

# RS232 & USB to SPI

## RS232/USB-SPI-N

Bi-Directional Converter: RS232<-->SPI or USB<-->SPI

### The Big Deal

- Allows Bi-Directional communication between USB or RS232 to SPI
- Easy-to-use, quick-loading GUI and API objects for programmers - compatible with 32/64 Bit operating systems
- Accessory cables for all three ports included.



CASE STYLE: LK1579



Installation CD with Software included



### Product Overview

Mini Circuits' RS232/USB-SPI-N is a compact digital convertor allowing two way communication with SPI slave devices using either a USB or RS232 port. The model operates at 330kbit/sec with 1 to 16 data bits (specified by user) per word. For SPI communication standard TTL levels are used and the model can handle all voltage levels defined in the RS232 protocol. Power to the Converter is supplied via the USB port from either the USB bus or the provided power adaptor when using RS2323 control. The model is constructed in a compact plastic case (size of 2.53" X 1.68" X 0.92") with a USB type B female port, a standard RJ45 network port for the SPI signals and a 9-pin D-Sub female port for the RS232 signals.

The RS232/USB-SPI-N is supplied along with a software CD containing a graphical user interface program and programming APIs for 32 and 64 bit environments. Also included are a 2.7ft. USB cable, a 6ft. D-Sub 9 male-female cable, a 5ft. RJ45 to RJ45 cable, and a power adaptor with a USB A female connector, suitable for US, EU, and other power systems - see page 4 for details. Longer USB cables are available as an additional option.

### Key Features

Feature	Advantages
Bi-Directional communication	Allows full two way communication from any USB or RS232 port to an SPI device.
5V <sub>DC</sub> Operating voltage	The RS232/USB-SPI-N uses 5V operating voltage, supplied from either the USB BUS or an external power adaptor.
USB HID (Human Interface Device)	Plug-and-Play (no need to install a driver for the device).
32/64 Bit operating systems	Compatible with Windows® and Linux® operating systems using 32 and 64 bit architecture.
Software CD, cables, and power adaptor included	Includes a full set of accessories for immediate use, with no hidden costs.



For detailed performance specs & shopping online see web site

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp).

# RS232 & USB to SPI Converter

## Bi-Directional Converter: RS232<-->SPI or USB<-->SPI

### Features

- USB or RS232 control
- Full two way communication to SPI slave devices
- Powered from either the USB bus or a power adaptor
- Communication rate 330kbit/sec
- Compatible with 32/64-bit Windows® or Linux® operating systems
- ActiveX com object and .Net class library for use with other software: C++, C#, CVI®, Delphi®, LabVIEW® 8 or newer, MATLAB® 7 or newer, Python, Agilent VEE®, Visual Basic®, Visual Studio® 6 or newer, AutoIT and more<sup>1</sup>
- Friendly Windows® Graphical User Interface



