CP2101-EK

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CP2101 EVALUATION KIT USER'S GUIDE

1. Kit Contents

The CP2101 Evaluation Kit contains the following items:

- CP2101 Evaluation Board
- CP2101 Virtual COM Port Drivers CD-ROM
- RS232 Serial Cable
- USB Cable
- CP2101 Evaluation Kit User's Guide (this document)

2. Installing Drivers

The CD-ROM included with the CP2101EK Evaluation Kit contains the Virtual COM Port Drivers for the CP2101. The following files are included on the CD-ROM:

- Driver unpack utility (CP2101_Drivers.exe)
- Version information document (Readme.txt)
- Documentation Directory
    - CP2101 datasheet (CP2101.pdf)
    - CP2101 Evaluation Kit User's Guide (CP2101_UG.pdf)
    - CP2101 Customization Guide (AN144.pdf)
    - Software Directory
        - CP2101 Customization Software (AN144SW.zip)

2.1. Extract all Virtual COM Port Drivers

Initial software setup requires running **CP2101_Drivers.exe** to extract all of the device drivers (Windows and Macintosh). After following the prompts, the utility will copy the driver files to a specified directory or the default directory, "C:\SiLabs\MCU\CP2101". Each set of drivers will be extracted to an appropriately named directory, for example WIN and MACX.

2.2. Virtual COM Port Driver Installation Windows 2000

Follow these steps to install the Windows 2000 VCOM driver:

1. Connect the USB cable between the host computer and the CP2101 target device.
2. Windows will open a "Found New Hardware Wizard" window. Press Next to continue.
3. Select "Search for a suitable driver for my device (recommended)" and press Next.
4. Check "Specify a location" and press Next.
5. Press Browse to locate the "slabbus.inf" driver installation file. The default location is the "C:\SiLabs\MCU\CP2101\WIN" directory. Once this file is selected press OK.
6. Verify that the correct path and filename are shown and press Next.
7. Press Finish to finish installing the "CP2101 USB Composite Device".
8. Windows will open a second "Found New Hardware Wizard" window. Press Next to continue.
9. Select "Search for a suitable driver for my device (recommended)" and press Next.
10. Check "Specify a location" and press Next.
11. Press Browse to locate the "slabw2k.inf" driver installation file. The default location is the "C:\SiLabs\MCU\CP2101\WIN" directory. Once this file is selected press OK.
12. Verify that the correct path and filename are shown and press Next.
13. Press Finish to finish installing the "CP2101 USB to UART Bridge Controller".

2.3. Virtual COM Port Driver Installation Windows XP

Follow these steps to install the Windows XP VCOM driver:

1. Connect the USB cable between the host computer and the CP2101 target device.
2. Windows will open a "Found New Hardware Wizard" window.
3. Select "Install from a list or specific location (Advanced)" and press Next.
4. Select "Include this location in the search".
5. Press Browse to locate the "C:\SiLabs\MCU\CP2101\WIN" directory. Once this directory is selected press OK.
6. Verify that the correct path and filename are shown and press Next.
7. Press Finish to finish installing the "CP2101 USB Composite Device".
8. Windows will open a second "Found New Hardware Wizard" window.
9. Select "Install from a list or specific location (Advanced)" and press Next.
10. Select "Include this location in the search".
11. Press Browse to locate the "C:\SiLabs\MCU\CP2101\WIN" directory. Once this directory is selected press OK.
12. Verify that the correct path and filename are shown and press Next.
13. Press Finish to finish installing the "CP2101 USB to UART Bridge Controller".

2.4. Virtual COM Port Driver Installation Windows 98 SE

Follow these steps to install the Windows 98 VCOM driver:

1. Connect the USB cable between the host computer and the CP2101 target device.
2. Windows will open a "Found New Hardware Wizard" window. Press Next to continue.
3. Select "Search for the best driver for your device (Recommended)" and press Next.
4. Select "Specify a location".
5. Press Browse to locate the "C:\SiLabs\MCU\CP2101\WIN" directory. Once this directory is selected press Next.
6. Verify that the correct path and filename are shown and press Next.
7. Press Finish to finish installing the "CP2101 USB Composite Device".
8. Windows will open a second "Found New Hardware Wizard" window. Press Next to continue.
9. Select "Search for the best driver for your device (Recommended)" and press Next.
10. Select "Specify a location".
11. Press Browse to locate the "C:\SiLabs\MCU\CP2101\WIN" directory. Once this directory is selected press Next.
12. Verify that the correct path and filename are shown and press Next.
13. Press Finish to finish installing the "CP2101 USB to UART Bridge Controller".

