

# 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 RS232 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 an AC/DC power adaptor with a USB type 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 more information on using the RS232/USB-SPI-N converter see the <a href="#">User Guide</a> or <a href="#">Programming guide</a> provided on the CD and available for download from the web. |

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# 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
- Supports a wide range of programming environments (See application note [AN-49-001](#) for details)
- Friendly Windows Graphical User Interface
- [User Guide](#) and [Programming guide](#) available on website



Installation CD with  
Software included

## RS232/USB-SPI-N

| Model No.                   | Description                    | Qty.  |
|-----------------------------|--------------------------------|-------|
| RS232/USB-SPI-N             | USB & RS232 to SPI Conv.       | (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

#### RoHS Compliant

See our web site for RoHS Compliance methodologies and qualifications

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



## Electrical Specifications

| Parameter  | Connectors        | Conditions            | Min. | Typ. | Max. | Units    |
|--|-------------------|-----------------------|------|------|------|----------|
| RS232 port <sup>1</sup>  |                   |                       |      |      |      |          |
| Baud rate 9600; 8 bit word; even parity; stop bit = ‘1’                                      |                   |                       |      |      |      |          |
| Logic levels   | 9 pin D-Sub       | Meets RS232 standard  |      |      |      |          |
| SPI port <sup>2</sup>  |                   |                       |      |      |      |          |
| Data transferred on rising clock edge, clock signal duty cycle 50% regardless of pulse width |                   |                       |      |      |      |          |
| Pulse width (set by user)  | RJ45<br>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   |          |
| USB port   |                   |                       |      |      |      |          |
| Full USB 2.0 capability  |                   |                       |      |      |      |          |
| Supply Voltage <sup>1</sup>  | USB               | –                     | –    | 5    | –    | V        |
| USB current draw<br>(depends on SPI load)  |                   | –                     | –    | 50   | 135  | mA       |

<sup>1</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>2</sup> The converter is the SPI master both when transmitting and receiving data.

## Minimum System Requirements

|                       |  |
|-----------------------|--|
| Interface             | USB HID  |
| Host operating system | <b>Windows 32/64 Bit operating system:</b> Windows 98®, Windows XP®, Windows Vista®, Windows 7®, Windows 8®, Windows 10®<br><b>Linux @ support:</b> 32/64 Bit operating system |
| Hardware              | Pentium® II or better  |

## 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           |
| 1,4,6 - 9  | Not Connected |

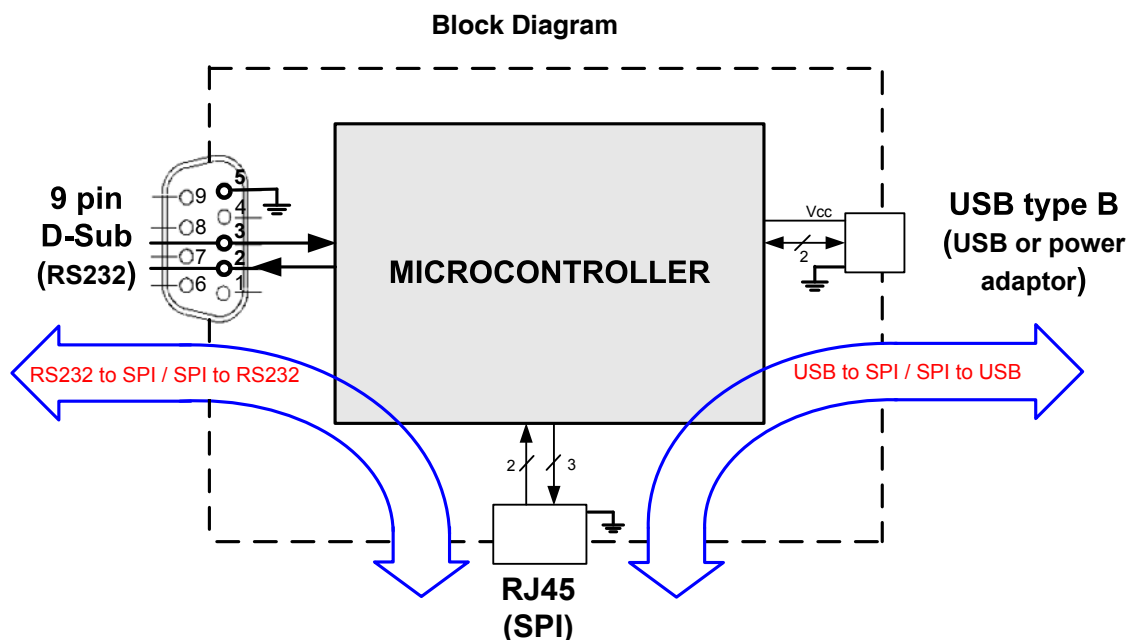
\*\* RJ45  
Pin Connections

| 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 $V_{CC}$         |
| Input Voltage at SPI Input contacts | -0.3V to $V_{CC}+0.3V$ |
| $V_{CC}$ Max.                       | 6V                     |

