

S.I. TECH

USB to Fiber Optic Modems

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USB PRODUCTS

USB TECHNOLOGY: UNIVERSAL SERIAL BUS (USB)

USB's main attraction is that it makes adding peripherals to your computer very easy. It enables you to connect peripherals to the outside of the computer so you don't have to open your PC.

Introduced in 1995, the USB standard was developed by industry leaders including DEC, IBM, Intel, Microsoft, and Compaq. Today, PCs and peripherals feature at least one USB port. Peripherals include everything from printers to cameras.

A USB peripheral simply plugs right into the port and USB devices are completely hot-swappable. USB host controllers automatically detect when peripherals are connected to or disconnected from a port.

USB uses a tiered star topology, meaning that USB devices called hubs can serve as connection ports for other USB devices. Only one device needs to be plugged into your PC. A single USB port can support up to 127 devices.

USB 1.1, the original USB standard, has two data rates: 12 Mbps for devices such as disk drivers that need high-speed throughput and 1.5 Mbps for devices like joysticks that use much less bandwidth.

USB 2.0, Hi-Speed USB 2.0, gained wide acceptance in the industry. It increases the speed of the peripheral-to-PC connection from 12 Mbps to 480 Mbps, or 40 times faster.

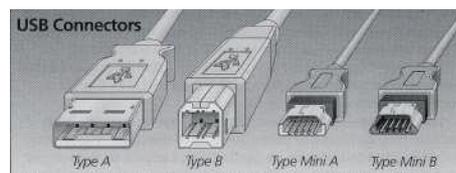
This increase in bandwidth enhances the use of external peripherals that require high throughput, such as CD/DVD burners, hard drives, digital cameras, video equipment, etc. A USB 2.0 and USB 1.1 peripherals.

A newer USB standard, USB On-The-Go (OTG), enables portable devices, such as PDAs, digital music players, and mobile phones, to connect to each other without the need for a PC host.

USB 3.0, a new high speed standard is under development. It is expected to work up to 4 Gbits/sec or higher, or 10 times faster than USB 2.0.

USB 2.0 is limited to about 5 meters length from PC and it is expected that USB 3.0 may be limited to 2.0 meters from host computer.

There are four types of USB connectors: Type A, Type B, the Mini A, and Mini B. USB 1.1 specifies Type A and Type B. USB 2.0 specifies Type A, Type B, and the Mini B. The Mini A connector was developed as part of the USB OTG specification and is used for smaller peripherals, such as cell phones and PDAs.



To overcome distance limitations of USB 1.1 and USB 2.0, S.I. Tech has developed fiber optic extenders for each type. USB 2.0 Fiber Optic Extender will also support USB 1.1 applications. USB 2.0 running at 480 Mbps does impose other restrictions such as multimode fiber bandwidth, particularly, 62.5/125 micron fiber operating at 850 nm. User needs to review his/her application on specific fiber type that should be used. If single mode fiber is used along with appropriate USB 2.0 extenders made for single mode, then bandwidth limitations do not apply.

**TABLE J
USB TO FIBER AND WIRELESS BIT-DRIVERS® (MODEMS)**

Model No.	Package			Data Rate	Data Format			Power Option*	Multimode Fiber		Singlemode Fiber Connector	Point to Point	HUB Port 1 to 4	Distance *** Km					Weight Lb/KG	Remarks
	Stand Alone	Din-Rail	Mini Card		Rack Mount	Rugged	USB 1.1		USB 2.0	USB 3.0				Connector	Wavelength (SM-1300) nm	2	5	10		
2183	✓	✓	✓	480Mbps	✓	✓	✓	2166	LC	850/1310	LC	✓	✓	✓	✓	✓	1/45	Full speed USB 1.1 & USB 2.0, UHCI & OHCI USB 2.0 1 to 4 ports Hub, Full speed, USB 1.1 and USB 2.0		
2184	✓	✓	✓	480Mbps	✓	✓	✓	2166	LC	850/1310	LC	✓	✓	✓	✓	✓	1/45			
2187	✓	✓	✓	5 Gbps	✓	✓	✓	2166Lok	LC	850/1310	LC	✓	✓	✓	✓	✓	8/34	USB 3.0 Hub		
2188	✓	✓	✓	5 Gbps	✓	✓	✓	2166Lok	LC	850/1310	LC	✓	✓	✓	✓	✓	8/34			
3181	✓	✓	✓	480Mbps	✓	✓	✓	2166	ST	850/1310	ST	✓	✓	✓	✓	✓	2/9	USB 2.0 Highly Shielded		
3182	✓	✓	✓	480Mbps	✓	✓	✓	2166	ST	850/1310	ST	✓	✓	✓	✓	✓	2/9			
212005	✓	✓	✓	115 Kbps	✓	✓	✓	-	-	-	-	✓	✓	✓	✓	✓	25/1	USB to RS-232		
212106	✓	✓	✓	0.25 Mbps	✓	✓	✓	-	-	-	-	✓	✓	✓	✓	✓	25/1			
212110	✓	✓	✓	0.25 Mbps	✓	✓	✓	-	-	-	-	✓	✓	✓	✓	✓	-	USB to RS-422		
2130	✓	✓	✓	Upto 3 Mbps	✓	✓	✓	Host	ST	850	ST	✓	✓	✓	✓	✓	25/1			
2131	✓	✓	✓	Upto 3 Mbps	✓	✓	✓	Host	ST	850	ST	✓	✓	✓	✓	✓	25/1	USB to Serial Fiber Interface USB to Serial (Mark & Space Reversed)		
2132	✓	✓	✓	Upto 3 Mbps	✓	✓	✓	Host	ST	850	ST	✓	✓	✓	✓	✓	25/1			

Specifications subject to change without notice.

