CP2102-EK

CP2102 EVALUATION KIT USER'S GUIDE

1. Kit Contents

The CP2102 Evaluation Kit contains the following items:
- CP2102 Evaluation Board
- CP210x Drivers and Product Information CD-ROM. CD content includes:
  - CP210x Virtual COM Port Drivers for Windows, Linux and Mac
  - USBXpress Driver Development Kit for Windows
  - Documentation:
    - CP2102 Data Sheet
    - CP2102 Evaluation Kit User's Guide
    - CP210x Device Customization Guide and Software (AN144)
    - Serial Communications Guide for the CP210x and Examples (AN197)
    - CP210x Baud Rate Support Guide and Software (AN205)
    - USB Driver Customization Guide and Software (AN220)
    - Port Configuration and GPIO for CP210x Guide and Examples (AN223)
- RS232 Serial Cable
- USB Cable

2. Software Setup

The included CD-ROM contains the Virtual COM Port Drivers, USBXpress Driver Development kit, and additional documentation. Insert the CD-ROM into a system's CD-ROM drive. If using a Windows PC an installer will automatically launch, allowing you to install the software or read documentation by clicking buttons on the Installation Panel. If the installer does not automatically start when you insert the CD-ROM, run *autorun.exe* found in the root directory of the CD-ROM. Refer to the *ReleaseNotes CP210x CD.txt* file on the CD-ROM for the latest information regarding versions and known problems and restrictions. If a non-Windows PC is used, manually browse to the directory on the CD-ROM that contains drivers for your OS. The instructions in this document assume a Windows PC is being used.

2.1. Virtual COM Port Driver Installation

Press the "CP210x Drivers" button on the main installation panel to access CP210x Virtual COM Port Drivers for Windows, Linux and Mac operating systems. Choose the option for the target system.

2.1.1. Virtual COM Port Driver Installation Windows 2000/XP/2003 Server/Vista (x86, x64)

Press the button titled "Windows Drivers" to begin the driver installation process. This will launch a driver "unpacker" utility.

1. Follow the steps to copy the driver files to the desired location. The default directory is *C:\SiLabs\MCU\CP210x*.
2. The final window will give an option to install the driver on the target system. Select the "Launch the CP210x VCP Driver Installer" option if you are ready to install the driver.
3. If selected, the driver installer will now launch providing an option to specify the driver installation location. After pressing the "Install" button, the installer will search your system for copies of previously installed CP210x Virtual COM Port drivers. It will let you know when your system is up to date. The driver files included in this installation have been certified by Microsoft.
4. If the "Launch the CP210x VCP Driver Installer" option was not selected in step 3, the installer can be found in the location specified in step 2, by default *C:\SiLabs\MCU\CP210x\Windows_2K_XP_S2K3_Vista*. At this location run *CP210xVCPInstaller.exe*.
5. To complete the installation process, connect a USB cable between the host computer and the CP2102 Evaluation Board. Windows will automatically finish the driver installation. Information windows will pop up from the taskbar to show the installation progress.

6. If needed, the driver files can be uninstalled by selecting "Silicon Laboratories CP210x USB to UART Bridge (Driver Removal" option in the "Add or Remove Programs" window.

2.1.2. Virtual COM Port Driver Installation Macintosh

The button titled "Mac Drivers" provides direct access to the Mac OSX and OS9 packed driver files on the CD-ROM.

1. Copy these files to your target system.
2. To install the Mac OSX virtual COM port driver:
   a. Extract the **Mac_OSX_VCP_Driver.zip** file.
   b. Next, run the extracted file **SLAB_USBtoUART Installer**.
   c. To uninstall the driver, run the extracted file **SLAB_USBtoUART Uninstaller**.
3. To install the Mac OX9 virtual COM port driver:
   a. Extract the **Mac_OS9_VCP_Driver.sit** file.
   b. Next, run the extracted file **SLAB_USBtoUART-InstScr**.

2.1.3. Virtual COM Port Driver Installation Linux

The button titled "Linux Drivers" provides direct access to the Linux 2.6 and Linux RedHat 2.4 packed driver files on the CD-ROM.

1. Copy these files to your target system.
2. To install the Linux RedHat 2.4 virtual COM port driver:
   a. Extract the **linux_VCP_driver.tar.gz** file.
   b. Next, run the extracted file **load_mcci_usb**.
   c. To uninstall the driver, run the extracted file **unload_mcci_usb**.
3. To install the Linux 2.6 virtual COM port driver:
   a. Extract the **linux_VCP_v26_driver_src.zip** file.
   b. See **SIL00205_RNF_20060902.doc** for further installation instructions.

2.2. USBXpress Driver Development Kit

Press the "USBXpress" button on the main installation panel to access the USBXpress Driver Development Kit for Windows operating systems. Choose the option for the target system.

The Silicon Laboratories USBXpress® Development Kit provides a complete host software solution for interfacing to CP210x devices. No USB protocol or host device driver expertise is required. Instead, a simple, high-level Application Program Interface (API) for the host software is used to provide complete USB connectivity. The USBXpress Development Kit includes Windows device drivers, Windows device driver installer, host interface function library (host API) provided in the form of a Windows Dynamic Link Library (DLL). See Application Note AN169, "USBXpress Programmer's Guide" for detailed information on customizing the USBXpress drivers.