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



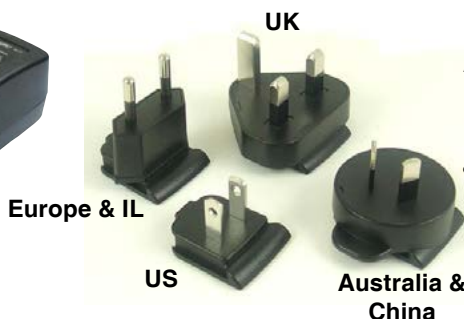
\*When using the Converter as a RS232 to SPI or SPI to RS232 Converter, supply voltage can be provided from either the computer's USB port or the provided power adaptor. When used to convert USB signals, all power is supplied via the computer's USB port.

## 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<sub>max</sub>=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)

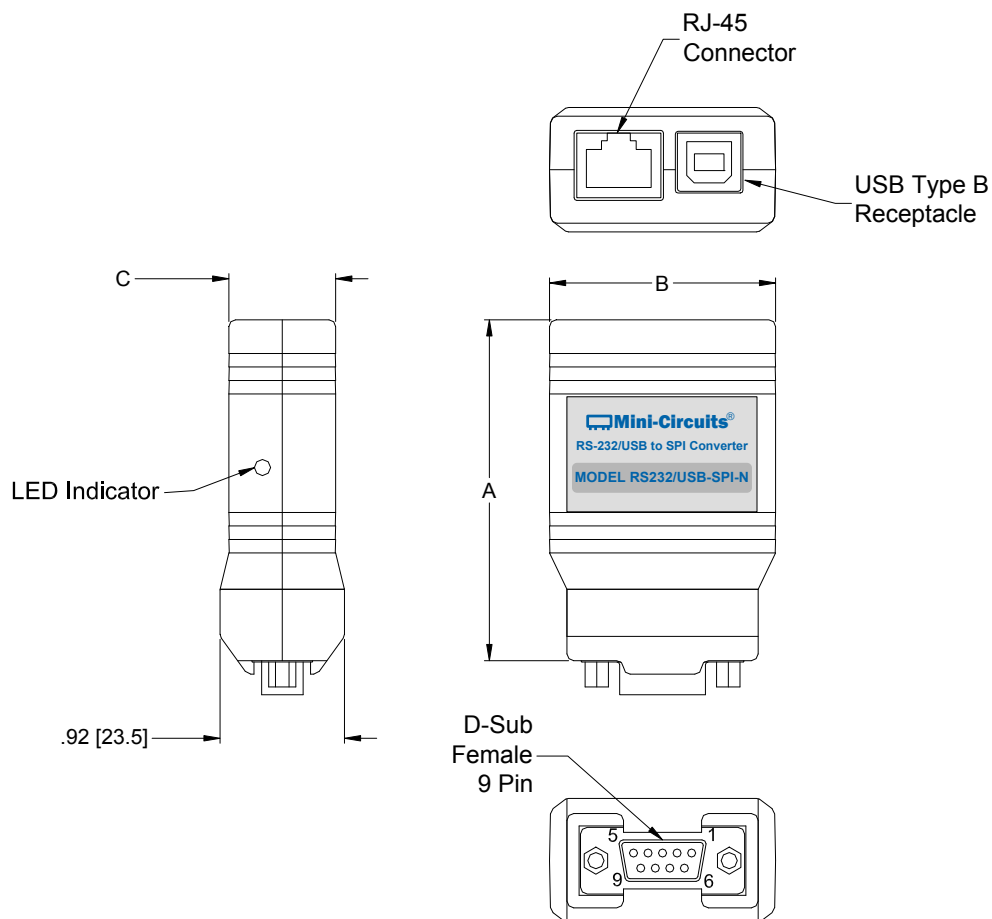
- MCL P/N: CBL-RJ45-MM-5+ (5ft.)



**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.<br>GRAMS |
|--------------|--------------|-------------|-------------|--------------|
| 2.53<br>64.3 | 1.68<br>42.7 | .79<br>20.2 | .92<br>23.5 | 40           |

**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) |

## Additional Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document 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)

