Isolated USB to SPI Converter

Features

- Bi-directional USB to SPI converter
- Full galvanic isolation
- Supports USB 2.0
- Low cost

Applications

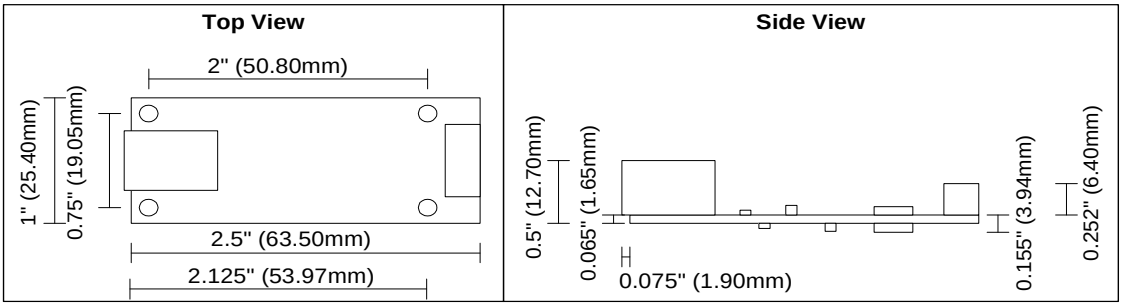
- Continuous data streaming*
- Data acquisition
- Instrumentation
- Communication

Using the USC-216 is an easy way to add a USB host to any device that features an SPI port. It electrically isolates the SPI side from the USB side without any loss of speed. The USC-216 can be used in various types of applications where a USB host is necessary such as, a data streaming device, a data acquisition device, an instrumentation device or a communication device.

The USC-216 has a standard SPI port and allows the user to connect with a device in either master or slave mode. It has an interrupt output (INT) to indicate to the SPI master device that the data is ready to send and an output pin (GPX) to indicate the completion of the USB enumeration. The USC-216 supports the USB 2.0 standard and connects to the host through a type B USB connector. Circular buffers simplify the software interface of the USC-216 SPI port and USB port.

The USC-216 is easy to configure with simple protocol commands for the USB port. For more information on the programming of the USC-216 see the User guide.

Mechanical



* Limited by the bulk transfer

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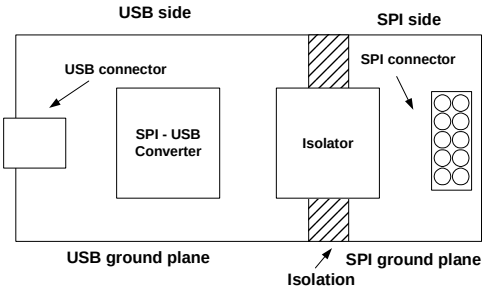
Specifications	USC-216	Unit
Performance		
USB Compliance	2.0	
Data Rate ¤		
Data < 835 bytes	1,5	Mbps
Data > 835 bytes	500	Kbps
Environment		
Operating Temp Range	-40 to 85°C	°C
Electrical		
Supply Voltage SPI Side	3.3	V
Supply Current SPI Side	35	mA
Supply Voltage USB Side	5	V
Supply Current USB Side	38	mA
Electrical isolation between USB side and SPI side	2.5	KV
Physical		
Size	2.5 x 1 x 0.58	In
	63.5 x 25.4 x 14.7	mm
Weight	0.026	lbs
	12	Grams

Connectors		
Pin	J1[1]	J2[2]
1	VC	+3.3V
2	D+	MOSI
3	D-	GND
4	GND	SCLK
5		GND
6		SS
7		GND
8		MISO
9		GND
10		INT
11		GND
12		GPX

1- USB Type B connector
2- Molex 87831-1220

Principle of operation



The unit converts and buffers the data for the communication between the USB side and the SPI side. The two sides are electrically isolated from one another. The USB side is powered by the USB host through the USB type B connector. The SPI side is powered by the device to which it is connected through the SPI connector and controls the USB power side.

For the transfer of data on the USB side, the USC-216 uses Bulk mode. The unit has two endpoints one IN and one OUT this allows for a bi-directional USB communication. Please refer to User Guide for detailed Bulk Mode transfer information.

¤ The converter has two circular buffers that can stock up to 835 bytes before sending through the data to the SPI and USB ports. If the number of bytes to send is less than 835, the converter will stock the data and send it after it has received the last byte. In this case, the SPI port should be set at a baud rate lesser than 1,5Mbps. However, when a packet of data higher than 835 bytes is required the converter can manage both communications simultaneously but the baud rate will need to be decreased to 500 Kbps while in continuous mode.

Ordering Information

Part	**Temperature Range**
USC-216LF+	-40°C ~ 85°C

+ Lead-free compliant

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