Installation CD with Software included

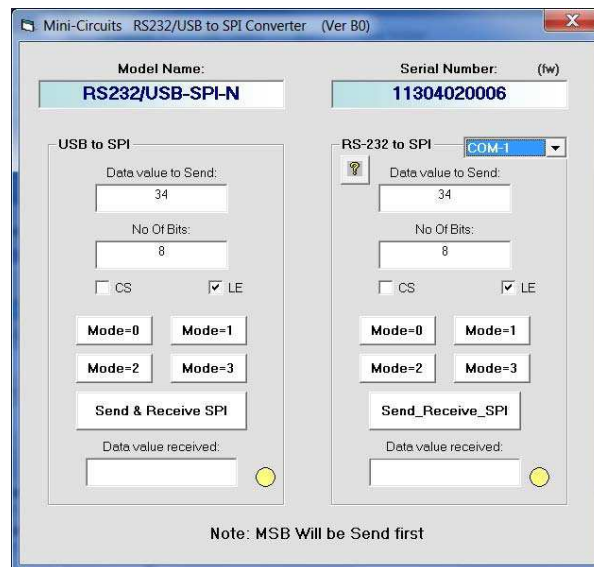
## RS232/USB-SPI-N

Model No.	Description	Price	Qty.
<b>RS232/USB-SPI-N</b>	<b>USB &amp; RS232 to SPI Conv.</b>	\$244.95 ea.	(1-4)
<b>Included Accessories</b>			
PC-ADP-CD	Software CD		1
USB-CBL-AB-3+	2.7 ft USB cable		1
USB-AC/DC-5	AC/DC 5V <sub>DC</sub> Adapter		1
CBL-RJ45-MM-5+	5 ft RJ45 cable (SPI)		1
D-SUB9-MF-6+	6 ft 9 pin D-Sub cable (RS232)		1

### Applications

- Lab
- Control systems

### User-friendly GUI for RS232/USB-SPI-N Converter



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## Electrical Specifications

Parameter	Connectors	Conditions	Min.	Typ.	Max.	Units	
<b>RS232 port<sup>2</sup></b>							
Baud rate 9600; 8 bit word; even parity; stop bit = '1'							
Logic levels	9 pin D-Sub	Meets RS232 standard					
<b>SPI port<sup>3</sup></b>							
Data transferred on rising clock edge, clock signal duty cycle 50% regardless of pulse width							
Pulse width (set by user)	RJ45 Connector	With supplied program	0.08		255	μSec	
Transmission rate		-	-	330	-	kbit/sec	
Logic high		Output		2.4	-	5.2	V
Logic Low				0	-	0.3	
Current Source (per pin)		Pin 2, 6 or 8	-	-	-	25	mA
Current Sink (per pin)		Pin 3 or 5	-	-	-	25	
<b>USB port</b>							
Full USB 2.0 capability							
Supply Voltage <sup>2</sup>	USB	-	-	5	-	V	
USB current draw (depends on SPI load)		-	-	50	135	mA	

<sup>2</sup> When using the Converter as a RS232 to SPI or SPI to RS232 Converter, supply voltage can be provided from either the computer's USB port or the provided power adaptor. When used to convert USB signals, all power is supplied via the computer's USB port.

<sup>3</sup> The converter is the SPI master both when transmitting and receiving data.

## Minimum System Requirements

Interface	USB HID
Host operating system	<b>32 Bit operating system:</b> Windows 98®, Windows XP®, Windows Vista®, Windows 7® <b>64 Bit operating system:</b> Windows Vista®, Windows 7® <b>Linux® support:</b> 32/64 Bit operating system
Hardware	Pentium® II or better

## Coaxial Connections

USB	(USB B female)
RS232*	(9 Pin D-Sub female)
SPI**	(RJ45 connector)

## \* 9 Pin D-Sub Pin Connections

PIN Number	Function
2	Transmit
3	Receive
5	GND

## \*\* RJ45 Pin Connections

PIN Number	Function
2	Load Enable
3	Data In
5	Chip Select
6	Clock
8	Data out
1,4,7	GND

## Absolute Maximum Ratings

Parameter	Ratings
Operating Temperature	0°C to +50°C
Storage Temperature	-20°C to +60°C
Voltage input at RS232 receive pin	-30V to +30V
Input Voltage at output contacts	0V to V <sub>CC</sub>
Input Voltage at SPI Input contacts	-0.3V to V <sub>CC</sub> +0.3V
V <sub>CC</sub> Max.	6V

Permanent damage may occur if any of these limits are exceeded.