2.5. Virtual COM Port Driver Installation Macintosh

To install the Macintosh OS-X virtual COM port driver, extract the **cardinal-osx-V1_00c-release.zip** file located in the MACX directory created in Section 2.1. Next, run the extracted file **SLAB_USBtoUART Installer**. To uninstall the driver, run the extracted file **SLAB_USBtoUART Uninstaller**.

Macintosh OS-9 virtual COM port drivers are currently available by request only. To obtain a copy of these drivers contact a Silicon Laboratories MCU Tools Support representative at www.silabs.com.

2.6. Virtual COM Port Driver Installation Linux 2.40

The Linux virtual COM port driver included with the CP2101EK evaluation kit support Linux versions 2.40 and later. To install the driver, extract the **cardinal-redhat9-V0_81a.tar** file located in the LINUX directory created in Section 2.1. Next, run the extracted file **load_mcci_usb**. To uninstall the driver, run the extracted file **unload_mcci_usb**.

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3. CP2101 Hardware Interface

The evaluation board is connected to a PC as shown in Figure 1.

1. Connect one end of the USB cable to a USB Port on the PC.
2. Connect the other end of the USB cable to the USB connector on the CP2101 evaluation board.
3. Connect one end of the RS232 serial cable to the DB-9 connector on the CP2101 evaluation board.
4. Connect the other end of the RS232 serial cable to the target serial device.
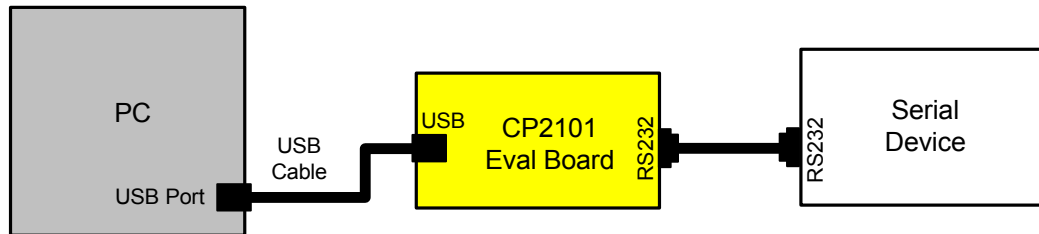

Figure 1. Hardware Setup

4. CP2101 Software Interface

Once connected to a USB port as described in section 3.0, the CP2101 will appear as a COM port in the Device Manager. The CP2101 will always use the lowest available COM port for operation. For instance, if COM ports 1 thru 3 are in use by other peripherals and applications, the CP2101 will use COM 4.

The CP2101 functions identically to a COM port from the reference point of both the host application and the serial device, and it can support serial device control requests defined in the Microsoft Win32® Communications API.

5. Target Board

The CP2101 Evaluation Kit includes an evaluation board with a CP2101 device pre-installed for evaluation and pre-liminary software development. Numerous input/output (I/O) connections are provided to facilitate prototyping using the evaluation board. Refer to Figure 2 for the locations of the various I/O connectors.

J1	DB9 connector for RS232 interface
J2	UART signal access connector
J3	USB connector for USB interface
J4	Not used
D1	Power indicator LED
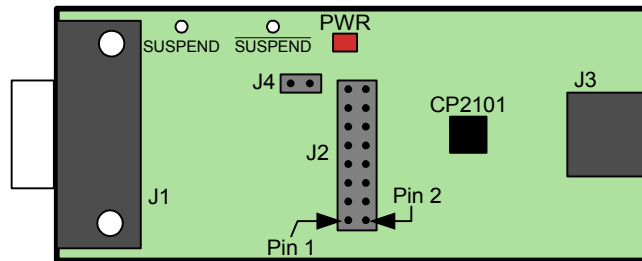
Figure 2. CP2101 Evaluation Board

5.1. Universal Serial Bus (USB) Interface (J3)

A Universal Serial Bus (USB) connector (J3) is provided to facilitate connections to the USB interface on the CP2101. See Table 1 for the USB pin definitions.