USB TO FIBER OPTIC BIT-DRIVERS®

2183



- USB 1.1 and 2.0 to Fiber Bit Driver
- Data rate from 1.5 to 480 Mbps
- Multimode or Single mode
- Eliminate Distance Limitations of USB 2.0 Extended Distance with Fiber
- Protect host computer from lightning or high voltages as it is optically isolated from attached devices
- USB 2.0 host converter is not required, works with USB 1.1 or 2.0 Controller
- LC Fiber Connector
- Works with Windows Vista Software and National Instrument Controllers
- Use with 2184

2184



- USB 1.1 and 2.0 – 4 Port Hub
- Data rate from 1.5 to 480 Mbps
- Multimode or Single mode
- Eliminate Distance Limitations of USB 2.0 - Extends Distance with Fiber
- Protect host computer from lightning or high voltages as it is optically isolated from attached devices
- USB 2.0 host converter is not required, works with USB 1.1 or 2.0 Controller
- LC Fiber Connector
- Works with Windows Vista Software and National Instrument Controllers
- Use with 2183

2187



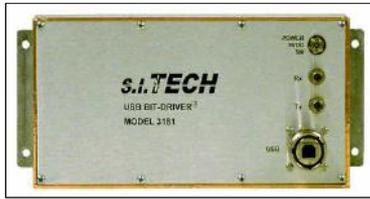
- USB 3.0
- Data rate is 5 Gbps
- Multimode or Single mode
- Protect host computer from lightning or high voltages as it is optically isolated from attached devices
- LC Fiber Connector
- Works with Windows, MAC, OSC, Linux operating systems
- Use with 2188

2188



- USB 3.0 Hub
- Data rate is 5 Gbps
- Multimode or Single mode
- Protect host computer from lightning or high voltages as it is optically isolated from attached devices
- LC Fiber Connector
- Works with Windows, MAC, OSC, Linux operating systems
- Use with 2188

3183



- ❑ USB 2.0 to Fiber Optic Bit Driver Tempest (Highly Shielded)
- ❑ Data rate 1.5 Mbps, 12 Mbps and 480 Mbps
- ❑ Multimode or Single mode
- ❑ Secure Communication and Long Distances
- ❑ Optically Isolates Host Computer, Protects from attached Devices
- ❑ Use with 2184 or 3184

3184



- ❑ USB 2.0 to Fiber Optic Bit Driver Tempest (Highly Shielded), 1 or 2 Port Hub
- ❑ Data rate 1.5 Mbps, 12 Mbps and 480 Mbps
- ❑ Multimode or Single mode
- ❑ Secure Communication and Long Distances
- ❑ Use with 2183 or 3183

USB TO SERIAL BIT-DRIVERS®

212005



- USB to Serial RS-232
- Can be used to connect legacy RS-232 interface to new PC with only USB ports
- Supplied with virtual comport driver

212106



- USB to Serial RS-422
- Can be used to connect legacy RS-422 interface to new PCs with only USB ports
- Supplied with virtual comport drivers
- Can be used with S.I.Tech #2106 RS-422 to fiber Bit-Drivers

212110



- USB to Serial RS-485
- Can be used to connect legacy RS-485 interface to new PCs with only USB ports
- Supplied with virtual comport drivers
- Can be used with S.I.Tech #2110 RS-485 to fiber Bit-Drivers

2130/2131/2132



- USB to Fiber Serial Interface
- Compatible with fiber interface found on many existing S.I. Tech serial data links
 - RS-232: 2005, 2505, 2507, 2617
 - RS-422: 2106, 2116, 2140, 2866
 - RS-485: 2110, 2128
- Data rates 300 bps to 3Mbps dependent on connecting product

USB2.0 to Fiber Optic Media Converter



Features:

- Supports USB 2.0 over fiber
- Power, Link Status, and Host LED indicators
- LC optical connectors
- Din Rail Mounting Option
- Connects to UHCI, OHCI and EHCI Host
- Improved Operation for Vista Operating System
- Supports USB 1.1 and 2.0 Host Controller
- Works with National Instrument Controllers

S.I.Tech 2183/2184 USB media converter pair extends the range of USB 2.0 beyond the USB 5 meter limit. The USB media converters are compliant with the USB 2.0 specification supporting low speed(1.5 Mbps), full speed(12 Mbps), and high speed(480 Mbps) USB data transfer.

The 2183/2184 are enumerated as generic USB hub and provide a 4-port USB hub at distances up to 2 Km over fiber optic cable. The 2183 connects to host PC through USB type B connector. The 2184 connects to USB peripherals through USB type A connector.

- Operation Mode:** USB 2.0
- Input/Output Interface:** USB Type B
- Transmission Line Interface:** LC optical connector is standard
- Transmission Distance:** See distance chart
- Transmitter Output Power:** MMF -9dBm Minimum
62.5micron
SMF -9dBm Minimum
- System Wavelength:** 850 or 1300 nm
- Data Rate:** 1.5 (USB 1.0), 12 (USB 1.1), and 480 (USB 2.0) Mbps
- Bit Error Rate:** 10⁻⁹
- Receiver Sensitivity:** MMF(850nm) -17 dBm minimum
MMF(1300nm) -20 dBm minimum
SMF(1300nm) -20 dBm minimum
- Operating Temperature:** 0 °C to 70 °C
- Weight:** 0.75 lb (340 grams)
- Input Power:** 5 VDC Locking Power Jack & Conn.
External with power supply - 5W typical (S.I.Tech #2166 - 100 to 240 VAC, 50/60 Hz, to 5VDC, UL, CE, & TUVGS Listed)
- Metal Enclosure:** Din Rail Mounting