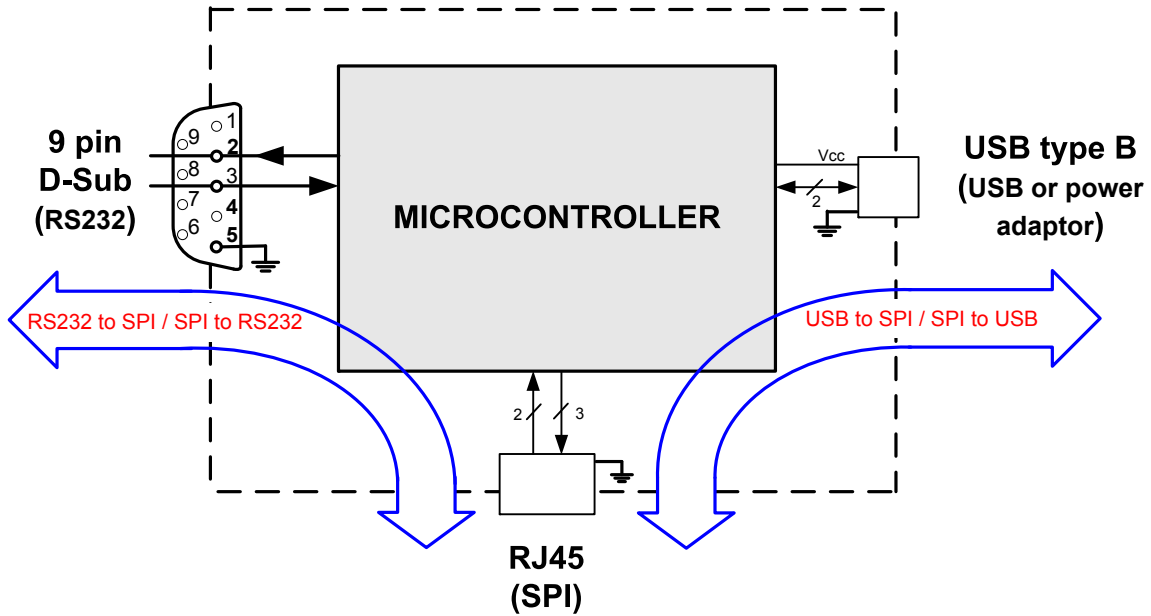


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## Block Diagram



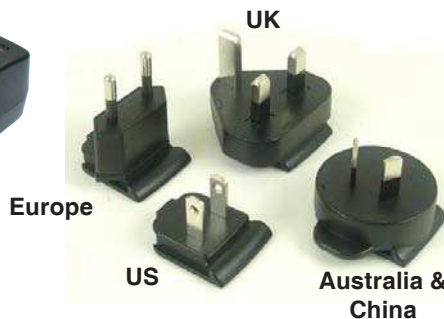
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## Accessories Included



**USB Cable: USB type A(Male) to USB type B(Male)**

- MCL P/N: USB-CBL-AB-3+ (2.7ft.)



**AC/DC 5V<sub>DC</sub> Power Adaptor with US, EU, UK AUS & China two pin power connectors**  
( $I_{max}=1A$ , Operating Temp. 0°C to +45°C)

