duplex or half-duplex data channel. These transceivers also feature data translation to convert between data protocols. These environmentally hardened transceivers are ideal for use in unconditioned out-of-plant or roadside installations.

Utilizing wave division multiplexing technology (WDM), only one optical fiber is required between units. Linear and point-to-point topologies are also possible using ComNet FDX72(M,S)1 models.

Bi-color (Red/Green) LED indicators are provided for rapidly ascertaining equipment operating status. See **Figure 7** on **Page 4** for an explanation of LED indications.

These units are interchangeable between stand-alone or card-cage mount configurations. See **Figure A** on **Page 6** for mounting instructions.

See **Figures 1 – 8** for complete installation details.

FIGURE 1 - FDX70E FIBER CONNECTIONS

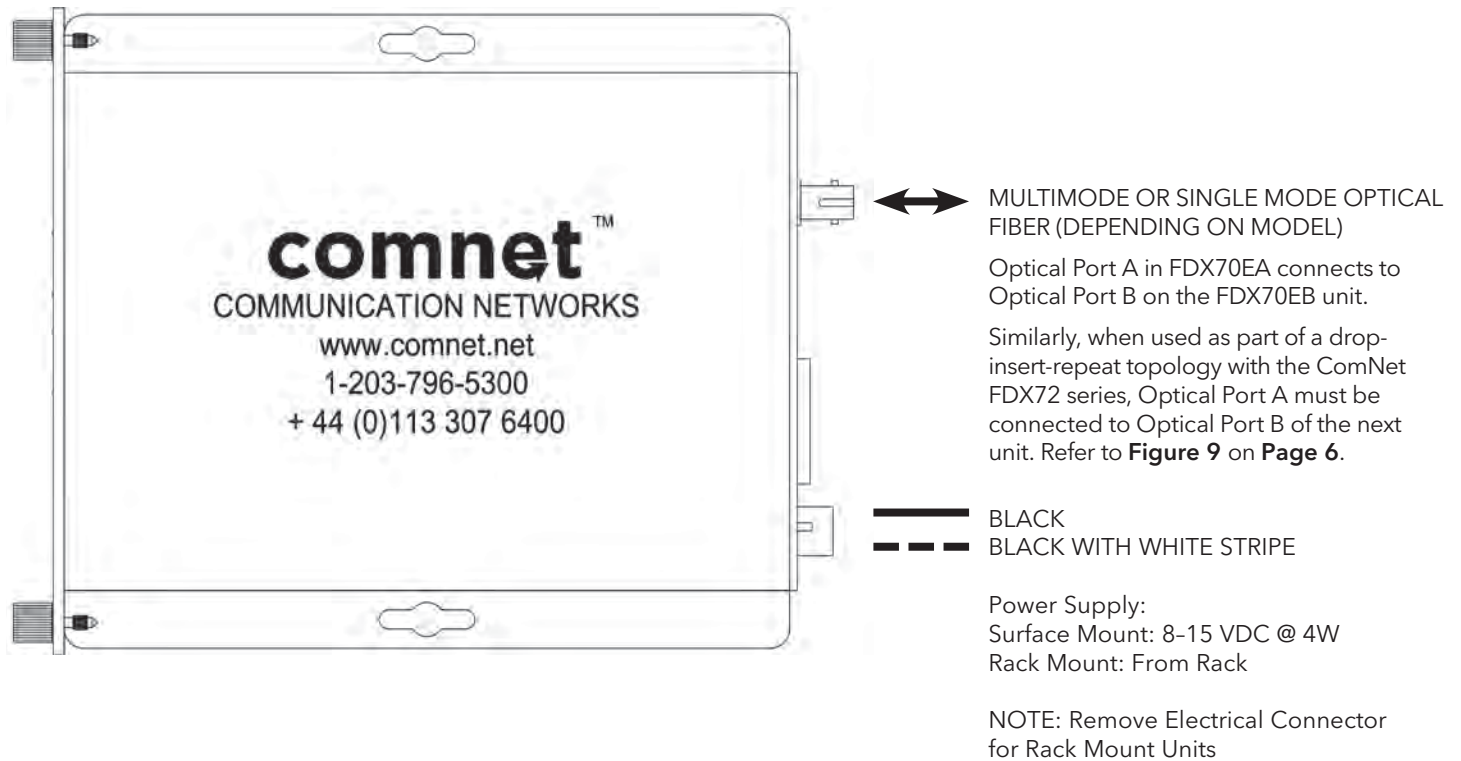


FIGURE 2 - FDX70EA

FRONT PANEL

REAR PANEL

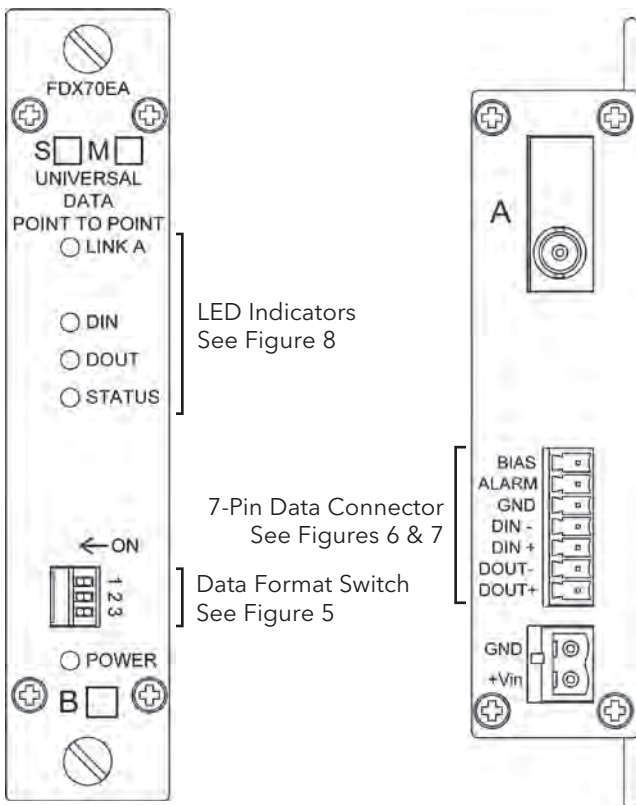


FIGURE 3 - FDX70EB

FRONT PANEL

REAR PANEL

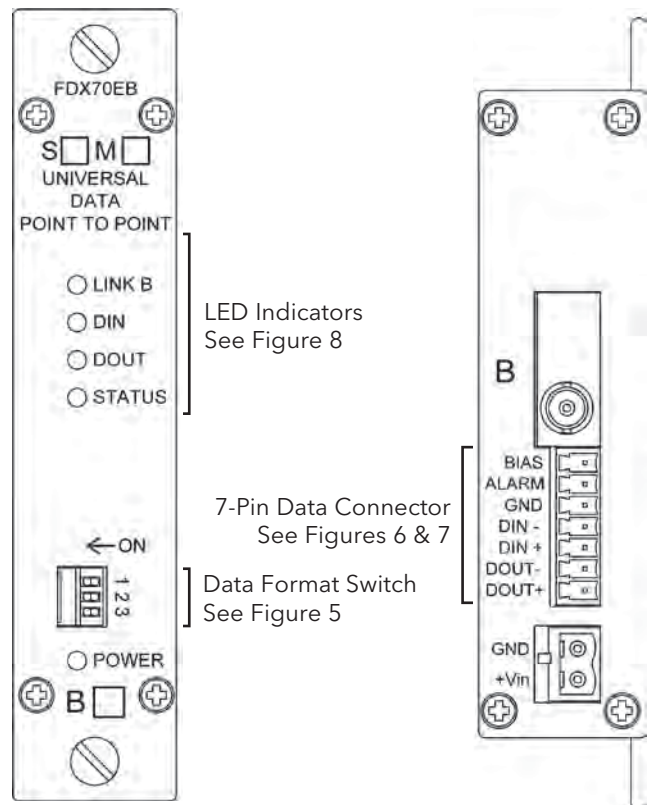
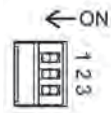