OPERATING DISTANCE FOR FIBER OPTIC CABLE

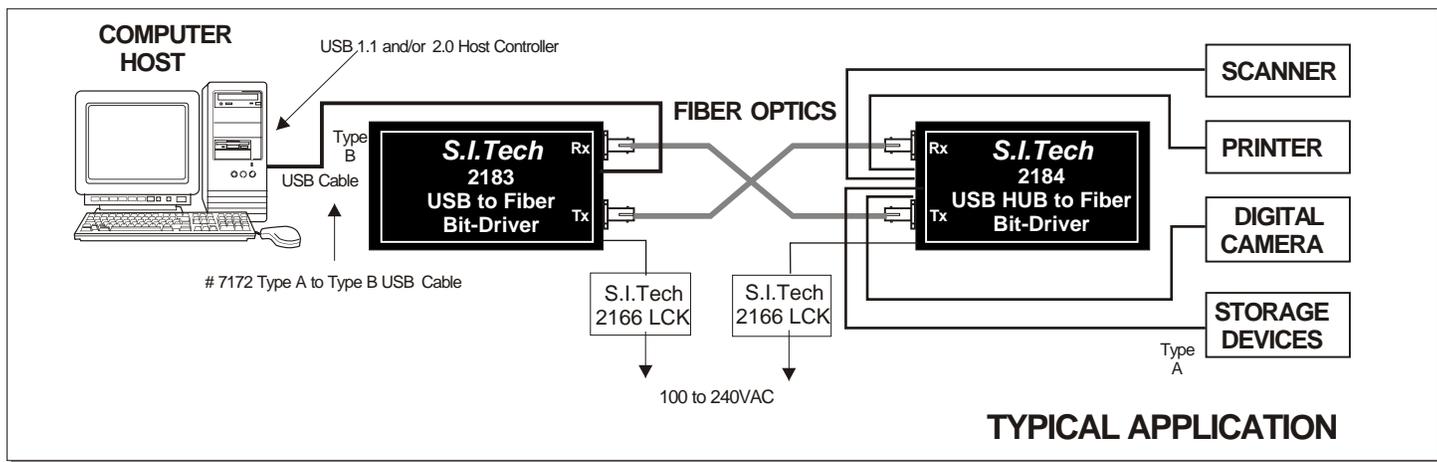
Fiber Size (Microns)	Attenuation dB/Km		Bandwidth MHz/Km		Distance Meters		Distance Feet	
	850nm	1300nm	850nm	1300nm	850nm	1300nm	850nm	1300nm
50	3.0	1.5	600	600	500	600	1650	1800
62.5	4.0	1.5	200	600	275	600	900	1800
10 SM	Unspecified	0.4	Unspecified	Unspecified	-	5000	-	16000

SM - Single mode option - 1300nm (Application limits may be exceeded)
Optical Unit Connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to Tx or Rx by noting cable imprint
If you are using Laser Enhanced multimode fiber, depending upon its bandwidth, longer distances may be possible.

*Meets FCC requirements of Class B, Part 15 Computing Devices Standard, USB Standard.
Specifications subject to change without notice.*



Note: 2183/2184 require USB2.0 root hub support from USB 2.0 host controller. The USB 2.0 host controller will be identified in the Windows Device Manager as "Enhanced" or EHCI controller.



USB2.0 to Fiber Optic Media Converter



Features:

- Supports USB 2.0 over fiber
- Four USB ports, each hub port provides attached device with 5VDC power (up to 500mA)
- Power, Optical Signal Detect, Link Status, and Device port status LED indicators
- LC optical connectors
- Din Rail Mounting Option
- Improved Operation for Vista Operating System
- Supports USB 1.1 and USB 2.0 controller
- Works with National Instrument controllers

- Operation Mode:** USB 2.0
- Input/Output Interface:** USB Type A
- Transmission Line Interface:** LC optical connector is standard
- Transmission Distance:** See distance chart
- Transmitter Output Power:** MMF -9dBm Minimum
62.5 micron
SMF -9dBm Minimum
- System Wavelength:** 850 or 1300 nm
- Data Rate:** 1.5 (USB 1.0), 12 (USB 1.1), and 480 (USB 2.0) Mbps
- Bit Error Rate:** 10⁻⁹
- Receiver Sensitivity:** MMF(850nm) -17dBm Minimum
MMF(1300nm) -20dBm Minimum
SMF(1300nm) -20dBm Minimum
- Operating Temperature:** 0 °C to 70 °C
- Weight:** 0.75 lb (340 grams)
- Input Power:** 5 VDC Locking power jack & conn. External with power supply - 5W typical (S.I.Tech #2166 - 100 to 240 VAC, 50/60 Hz, to 5VDC, UL, CE, & TUVGS Listed)
- Metal Enclosure:** Din Rail Mounting

S.I.Tech 2183/2184 USB media converter pair extends the range of USB 2.0 beyond the USB 5 meter limit. The USB media converters are compliant with the USB 2.0 specification supporting low speed (1.5 Mbps), full speed (12 Mbps), and high speed (480 Mbps) USB data transfer.

The 2183/2184 are enumerated as generic USB hub and provide a 4-port USB hub at distances up to 2 Km over fiber optic cable. The 2183 connects to host PC through USB type B connector. The 2184 connects to USB peripherals through USB type A connector.

OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/Km		Bandwidth MHz/Km		Distance Meters		Distance Feet	
	850nm	1300nm	850nm	1300nm	850nm	1300nm	850nm	1300nm
50	3.0	1.5	600	600	500	600	1650	1800
62.5	4.0	1.5	200	600	275	600	900	1800
10 SM	Unspecified	0.4	Unspecified	Unspecified	-	5000	-	16000

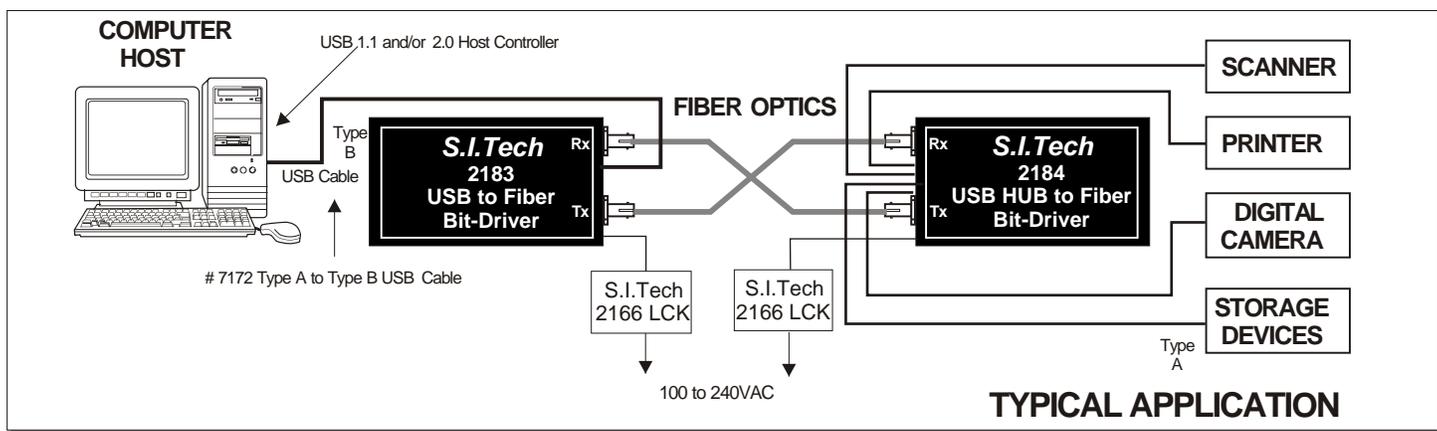
SM - Single mode option - 1300nm (Application limits may be exceeded)
Optical Unit Connection: Connect the optical transmission line to the T and R receptacles.
Note which cable channel goes to Tx or Rx by noting cable imprint.
If you are using Laser Enhanced multimode fiber, depending upon its bandwidth, longer distances maybe possible.

*Meets FCC requirements of Class B, Part 15 Computing Devices Standard, USB Standard.
Specifications subject to change without notice.*



Note: 2183/2184 require USB2.0 root hub support from USB 2.0 host controller. **The USB 2.0 host controller will be identified in the Windows Device Manager as "Enhanced" or EHCI controller.**

Note: 2184 5 watts typical, additional USB devices power (5V, up to 500mA) can increase 2184 power to 16 watts.



USB3.0 to Fiber Optic Media Converter



Features:

- Supports USB 3.0 over fiber
- Support all major operating systems - Windows, Mac, OSX, Linux.
- Power, Link Status, and Host LED indicators
- LC optical connectors
- Plug and Play
- Extend USB 3.0 on multimode fiber up to 100m.
- **2 port** hub data speed 5 GigaBits/Second (2188)
- Not backward compatible with USB1.1 and 2.0

S.I.Tech 2187/2188 USB media converter pair extends the range of USB 3.0 beyond the USB 5 meter limit. The USB media converters are compliant with the USB 3.0 specification supporting full speed of 5Gbs USB data transfer.

- Operation Mode:** USB 3.0
- Input/Output Interface:** USB Type B
- Transmission Line Interface:** LC optical connector is standard
- Transmission Distance:** See distance chart

System Wavelength: 850 nm (1310nm option)
Bit Error Rate: 10⁻⁹

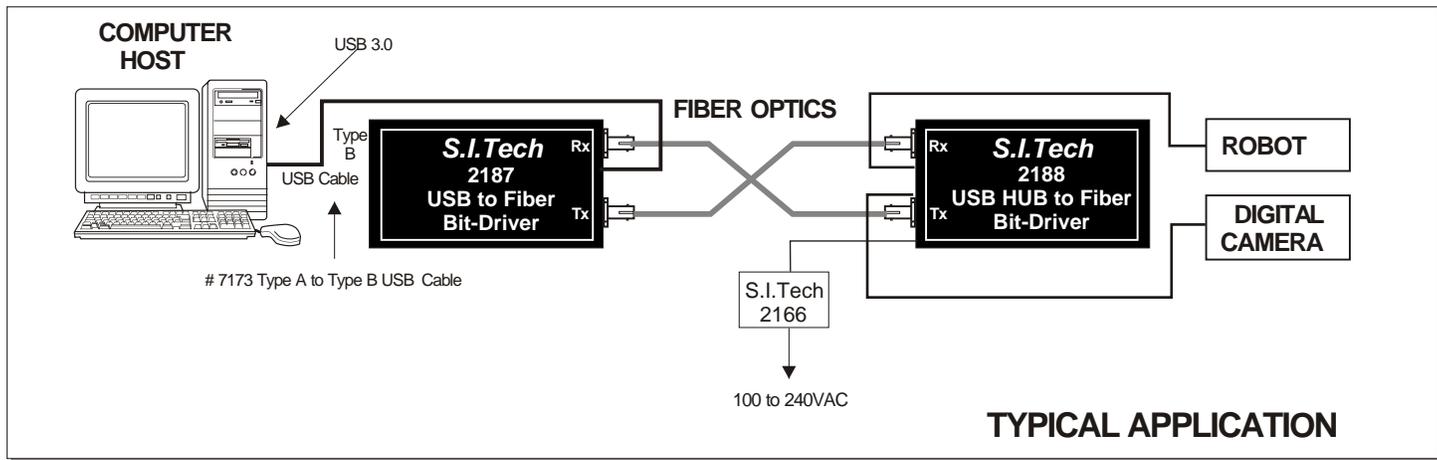
- Operating Temperature:** 0 °C to 40 °C
- Weight:** 0.75 lb (340 grams)
- Input Power:** Powered from USB port of computer
- Metal Enclosure:** 3.9" X 3.0" X 1.0"
(100 X 76 X 26 mm)

OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/Km		Bandwidth MHz/Km	Distance Meters	Distance Feet	Distance Meters	Distance Feet
	850nm	1300nm		850nm	850nm	1310nm	1310nm
50 (OM2)	3.0	1.5	500	50	165	-	-
50 (Om3)*	4.0	1.5	2000	200	660	-	-
50 (Om4)*	3.0	2.5	4000	300	1000	-	-
10 SM	-	0.35	-	-	-	220	660

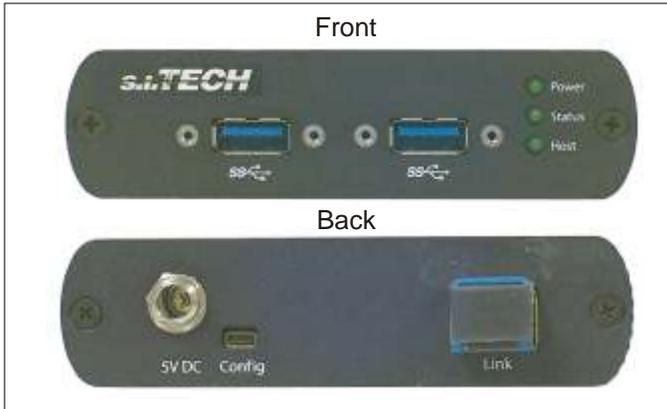
SM - Single mode option - 1300nm (*Application limits may be exceeded)
 Optical Unit Connection: Connect the optical transmission line to the T and R receptacles.
 Note which cable channel goes to Tx or Rx by noting cable imprint
 If you are using Laser Enhanced multimode fiber, depending upon its bandwidth, longer distances may be possible..

Meets FCC requirements of Class B, Part 15 Computing Devices Standard, USB Standard. ROHS Specifications subject to change without notice.



TYPICAL APPLICATION

USB3.0 Hub to Fiber Optic Media Converter



Features:

- Supports USB 3.0 over fiber
- Support all major operating systems - Windows, Mac, OSX, Linux.
- Power, Link Status, and Host LED indicators
- LC optical connectors
- Plug and Play
- Extend USB 3.0 on multimode fiber up to 100m.
- **2 port** hub data speed 5 GigaBits/Second (2188)
- Not backwards compatible with USB1.1 and 2.0

S.I.Tech 2187/2188 USB media converter pair extends the range of USB 3.0 beyond the USB 5 meter limit. The USB media converters are compliant with the USB 3.0 specification supporting full speed of 5Gbs USB data transfer.

- Operation Mode:** USB 3.0
- Input/Output Interface:** USB Type A
- Transmission Line Interface:** LC optical connector is standard
- Transmission Distance:** See distance chart

System Wavelength: 850 nm (1310 nm option)
Bit Error Rate: 10⁻⁹

Operating Temperature: 0 °C to 40 °C
Weight: 0.75 lb (340 grams)
Input Power: 5 VDC (4.75 to 5.50 VDC)
 External with power supply - 5W typical (S.I.Tech #2166 - 100 to 240 VAC, 50/60 Hz, to 24VDC, UL, CE, & TUVGS Listed) Locking Connector

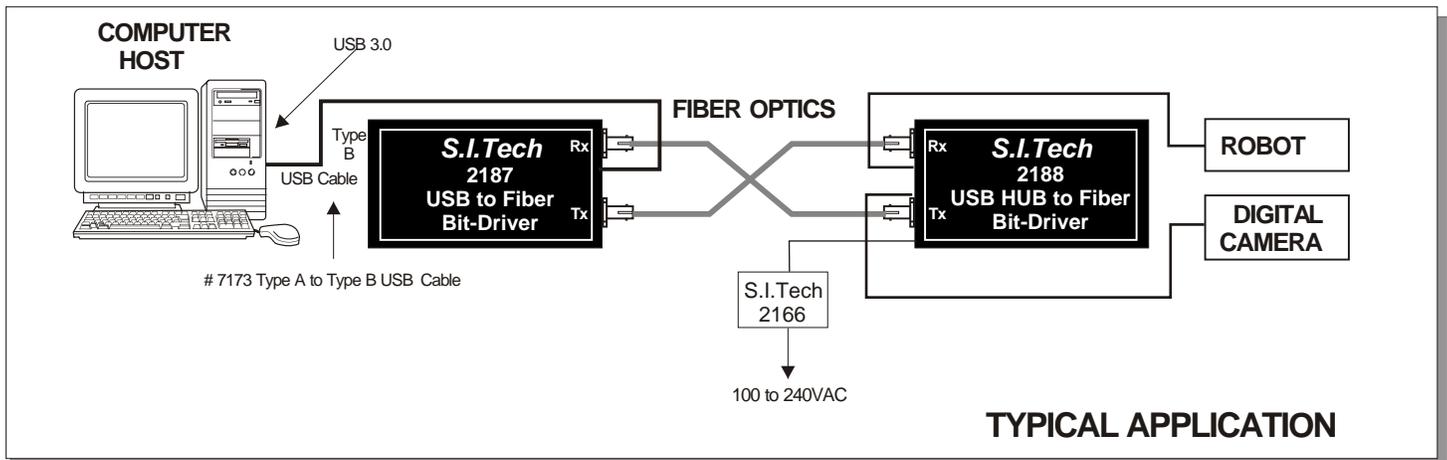
Metal Enclosure: 3.9" X 3.0" X 1.0"
 (100 X 76 X 26 mm)

OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/Km		Bandwidth MHz/Km	Distance Meters	Distance Feet	Distance Meters	Distance Feet
	850nm	1300nm		850nm	850nm	1310nm	1310nm
50 (OM2)	3.0	1.5	500	50	165	-	-
50 (Om3)*	4.0	1.5	2000	200	660	-	-
50 (Om4)*	3.0	2.5	4000	300	1000	-	-
10 SM	-	0.35	-	-	-	220	660

SM - Single mode option - 1300nm (*Application limits may be exceeded)
 Optical Unit Connection: Connect the optical transmission line to the T and R receptacles.
 Note which cable channel goes to Tx or Rx by noting cable imprint
 If you are using Laser Enhanced multimode fiber, depending upon its bandwidth, longer distances maybe possible..