- MCL P/N: USB-AC/DC-5

## Accessories Included (Continued)



**SPI Cable: RJ45 plug to RJ45 plug**  
(Wire gauge 28<sub>AWG</sub>, Operating Temp. -20 to+60 °C)

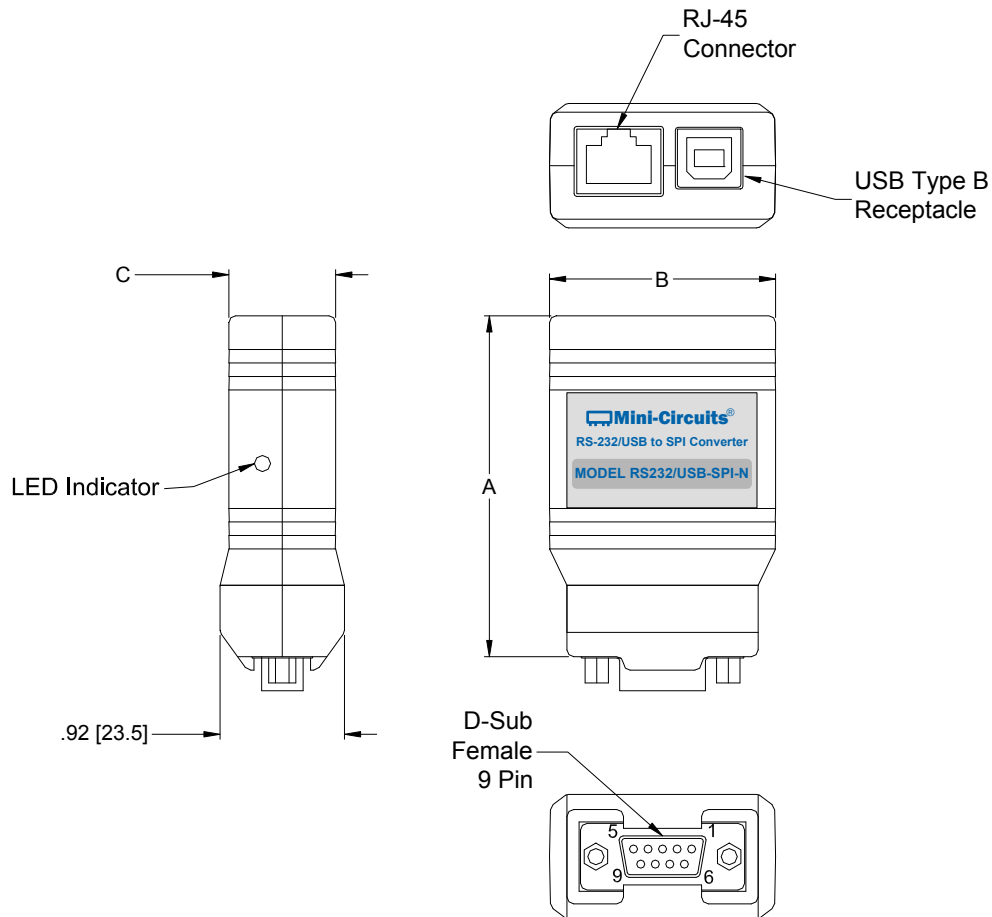
- MCL P/N: CBL-RJ45-MM-5+ (5ft.)



**RS232 cable:9 pin D-sub(Male) to 9 pin D-sub(Female)**  
(Wire gauge 28<sub>AWG</sub>, Operating Temp. -20 to+60 °C)

- MCL P/N: D-SUB9-MF-6+ (6ft.)

## Outline Drawing: (LK1579)



### Outline Dimensions ( $\frac{\text{inch}}{\text{mm}}$ )

A	B	C	D	WT. GRAMS
2.53	1.68	.79	.92	40
64.3	42.7	20.2	23.5	

## Ordering, Pricing & Availability Information see our web site

Model	Description
RS232/USB-SPI-N	Bi-Directional converter for RS232<->SPI and USB<->SPI

Included Accessories	Description
USB-CBL-AB-3+	2.7 ft (0.8 m) USB Cable
PC-ADP-CD	Installation CD
USB-AC/DC-5+	AC/DC +5V power adaptor with USB connector
CBL-RJ45-MM-5+	5 ft Serial data cable RJ45 plug to RJ45 plug (SPI)
D-SUB9-MF-6+	6 ft 9 pin D-Sub(M) to 9 pin D-Sub(F) cable assembly (RS232)

Optional Accessories	Description
USB-CBL-AB-3+ (Spare)	2.7 ft (0.8 m) USB cable
USB-CBL-AB-7+	6.8 ft (2.1 m) USB cable
USB-CBL-AB-11+	11 ft (3.4 m) USB cable
USB-AC/DC-5+ (spare)	AC/DC +5V power adaptor with USB connector
CBL-RJ45-MM-5+ (spare)	5 ft Serial data cable RJ45 plug to RJ45 plug (SPI)
D-SUB9-MF-6+ (spare)	6 ft 9 pin D-Sub(M) to 9 pin D-Sub(F) cable assembly (RS232)