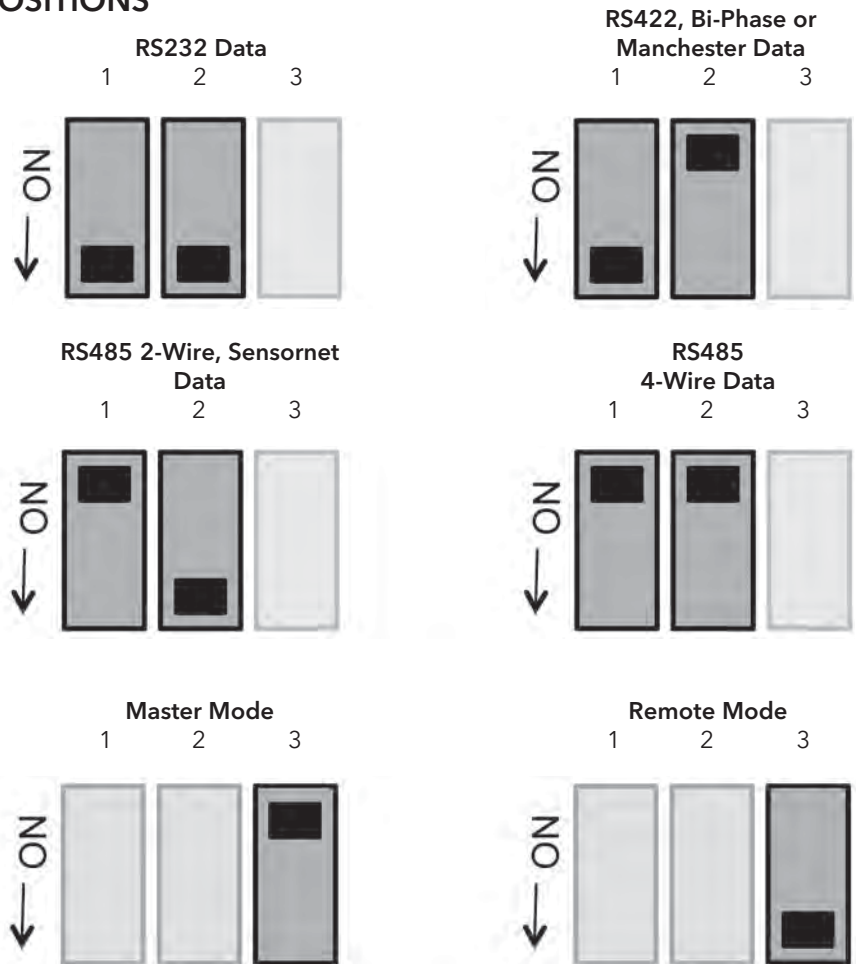
FIGURE 4 - DATA FORMAT SWITCH POSITIONS



**Switch**

Located on front panel.

The first two switches set the data type, the third sets the Master/Remote Mode.



There are two virtual data channels shared between all FDX70E or FDX72 units in a system: a Master channel and a Remote channel. The Master/Remote Mode switch sets the data channel used by the equipment connected to each FDX70E unit in the system. The behavior of a Master and Remote depends on the data type (set by switches 1 and 2):

**RS232, RS422, RS485 (4-wire)**

One unit must be set to Master Mode, and the other unit should be set to Remote Mode.

When used here is no limit to the number of Masters or Remotes in a system as long as the connected equipment can handle multiple Masters and multiple Remotes. Most applications requiring Master/Remote communications would use just one Master and multiple Remotes. Masters can communicate with all Remote units, but not with other Masters. Remotes can communicate with all Masters, but not with other Remotes.