2.2.1. USBXpress Installation for Windows 2000/XP/2003 Server/Vista (x86, x64)

Press the button titled "USBXpress for Windows" to install USBXpress for Windows 2000/XP/2003 Server/Vista (x86, x64). Follow the steps to install the software to the desired location. The default installation directory is *C:\SiLabs\MCU\USBXpress*.

2.2.2. USBXpress Installation for Windows 98SE

Press the button titled "USBXpress for Windows 98SE" to install USBXpress v2.42. Versions of USBXpress newer than v2.42 do not support Windows 98SE. Follow the steps to install the software to the desired location. The default installation directory is *C:\SiLabs\MCU\USBXpress*.

2.2.3. USBXpress Installation for Windows CE

The button titled "USBXpress for Windows CE" provides direct access to the packed driver files on the CD-ROM. An index file will open showing all the supported Windows CE platforms. Right click on a "Download" link to copy the desired package to your target system. Further installation instructions can be found in the *ReadMe.txt* file contained inside the driver package.

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3. CP2102 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 CP2102 evaluation board.
3. Connect one end of the RS232 serial cable to the DB-9 connector on the CP2102 evaluation board.
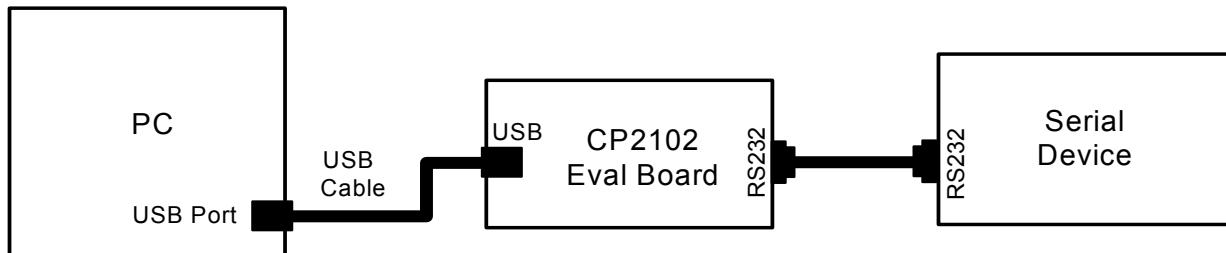4. Connect the other end of the RS232 serial cable to the target serial device.

Figure 1. Hardware Setup

4. CP2102 Software Interface

If the Virtual COM Port drivers are used, the CP2102 will appear as a COM port in the Device Manager, as shown in Figure 2. The CP2102 will always use the lowest available COM port for operation. For instance, if COM ports 1 through 3 are in use by other peripherals and applications, the CP2102 will use COM 4.

The CP2102 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.

If the USBXpress drivers are used, the CP2102 will appear as a USB USBXpress device, as shown in Figure 2.
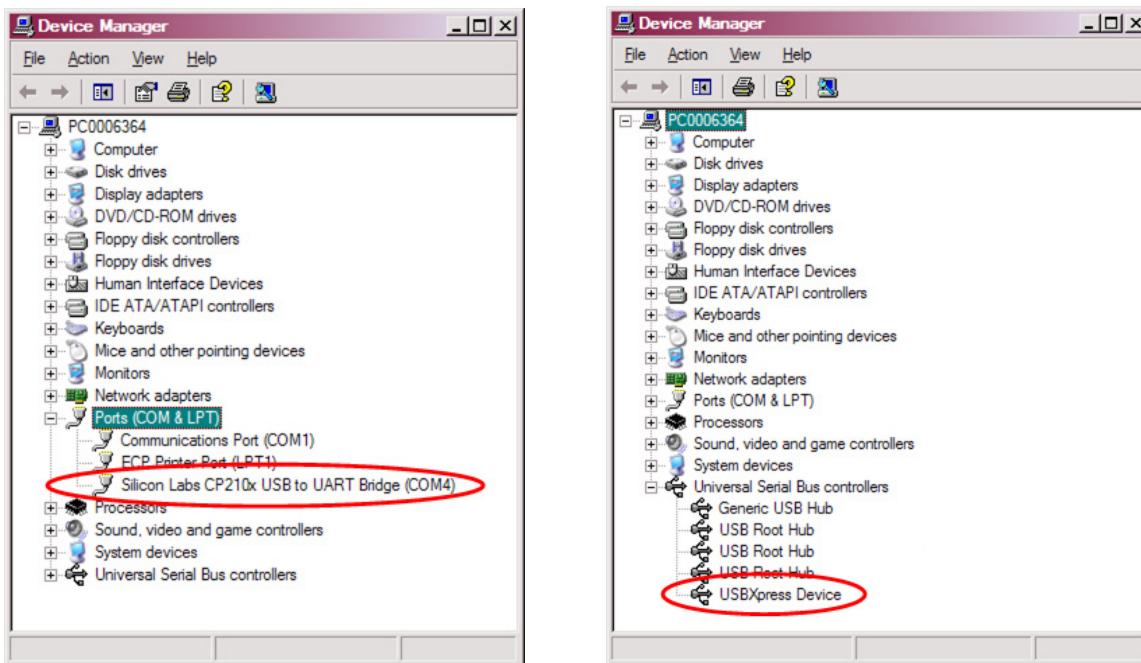