Meets FCC requirements of Class B, Part 15 Computing Devices Standard, USB Standard. ROHS Specifications subject to change without notice.



TYPICAL APPLICATION

USB2.0 to Fiber Optic Media Converter - Highly Shielded



Features:

- Supports USB 2.0 over fiber
- ST optical connectors
- Improved Operation for Vista Operating System
- Connects to UHCI, OHCI and EHCI Host
- Supports USB 1.1 and 2.0 Host Controller
- Works with National Instrument Controllers
- Highly Shielded Case - Improved EMI/RFI Protection

S.I.Tech 3183 and 3184 are highly shielded 2183 and 2184 USB media converter pair which extends the range of USB 2.0 beyond the USB 5 meter limit. The USB media converters are compliant with the USB 2.0 specification supporting low speed (1.5Mbps), full speed(12 Mbps), and high speed(480 Mbps) USB data transfer. The 3181 and 3182 provide improved EMI/RFI protection compared to 2183 and 2184.

The 3183/3184 are enumerated as generic USB hub and provide a 1-port USB hub at distances up to 2 Km over fiber optic cable. The 3183 connects to host PC through USB type B connector. The 3184 connects to USB peripherals through USB type A connector. The 3183/3184 can be used with 2183/2184.

- Operation Mode:** USB 2.0
- Input/Output Interface:** USB Type B
- Transmission Line Interface:** ST optical connector is standard
- Transmission Distance:** See distance chart
- Transmitter Output Power:** MMF -9dBm Minimum
62.5micron
SMF -9dBm Minimum
- System Wavelength:** 850 or 1300 nm
- Data Rate:** 1.5, (USB 1.0) 12,(USB 1.1) and 480 (USB 2.0) Mbps
- Bit Error Rate:** 10⁻⁹
- Receiver Sensitivity:** MMF(850nm) -17 dBm minimum
MMF(1300nm) -20 dBm minimum
SMF(1300nm) -20 dBm minimum
- Operating Temperature:** 0 °C to 70 °C
- Weight:** 2 lb (900 grams)
- Input Power:** 5VDC
External with power supply - 5W typical (S.I.Tech #2166 - L 5VDC, UL, CE, & TUVGS Listed)
- Metal Enclosure:** 9.37"L X 4.25"W X 1.75"H (23.8 X 10.8 X 4.4 cm)

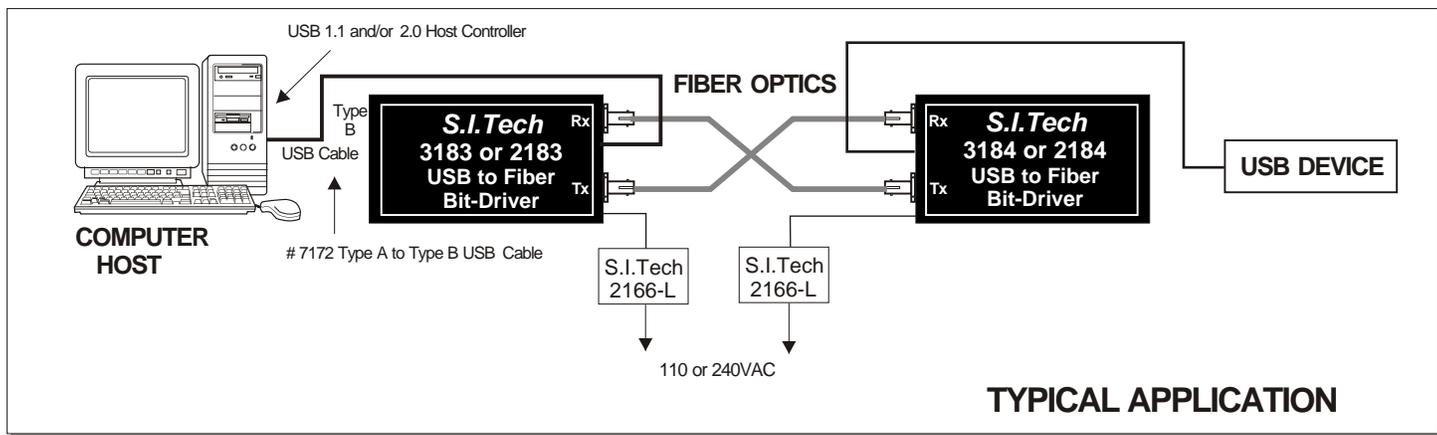
OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/Km		Bandwidth MHz/Km		Distance Meters		Distance Feet	
	850nm	1300nm	850nm	1300nm	850nm	1300nm	850nm	1300nm
50	3.0	1.5	600	600	500	600	1650	1800
62.5	4.0	1.5	200	600	275	600	900	1800
10 SM	Unspecified	0.4	Unspecified	Unspecified	-	5000	-	16000

SM - Single mode option - 1300nm (Application limits may be exceeded)
Optical Unit Connection: Connect the optical transmission line to the T and R receptacles.
Note which cable channel goes to Tx or Rx by noting cable imprint
If you are using Laser Enhanced multimode fiber, depending upon its bandwidth, longer distances may be possible..

Note: 3182/3184 require USB2.0 root hub support from USB 2.0 host controller.
The USB 2.0 host controller will be identified in the Windows Device Manager as "Enhanced" or EHCI controller.