**RS485 (2-wire)**

The concept of Master and Remote are not used with RS485 (2-wire) mode. Rather, the Master/Remote Mode switch simply sets which of two independent data channels each unit will use. All Masters can communicate with each other, but not with Remotes. All Remotes can communicate with each other, but not with Masters. When in RS485 2W mode, all units should be set to the same mode.

FIGURE 5 - DATA CONNECTIONS

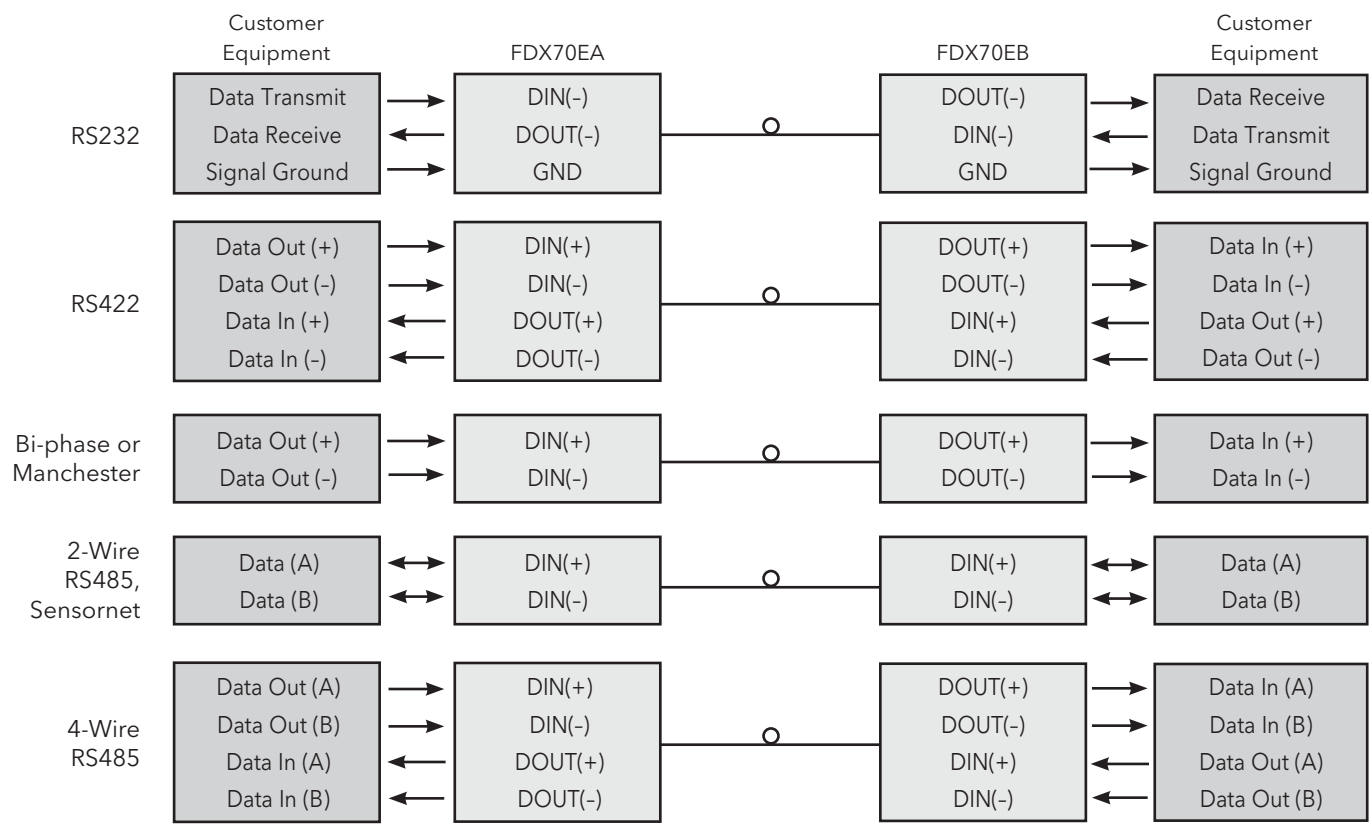


FIGURE 6 - 7-PIN DATA CONNECTOR

BIAS

ALARM

GND

DIN -

DIN +

DOUT -

DOUT +

BIAS

ALARM

GND:

DIN+/DIN-

DOUT+/DOUT-

Current limited +5V connection. This terminal can be used as a connection for pull-up resistors, if required.

Alarm relay output. Indicates fault conditions. The relay is internally connected to the GND terminal when no faults are detected (i.e. a normally closed relay). The relay circuit opens when a fault is detected anywhere in the system.

Signal ground reference. This terminal can be also be used as a connection for pull-down resistors, if required.

Electrical data inputs. See **Figure 5** for data connections.

Electrical data outputs. See **Figure 5** for data connections.

FIGURE 7 - LED INDICATORS

	LINK A (FDX70EA)	LINK B (FDX70EB)	DIN	DOUT	STATUS	POWER
GREEN	Unit In Sync	Unit In Sync	Data Activity	Data Activity	System OK. No Alarm	Unit Powered Up
RED	Unit Not In Sync	Unit Not In Sync	-	-	Fault Detected. Alarm Condition.	-
OFF	-	-	No Data Activity	No Data Activity	-	Unit Powered Down

## FAULT CONDITIONS

A fault condition is when a FDX70E unit system loses power or optical link. The FDX70E provides three LED indicators to help identify when and where fault conditions occur in a system:

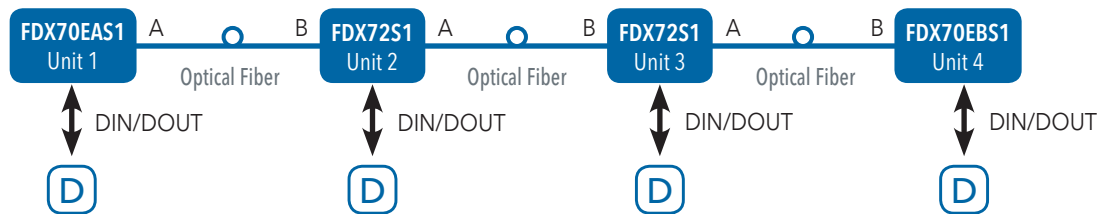
1. ALARM relay output
2. STATUS LED
3. LINK A and LINK B LEDs

When a fault occurs, the ALARM relay on every FDX70E in the system goes from closed to open. In addition, the STATUS LED on every FDX70E in the system goes from solid green to solid red. The LINK A and LINK B LEDs can then be used to identify the actual location of the fault based on their color and pattern:

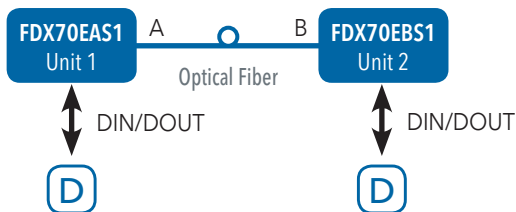
<b>Solid Green</b>	<b>Optical link has been established between this optical port and the adjacent FDX70E over fiber.</b> Furthermore, every other unit in the system is also reporting that link has been established. There are no faults in the system.
<b>Solid Red</b>	<b>Optical link over this port has been lost.</b> This could be due to a broken fiber, a bad connection, or loss of power at the adjacent unit.

## FIGURE 8 - TYPICAL APPLICATIONS

Linear Drop-Insert-Repeat Chain using compatible FDX72 units



Point-to-Point



INS\_FDX70E\_REV-  
03/01/12  
PAGE 6