ECD232 Isolator User Manual
RS-232 to RS232 Optical Isolator

1. Introduction

1.1 Product Over-view

The ECD232iso is a cost-effective 9-pin---9-pin port-power RS232 Isolator for getting rid of problematic ground loops or for insuring the survivability of laptops in the field. Built in a standard case, ECD232iso is fully isolation tested to 5,000Vrms and provides isolation for most RS232 interfaces.

The isolator has a DB9 female connector on the DTE side, it can be plugged directly into a standard PC serial port. The device has a DB9 male connector on the DCE side, it makes the device transparently.

1.2 Why use ECD232iso

A ground loop is a current across the cable, created by a difference in potential between two grounded points, as in two buildings connected by a long run of RS232, RS422, RS485 or other data lines cables. When two devices are connected and their ground potentials are different, voltage flows from high to low by traveling through the data cable even the ground wire. If the voltage potential is large enough, your equipment will not be able to handle the excess voltage, and one of your ports will be damaged. Even small ground loop voltages cause transmission errors with data signals riding on top of the ground loop current.

Bad ground loops are a long-term condition that can slowly heat, and even cook your circuits. The chips have a higher-than normal failure rate. With the test equipment and tools available in the ordinary data communications shop this phenomenon is hard to pin down and prevention is some times the easiest solution if you are getting read errors or early life component failures. Using ECD232iso, makes great surge protectors up to the arc-over point of the chip, stops ground current and guards the RS232 serial ports…

1.3 Difference between Isolator and Surge Protector

The use of isolator in data lines eliminates interference that is otherwise common at PC connected to RS232/RS485 lines (ground loop, vertical effect, potential differences, remote lightning).
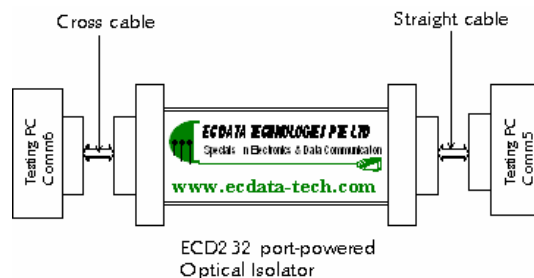
Surge protectors have no effect on equalizing currents that exist between the connected devices due to potential differences. They also cannot prevent damage to interface components by such currents.

1.4 Block Diagram

5000Volt Optical Isolation
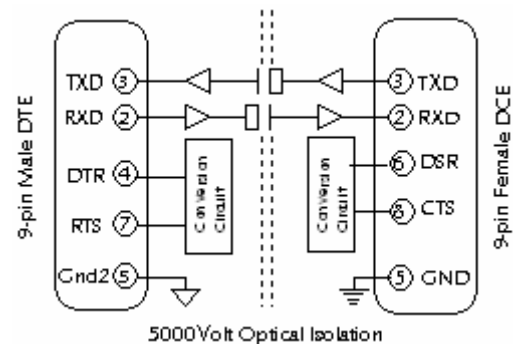
2. Installation

2.1 Application diagram

ECD232 port-powered Optical Isolator

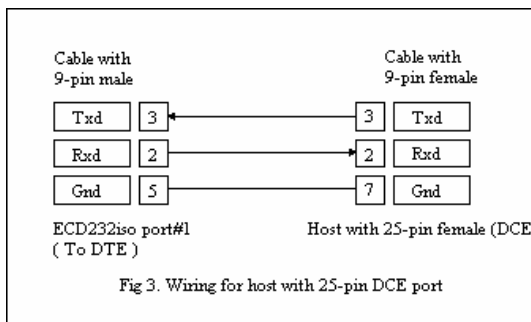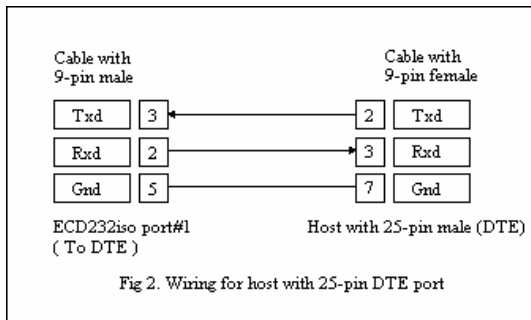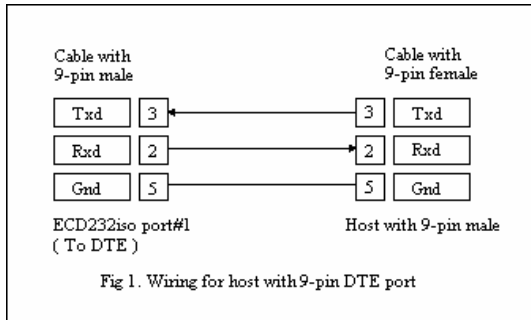### 2.2 Wiring

The ECD232iso has one 9-pin male (to DCE) and one 9-pin female connector(to DTE) configured. This combination of male/female

Specifications subject to change without notice.

ports allows the device to be by-passed for testing purposes.

Following are the appropriate wiring diagrams:

Fig 1. Wiring for host with 9-pin DTE port

Fig 2. Wiring for host with 25-pin DTE port

Fig 3. Wiring for host with 25-pin DCE port

3.   Technical Specification

3.1 Port Description

3.1.1 RS232:   3-wire RS232, Signals: Txd, Rxd, SGnd.

3.1.2 Duplex: Operation can be either half or full duplex. No configuration required.

3.1.3 Speed: Up to 115K baud. No configuration required.

3.1.4 Character Setting: Operates with any combination of parity, data, stop and start bits. No configuration required.

3.2 Isolation
        5,000Vrms tested.

3.3 Power
        Port-powered from RS232 data and handshake lines.

3.4 Environmental

Ambient Operating Temperature: -40C to +65C.

Ambient Storage Temperature: -40C to +100C.

Relative Humidity: 10 to 90%RH, non condensing.

3.5 Mechanical Dimensions

3.5.1 Height, width, depth (See drawing)

3.5.2 Weight: approx 20g