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SparkFun BC75116

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Model: BC75116

1. INTRODUCTION

This manual provides instructions for the SparkFun USB to TTL Serial Cable, Model BC75116. This cable offers a direct method to connect devices with TTL serial interfaces to a computer via a USB port. It is specifically configured for 3.3V operation, making it suitable for use with devices such as the Raspberry Pi for power, communication, and accessing debug consoles.

2. PRODUCT OVERVIEW

The SparkFun USB to TTL Serial Cable is built around an FT232RQ chip, integrated within the USB-A connector. The cable terminates in a 4-pin connector designed for easy connection to various devices.

Key Features:

- FT232RQ based USB cable for reliable serial communication.
- 4-pin connector with clearly defined pinout: RX (Brown), TX (Tan-like/Peach), VCC (Red), and GND (Black).
- Operates at 3.3V logic levels, compatible with Raspberry Pi.



Figure 2.1: USB-A connector side of the cable, housing the FTDI chip.

3. SETUP INSTRUCTIONS

3.1 Driver Installation

Before connecting the cable to your computer, ensure the necessary FTDI drivers are installed. For most modern operating systems (Windows, macOS, Linux), these drivers may install automatically upon first connection. If not, you can download the official FTDI drivers from the FTDI website.

3.2 Physical Connection

1. **Connect to Computer:** Plug the USB-A connector of the cable into an available USB port on your computer.
2. **Identify Pins:** The other end of the cable features a 4-pin connector. Carefully identify each pin based on its color and label:
 - **Brown:** RX (Receive Data)
 - **Tan-like/Peach:** TX (Transmit Data)
 - **Red:** VCC (Power Supply)
 - **Black:** GND (Ground)
3. **Connect to Device:** Connect these pins to the corresponding serial pins on your target device (e.g., Raspberry Pi). Ensure correct polarity and pin matching (RX to TX, TX to RX, VCC to VCC, GND to GND).



Figure 3.1: Detailed view of the 4-pin connector showing pin labels (GND, RXD, TXD, VCC) and wire colors.

Important Note: While the I/O pins (RX, TX) operate at 3.3V, the VCC pin typically supplies 5V from the USB port. Always verify the voltage requirements of your target device before connecting the VCC pin to avoid damage.

4. OPERATING INSTRUCTIONS

Once the drivers are installed and the cable is physically connected, your computer should recognize the cable as a virtual COM port. You can then use any serial terminal program (e.g., PuTTY, Tera Term, minicom) to communicate with your connected device.

1. **Identify COM Port:** Check your computer's Device Manager (Windows) or `/dev/ttyUSB*` (Linux) to identify the assigned COM port number.
2. **Configure Terminal Software:** Open your preferred serial terminal software and configure it with the correct COM port, baud rate, data bits, parity, and stop bits as required by your target device. Common settings include 115200 baud, 8 data bits, no parity, 1 stop bit.
3. **Establish Communication:** Open the serial connection in your terminal software. You should now be able to send and receive data from your connected device.

5. MAINTENANCE

The SparkFun USB to TTL Serial Cable requires minimal maintenance. Follow these guidelines to ensure its longevity:

- Store the cable in a clean, dry environment away from extreme temperatures.
- Avoid bending or kinking the cable excessively, especially near the connectors.
- Do not expose the cable to moisture or corrosive substances.
- Clean the connectors gently with a dry, lint-free cloth if necessary.

6. TROUBLESHOOTING

- **No Device Recognition:**
 - Ensure FTDI drivers are correctly installed. Try reinstalling them from the official FTDI website.
 - Try a different USB port on your computer.
 - Verify the cable is securely plugged into both the computer and the target device.

- **Communication Errors / Corrupted Data:**
 - Double-check the baud rate, data bits, parity, and stop bits settings in your serial terminal software. These must match the target device's configuration.
 - Verify the RX and TX pins are correctly cross-connected (cable RX to device TX, cable TX to device RX).
 - Ensure the ground (GND) connections are solid between the cable and the device.
 - If experiencing persistent issues, especially at higher data rates, consider using the FTDI's FT_PROG utility to adjust internal settings. Some users have reported improved reliability by changing the current request to 140mA and enabling "High Current I/O's" if the default 90mA is insufficient for the application.

- **Device Not Powering On (when using VCC):**
 - Confirm that your device is designed to be powered by a 5V VCC supply, as the VCC pin on this cable typically provides 5V, even though the data lines are 3.3V. Connecting 5V to a 3.3V-only power input can damage your device.
 - Ensure the VCC and GND pins are correctly connected to your device's power input.

7. SPECIFICATIONS

Feature	Detail
Brand	SparkFun
Model	BC75116
Chipset	FT232RQ
Connector Type (Host)	USB Type A
Connector Type (Device)	4-pin separated connector
Pinout	RX (Brown), TX (Tan-like/Peach), VCC (Red), GND (Black)
Logic Voltage	3.3 Volts
VCC Output Voltage	Typically 5 Volts (from USB)
Compatible Devices	Raspberry Pi, other 3.3V TTL serial devices
Data Transfer Rate	Up to 480 Megabits Per Second (USB 2.0)
Item Weight	0.13 Pounds
Color	Black
Specification Met	RoHS, USB-IF

8. WARRANTY INFORMATION

This product is covered by a standard manufacturer's warranty against defects in materials and workmanship. For specific warranty terms and conditions, please refer to the official SparkFun website or contact their customer support. Keep your proof of purchase for warranty claims.

9. CUSTOMER SUPPORT

If you encounter any issues or have questions regarding the SparkFun USB to TTL Serial Cable, please visit the official SparkFun website for support resources, FAQs, and contact information. You may also find helpful community forums and documentation online.