

# EDGE NETWORKS

## FOD SERIES INSTALLATION MANUAL

### Abstract

Installation instructions for Edge Networks Fiber Optic Data Modem Series including:

FOD-ST2

FOD-STA

FOD-STB

FOD-SC2

FOD-SCA

FOD-SCB

FOD-SFP

Edge Networks  
[www.edge-networks.us](http://www.edge-networks.us)

**1. Introduction**

Edge Networks FOD series allows fiber optic transport of RS232, RS422, or RS485 data at speeds up to 1MBaud. Setting up the device is easily accomplished following the steps below.

**2. Identification:**

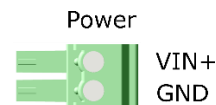
The FOD series has a removable 2 pin power connector, a removable 5 pin data connector, a 4 position DIP switch, an optical interface, and 4 LED indicators as shown below.



**3. Power:**

The removable 2 pin power connector should be connected to DC input power as shown. DC input can range from 7-65VDC with 12V being nominal input.

Edge Networks PSW12-12W, which is recommended for use with the FOD series, comes with tinned wires to connect into the power plug. The wire with the white dashes is the positive lead and should be connected to VIN+. The FOD series is reverse polarity protected, so no damage will occur if connected backwards. Verify Power LED illuminates when plugged in.



#### 4. DIP Switch

The DIP switch is used to select the format of the data being transmitted. It is also used to terminate the data lines in 120 Ohms. This is useful in RS422 or RS485 modes when the device is connected to the end of the chain.

The DIP switch is set as follows where ON is UP and OFF is DOWN position

FORMAT SELECT Switches 1 & 2

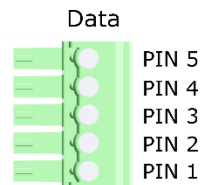
POS1	POS2	Format	
ON	ON	RS232	
ON	OFF	RS422	
OFF	ON	RS485-4W	
OFF	OFF	RS485-2W	

Termination Select Switches 3 & 4

POS3	ON puts 120 Ohms across Data pins 1&2
POS4	ON puts 120 Ohms across Data pins 4&5

Typical RS422 / RS485 bus requires a termination on each end of the bus for a total of two termination. If the FOD module is located at the end of a run, enable the termination.

#### 5. Data IO



Data pinouts depend on the format selected by the DIP switch and are mapped out as follows:

PIN	Label	RS232	RS422	RS485-4W	RS485-2W
1	IN1 / A+	INPUT 1	INPUT +	INPUT+	I/O +
2	OUT1 / A-	OUTPUT 1	INPUT -	INPUT-	I/O -
3	GND	GND	GND	GND	GND
4	IN2 / B+	INPUT 2	OUTPUT +	OUTPUT +	Not Used
5	OUT2 / B-	OUTPUT 2	OUTPUT -	OUTPUT -	Not Used

#### Data Formats explained:

**RS232:** Uses single ended signaling that swings above and below ground. Signal input on Pin 1 will come out on the connected units Pin 2 and will toggle the Data LED. Signal input on Pin 4 will come out on the connected units Pin 5 and will NOT toggle the Data LED. Typically, Pins 1 & 2 are used for TX/RX while Pins 4 and 5 can be used for handshaking signals RTS and CTS.

**RS422:** Uses differential signaling that swings from 0 to 5V. RS422 signals are always active and do not tri-state. They are used in point to point applications only. Signal input on pins 1 & 2 will come out on pins 4 and 5 of the connected unit.

**RS485-4W:** Like RS422, RS485 uses differential signaling. Unlike RS422 however, the data can tri-state (float to a high impedance) when not being driven actively. Because 4 wires (2 pairs) are being used, data can be full duplex and communicate in both directions simultaneously.

**RS485-2W:** Is a half-duplex version of RS485-4W. Because only two wires are used (one pair) signals are transmitted only one direction at a time. In this case, Input on pins 1 & 2 will come out on pins 1 & 2 of the connected unit. When the data bus is idle it will go into tri-state.

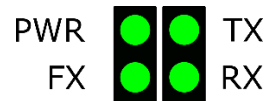
#### **Format Settings:**

The FOD product is independent of Baud Rate, Number of Start / Stop Bits, Number of Bits per message and Parity. No selection for this is required.

#### **Tri-state detection algorithm.**

The FOD product uses embedded firmware to determine when to tri-state the output. For each message, it will automatically detect the smallest bit time, and drive the bus for the duration of the message, plus an additional length of 8 x the shortest bit time. This allows a rapid turn around time that is independent of the baudrate. It also prevents bus jamming should a unit get stuck in an active state.

## 6. LED Indicators



There are 4 LED indicators on the unit.

Power: Indicates Proper Power applied (Solid Green)

FX: Indicates Fiber Optic Signal is being received (Solid Green)

TX: Data received into the FOD and transmitted over the fiber. (Flashing Green)

RX: Data received over the fiber and transmitted out of the FOD. (Flashing Green)

Note: TX/RX Function for INPUT / OUTPUT 1 only on RS232 mode.

## 7. Fiber Optic Interface

The FOD product comes in several different optical varieties. Use the appropriate interface connector for your device. On 2 fiber modules, it is important to swap the TX and RX fibers such that the TX on one unit connects to the RX on the other unit and vice versa. With one fiber units, simply connect one device to the other with the appropriate fiber connector type.

In SFP variants, install the SFP into the device and make sure the bale is up before inserting the fiber. This will keep the SFP locked in the cage.

### **Technical Support**

If you have any questions with the device or for help troubleshooting problems:

Please contact Edge Networks technical support at [techsupprt@edge-networks.us](mailto:techsupprt@edge-networks.us) or call us at (843) 654-9266