Table 1. USB Connector Pin Descriptions

Pin #	Description
1	VBUS
2	D-
3	D+
4	GND (Ground)

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5.2. UART Signals (J1, J2)

A RS232 transceiver circuit and DB-9 connector (J1) are provided on the evaluation board to connect the CP2101 virtual serial port to external serial devices. See Table 2 for the RS232 J1 pin descriptions. The J2 connector is provided to facilitate direct access to the CP2101's UART signals. Shorting blocks on J2 are required to connect the UART signals to J1. See Table 3 for J2 pin descriptions.

Table 2. RS232 Pin Descriptions

Pin	Signal	CP2101 Direction	Description
1	DCD	Input	Data Carrier Detect
2	RXD	Input	Receive Data
3	TXD	Output	Transmit Data
4	DTR	Output	Data Terminal Ready
5	GND		Ground
6	DSR	Input	Data Set Ready
7	RTS	Output	Request to Send
8	CTS	Input	Clear to Send
9	RI	Input	Ring Indicator

Table 3. J2 Pin Descriptions

Pins	Signal	CP2101 Direction	Description
1-2	TXD	Output	Transmit Data
3-4	RXD	Input	Receive Data
5-6	DTR	Output	Data Terminal Ready
7-8	RI	Input	Ring Indicator
8-10	DCD		Data Carrier Detect
11-12	DSR	Input	Data Set Ready
13-14	CTS	Input	Clear to Send
15-16	RTS	Output	Request to Send

6. Schematic
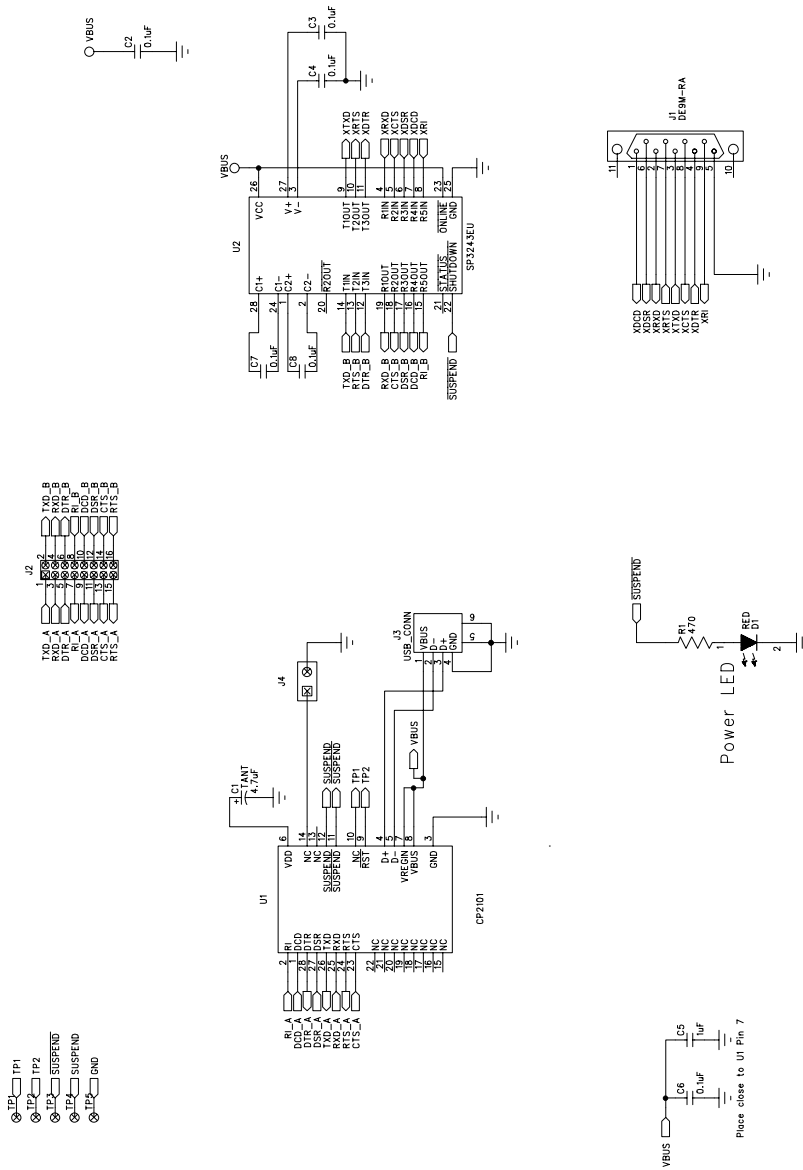
Figure 3. CP2101 Evaluation Board Schematic

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Notes:

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