Meets FCC requirements of Class B, Part 15 Computing Devices Standard, USB Standard.
Specifications subject to change without notice.



USB2.0 Hub to Fiber Optic Media Converter - Highly Shielded



Features:

- Supports USB 2.0 over fiber
- USB Hub/Port, Hub port provide attached device with 5VDC power (up to 500mA)
- ST optical connectors
- Improved Operation for Vista Operating System
- Supports USB 1.1 and 2.0 Host Controller
- Works with National Instrument Controllers
- Highly Shielded Case - Improved EMI/RFI Protection

S.I.Tech 3183 and 3184 USB media converter pair extends the range of USB 2.0 beyond the USB 5 meter limit. The USB media converters are compliant with the USB 2.0 specification supporting low speed (1.5Mbps), full speed(12 Mbps), and high speed(480 Mbps) USB data transfer. The 3183 and 3184 provide improved EMI/RFI protection compared to 2183 and 2184.

The 3181/3182 are enumerated as generic USB hub and provide a 1-port USB hub at distances up to 2 Km over fiber optic cable. The 3183 connects to host PC through USB type B connector. The 3184 connects to USB peripheral through USB type A connector. The 3183/3184 can be used with 2183/2184.

- Operation Mode:** USB 2.0
- Input/Output Interface:** USB Type B
- Transmission Line Interface:** ST optical connector is standard
- Transmission Distance:** See distance chart
- Transmitter Output Power:** MMF -9dBm Minimum
62.5micron
SMF -9dBm Minimum
- System Wavelength:** 850 or 1300 nm
- Data Rate:** 1.5, (USB 1.0) 12,(USB 1.1) and 480 (USB 2.0) Mbps
- Bit Error Rate:** 10⁻⁹
- Receiver Sensitivity:** MMF(850nm) -17 dBm minimum
MMF(1300nm) -20 dBm minimum
SMF(1300nm) -20 dBm minimum
- Operating Temperature:** 0 °C to 70 °C
- Weight:** 2 lb (900 grams)
- Input Power:** 5VDC
External with power supply - 5W typical (S.I.Tech #2166 - L 5VDC, UL, CE, & TUVGS Listed)
- Metal Enclosure:** 9.37"L X 4.25"W X 1.75"H (23.8 X 10.8 X 4.4 cm)

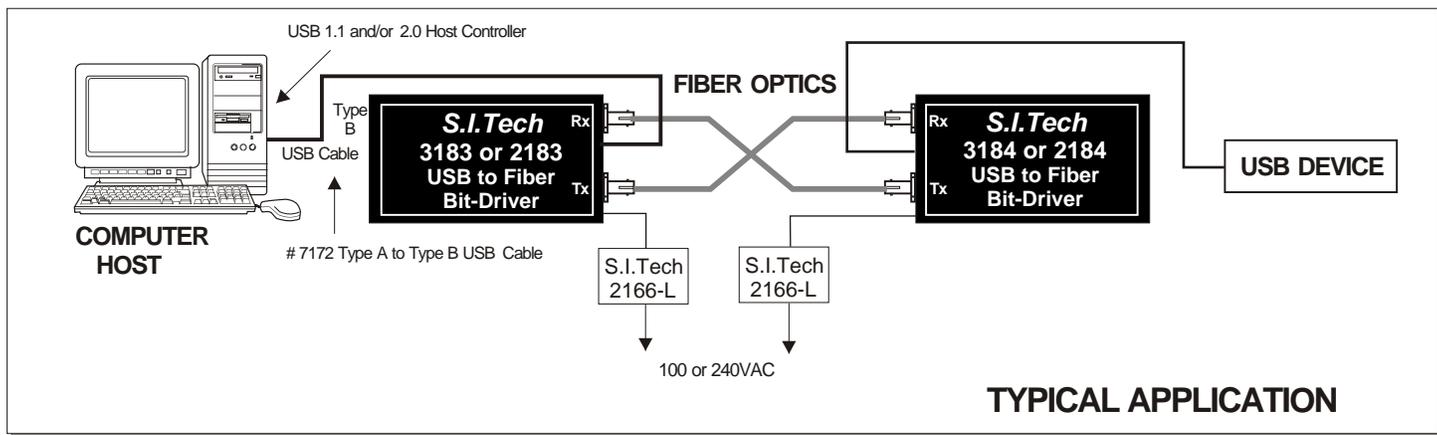
OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/Km		Bandwidth MHz/Km		Distance Meters		Distance Feet	
	850nm	1300nm	850nm	1300nm	850nm	1300nm	850nm	1300nm
50	3.0	1.5	600	600	500	600	1650	1800
62.5	4.0	1.5	200	600	275	600	900	1800
10 SM	Unspecified	0.4	Unspecified	Unspecified	-	5000	-	16000

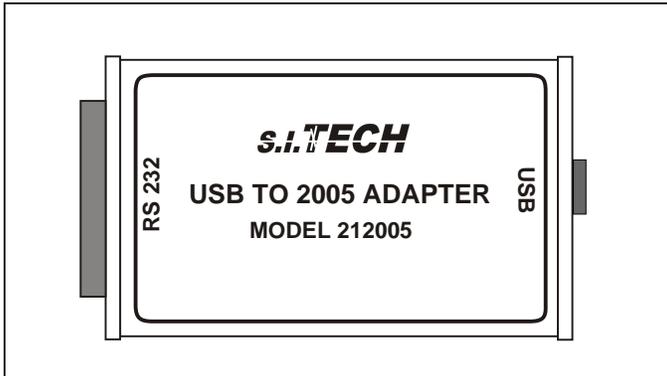
SM - Single mode option - 1300nm (Application limits may be exceeded)
Optical Unit Connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to Tx or Rx by noting cable imprint
If you are using Laser Enhanced multimode fiber, depending upon its bandwidth, longer distances maybe possible.

