

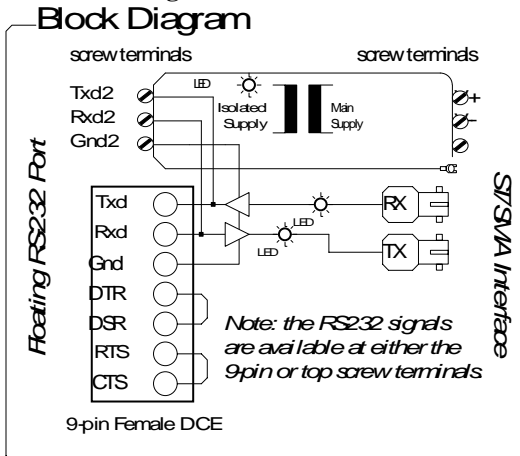


## ECD232fos User Manual

RS232 to Fiber Optic Converter (Single Mode)

### 1. Introduction

#### 1.1 Block Diagram



#### 1.2 Product Overview

The ECD232fos is designed specifically for use in industrial panel applications. It provides the following unique combination of features:

Fiber optics provides an intrinsically 100% galvanically isolated, noise-free, lightning immune data communication signal. The ECD232fos uses high quality components to communicate up to 11Km at 1310nm over 9/125um fibers. ST or SMA connectors are available.

The ECD232fos has two RS-232 ports: a 9-pin d-shell and 3 compression screw terminals. These are actually independent ports and you can connect a second device to the second port. It has 2 main uses:

- 1) You can connect a notebook computer to the second port to monitor the communications or introduce “noise” to test your error recovery, and
- 2) During factory or lab testing, you can run 3-wire RS-232 cables between your ECD232fos units instead of making a lot of short-use fiber test cables.

Optionally, the RS-232 port of the ECD232fos can have 2500V optical/galvanic

isolation from the power supply.(the two RS232 port always share the same ground)

With a floating ground, RS232 cable runs up to 50m can be guaranteed with quality, low capacitance cable like Beldon 1422A at 42pF/m. (RS232 requires less than 2500pF per signal)

For rapid troubleshooting and to simplify installation, you can treat the Rxd screw terminal as a test signal. Connecting a +5 to 15Vdc signal to it will force the fiber optic transmitter on. Visible even with the naked eye, this allows very quick checking of fiber “continuity”.

For rapid troubleshooting, there are LED indicators for the Txd, Rxd and isolated power.

Wide power supply range (9 to 36Vdc) allows use with 9v,12v,15v,24v power supply or direct from 12v or 24v battery systems.

Use of one 9-pin female “DCE like” port allows use of ribbon cables from 9-pin computer ports.

### 2. Installation

#### 2.1 RS232 connection:

The ECD232fos has one 9-pin female connectors configured in a standard DCE COM port. This means you can use a 9-pin ribbon cable to connect it to your standard 9-pin computer ports. Internally, the DTR/DSR pins and RTS/CTS pins are connected to support the use of ribbon cables.

Standard RS232 interface device cannot be damaged by reverse wiring or short-circuit to ground. Be warned that some low-cost devices use transistors to approximate an RS232 signal and this built-in protection may be lacking. 24 to 28 AWG shielded wire is suggested.



9-pin to 9-pin	25-pin to 9-pin	
	Rxd 3	2 Rxd
	Txd 2	3 Txd
	Gnd 7	5 Gnd
	DTR 20	4 DTR
	DSR 6	6 DSR
	CD 8	1 CD
	RTS 4	7 RTS
	CTS 5	8 CTS
		device, 25-pin rdc232fo

Example Cables (DTE to DCE)

### 2.2 Fiber Optics Connection:

The ECD232fos has either 2 ST-compatible bayonet connectors (option -st) or 2 SMA threaded connectors (option -sma). Note that all fiber optic cables need gentle handling and have a specified minimum bend radius. Please refer to your cable specs for details, but you should plan on providing space to neatly coil a 6 inch or 15cm loop diameter of extra fiber.

### 2.3 Power Supply Connection:

A fuse must be installed in the V+ supply wire. ECD232fos has internal diodes to provide full reverse supply protection.

### 2.4 Testing the Fiber

Supply a +5 to +15V signal to the Rxd screw terminal as a test signal. For the isolated models you will also need to connect the Gnd screw terminal. This will force the fiber optic transmitter on. Note that the unit will use about 2 times the normal supply current during the test mode.

## 3. Technical Specification

### 3.1 Port Description

- 3.1.1 **RS232; 3-wire RS232;** signals: Txd, Rxd, Gnd; working voltage range +/-9Vdc; max voltage range +/-15Vdc; Max surge +/-25Vdc
- 3.1.2 **Fiber Optic;** 1310nm over 9/125um; ST or SMA connectors.
- 3.1.3 **Duplex;** Operation can be either half or full duplex; No configuration required.
- 3.1.4 **Speed;** Tested to 230K baud; No configuration required.
- 3.1.5 **Character Setting;** Operates with any combination of parity, data, stop, and start bits; No configuration required.
- 3.2 **Isolation (Per ISO/IEC 9545)**
  - 3.2.1 **Fiber Optics;** Intrinsic full isolation

- 3.2.2 **RS232 to Supply;** model “-1p” none; model “-2p” 2500v (galvanic, 3kv test)
- 3.2.3 **Casing;** dielectric strength per DIN VDE 0303/part 2 is 400kv/cm

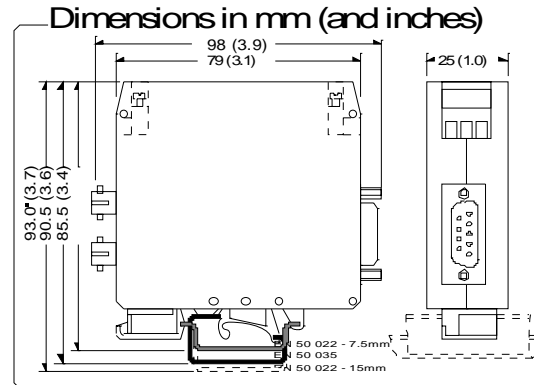
### 3.3 Power Supply

- 3.3.1 **Model ECD232fos-5v-1p**  
5Vdc+/-5%; 50mA normal operation (120mA during test mode)
- 3.3.2 **Model ECD232fos-5v-2p**  
5Vdc+/-5%; 90mA normal operation (200mA during test mode)
- 3.3.3 **Model ECD232fos-dv-2p**  
9 to 36Vdc; 0.75w normal operation (1.5w during test mode)

### 3.4 Environmental

- 3.4.1 **Ambient Operating Temperature;** 0C to 60C
- 3.4.2 **Ambient Storage Temperature;** -40C to +100C
- 3.4.3 **Relative Humidity;** 10 to 90%, non condensing
- 3.4.4 **Casing;** fungus and termite resistant
- 3.4.5 **Casing; flame characteristics;** self-extinguishing per UL94V2

### 3.5 Mechanical Dimensions



- 3.5.1 Height; Width; Depth (See drawing)
- 3.5.2 Weight; approx 130g
- 3.5.3 Terminal Capacity; 2.5mm strand (12AWG)
- 3.5.4 Mounting Rail; DIN EN 50022 (35mm Sym)