

### High Speed Ruggedized Fiber-to-USB Interface Converter

The Model 4165/4166 is a high speed ruggedized Fiber-to-USB interface converter from Electro Standards Laboratories. With its integrated rate buffering, the Model 4165/4166 converts USB 2.0 compliant data from a standard PC to a serial asynchronous data interface over fiber with a user selectable baud rate of up to 3 Mbps. The Model 4165/4166 is ideal for applications involving PC communications that require high speed, secure communications, and optical isolation. Typical applications include constructing an optically isolated point-to-point communications link between the USB ports of two PC's, or an optically isolated high speed communication link between a PC and a serial data network subjected to a high EMI environment that might corrupt communications over a copper interface. Designed to operate from -40°C to +85°C, it is a member of Electro Standards Laboratories rugged community media converter family. The unit features ESD protection circuitry on the USB I/O connector. The unit's power input is protected from transients and features 3kVDC isolation to prevent system ground loops. It can be powered from a wide input range of 10VDC-36VDC, with models also available for other voltage ranges such as 4.5VDC-9VDC and 19VDC-72VDC. It is also factory configurable for USB port powered operation. Other features include user selectable fiber polarity, user selectable asynchronous data format, dual DB9 power connectors (board only) for convenience in bused power applications, Tx, Rx, and Power indicator LEDs. The converter is available as a board only with front mounting threaded brackets for rack mounting in embedded applications. For applications that require an enclosure, it is also available in a desk top package with optional DIN rail mounting hardware.

Desktop Unit



Model 4165  
(Cat No. 304165)

#### Specifications:

##### Fiber Interface:

Connectors: Fiber Optic ST  
TX Power: -12.5 dBm  
RX Sensitivity: -27.5 dBm  
Optical Budget: 15 dB  
Max. Link Distance with 62.5/125  $\mu$ m fiber:  
5.35 km up to 3 Mbps, 25°C  
3.75 km up to 3 Mbps, -40°C to +85°C  
Wavelength: 820 nm/850 nm, multimode  
Fiber Size: 50/125  $\mu$ m, 62.5/125  $\mu$ m, 100/140  $\mu$ m

##### Fiber Polarity:

Logical 1 = Light ON/OFF: User Selectable

##### Fiber Data Format:

Type: Asynchronous, user selectable format  
Rate: User selectable baud rates from 300 bps to 3 Mbps  
Fiber-to-USB rate conversion: Internally buffered.

##### USB Interface:

Connectors: USB, Type B, High Retention

##### USB Data Format:

Type: USB 2.0 Compliant USB Client  
Rate: Supports low speed (1.5 Mbps), and  
Full speed (12 Mbps) USB Data transfer rates.

##### Indicators:

LEDs: TXD, RXD, PWR

##### Power:

Input Power: 10VDC-36VDC std, 4.5VDC-9VDC,  
19VDC-72VDC, Others at 1.5W.

Isolation: 3 kVDC

Connectors: Dual DB9F for Power Daisy Chaining  
(board only),

DC Power Jack (desktop unit)

USB port powered (factory configurable)

##### Operating Environment:

-40°C to +85°C

##### Model 4166 Mechanical (Board Only):

Model / Cat No: 4166 / 304166

Size: 4.8" x 3.9" x 0.63"

Weight: Approx. 3.2 oz (91g)

Mounting: Mounting Holes, Rt Angle Brackets

##### Model 4165 Mechanical (Desktop Unit):

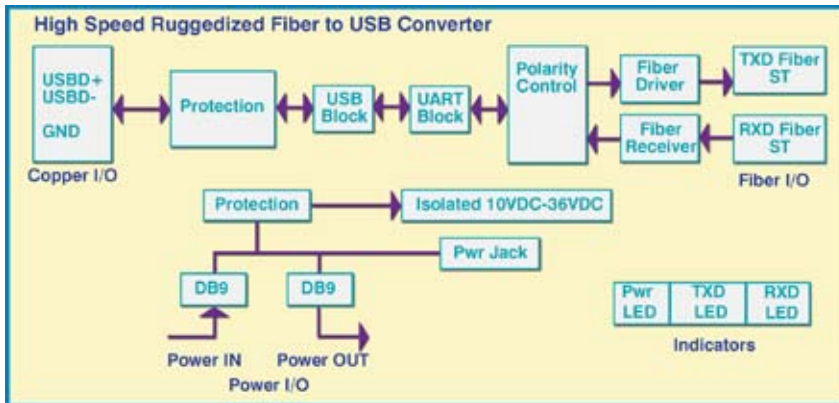
Model / Cat No: 4165 / 304165

Size: 5" x 4.25" x 1.4"