Note: 3183/3184 require USB2.0 root hub support from USB 2.0 host controller.
The USB 2.0 host controller will be identified in the Windows Device Manager as "Enhanced" or EHCI controller.

Meets FCC requirements of Class B, Part 15 Computing Devices Standard, USB Standard.
Specifications subject to change without notice.



USB to RS-232 Adapter



Features:

- Plugs directly into S.I.Tech 2005 DB25 connector
- Connects to any PC with USB port use S.I.Tech #7105 USB Cable
- 300 to 115.2 Kbps Data Rates
- Works with Model 2005 Bit-Driver

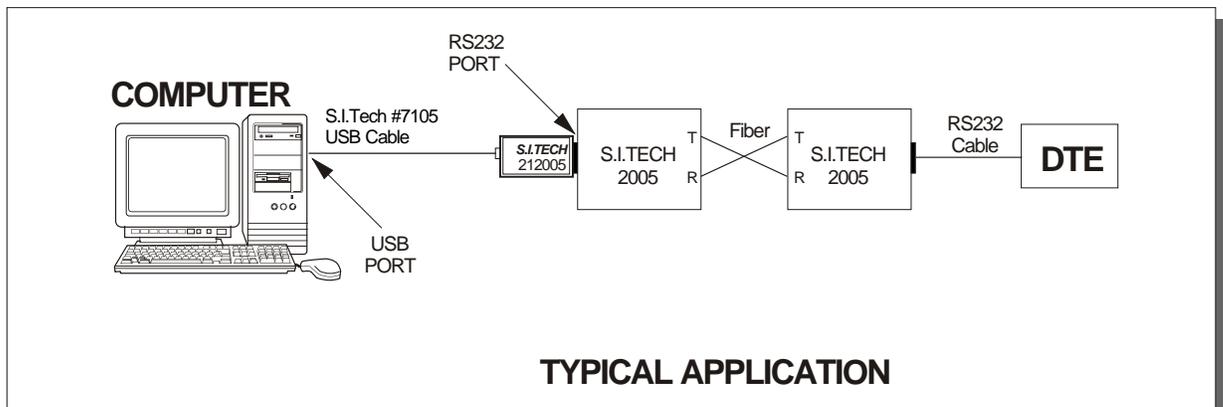
Note: Requires virtual COM port (VCP) drivers supplied on disk. VCP drivers map a COM port to 212005. COM port assignment is found in Windows Device Manager under the ports tab.

Operation Mode: Asynchronous
Input Interface: USB
Output Interface: RS-232-C, Serial Data
Operating Temperature: 0 °C to 50 °C
Metal Enclosure: 1.75 x 3 x 0.625 in (4.5 x 7.5 x1.6 cm)
Weight: 0.25 lb (100 grams)
Power: Powered from USB port of a computer

RS - 232 CONNECTOR PINS UTILIZED

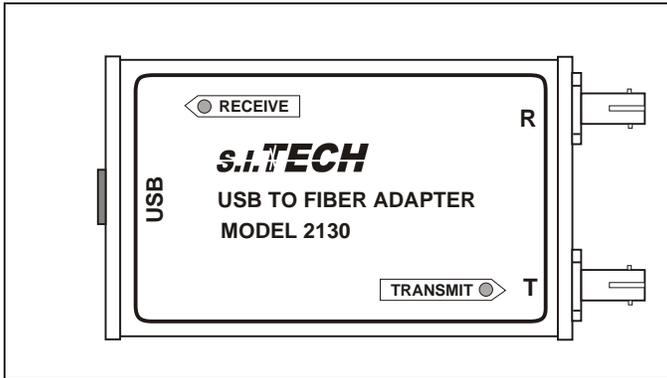
DB-9M Pin No.	DB-25M Pin No.	Description	Symbol	DTE DCE
-	1	Protective Ground	Chassis Ground	↔
3	2	Transmitted Data	TXD	→
2	3	Received Data	RXD	←
7	4	Request to Send	RTS	→
8	5	Clear to Send	CTS	←
6	6	Data Set Ready	DSR	→
5	7	Signal Ground	Sig. Gnd.	↔
1	8	Data Carrier Detect	DCD	←
4	20	Data Terminal Ready	DTR	←

Meets FCC requirements of Class A, Part 15 Computing Devices Standard.
 Specifications subject to change without notice.



TYPICAL APPLICATION

USB to Fiber



Features:

- USB to Fiber Serial Interface
- Compatible with fiber interface found on many S.I.Tech serial data links.
RS-232: 2005, 2505, 2507, 2617
RS-422: 2106, 2116, 2140, 2866
RS-485: 2110, 2128
- Data rates 300bps to 3Mbps dependent on connecting product

Note: Requires virtual COM port (VCP) drivers supplied on disk. VCP drivers map a COM port to 2130. COM port assignment is found in Windows Device Manager under the ports tab.

Operation Mode: Asynchronous

Input Interface: USB

Operating Temperature: 0 °C to 50 °C

Metal Enclosure: 1.75 x 3 x 0.625 in
(4.5 x 7.5 x 1.6 cm)

Weight: 0.25 lb (100 grams)

Power: Powered from USB port of a computer

OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/Km	Distance Meters*	Distance Feet*
50	3.0	2000	6600
62.5	4.0	2000	6600
100	5.0	2000	6600
10 SM	0.35	10000	33000

* High power option available. SM: Single Mode Option

Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

Meets FCC requirements of Class A, Part 15 Computing Devices Standard.

Specifications subject to change without notice.



HOW TO ORDER

USB	USE WITH
2130	2005, 2505, 2106, 2507
2131	2515, 2517, 2110, 2116, 2505MOD
2132	2617, 2140, 2128, 2866, 2109
2132-SM	2617-SM, 2128-SM, 2140-SM, 2866-SM