Weight: Approx. 9.8 oz (278g)

Mounting: 4 Threaded Holes Std, DIN rail

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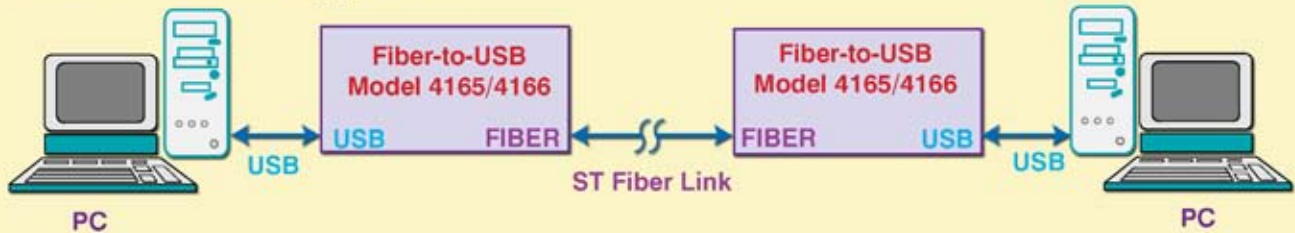


Board Unit



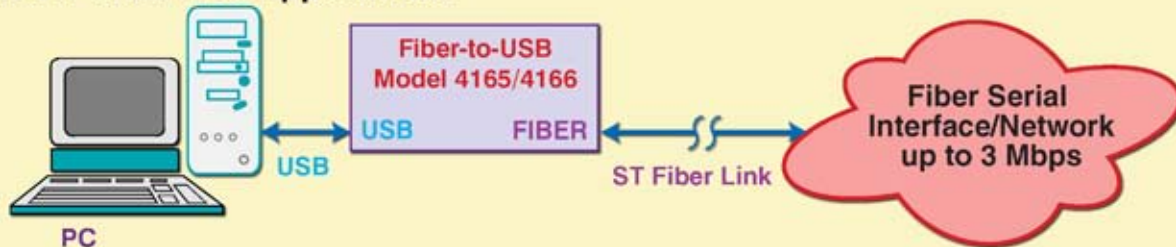
Model 4166  
(Cat No. 304166)

### Model 4165/4166 Application:



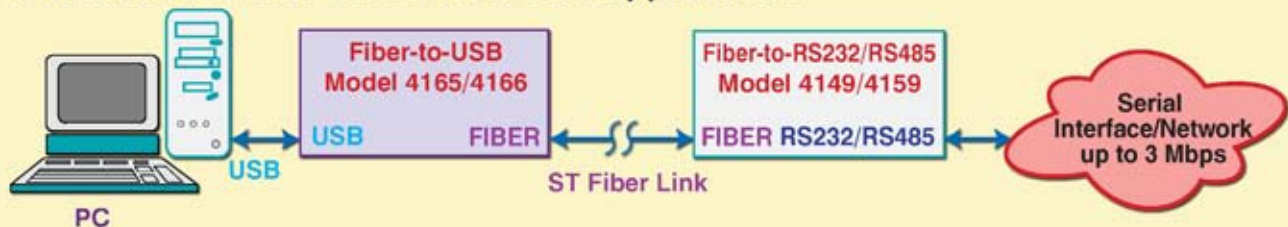
Point-to-Point Isolated PC USB Communications.

### Model 4165/4166 Application:



Isolated PC USB communications to fiber serial interface/network.

### Model 4165/4166 to Model 4149/4159 Application:



Isolated PC USB to RS232/RS485 communications serial interface/network.