Figure 2. CP210x in Device Manager

5. Target Board

The CP2102 Evaluation Kit includes an evaluation board with a CP2102 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 3 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   SUSPEND indicator LED
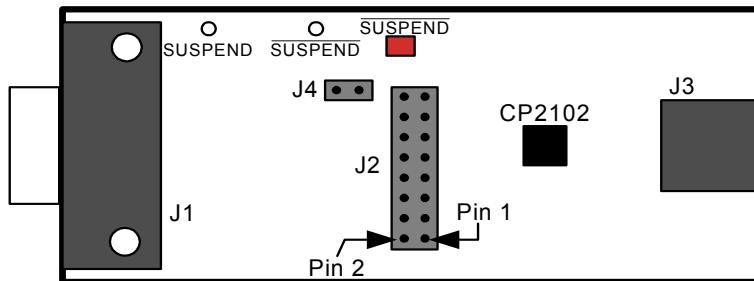
Figure 3. CP2102 Evaluation Board

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 CP2102. 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 CP2102 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 CP2102'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	CP2102 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	CP2102 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
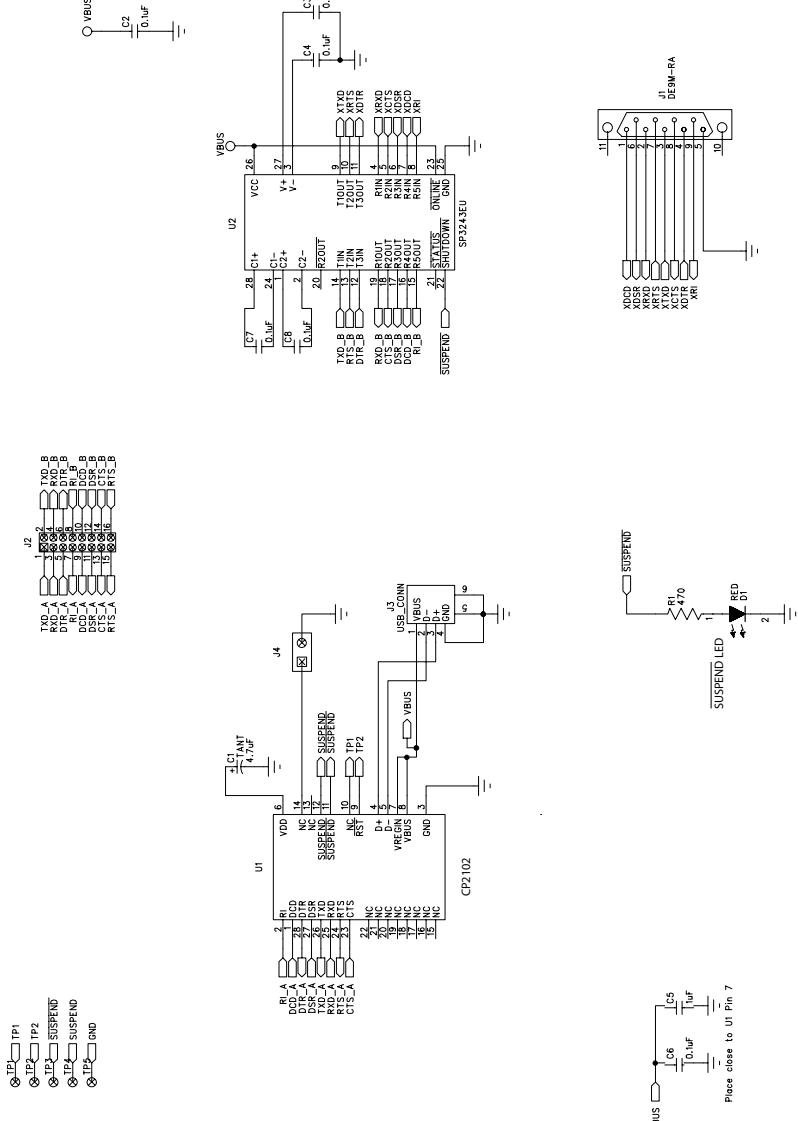
Figure 3. CP2102 Evaluation Board Schematic

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DOCUMENT CHANGE LIST

Revision 0.1 to Revision 0.2

■ Updated Figure 3 on page 4:
  ● Pin 1 and Pin 2 labels have been corrected

Revision 0.2 to Revision 0.3

■ Updated CD-ROM contents in Section "1. Kit Contents" to correspond with versions 4.0 and later of the CP210x Drivers and Product Information CD-ROM.

■ Updated Section "2. Software Setup" to include installation instructions for software included on versions 4.0 and later of the CP210x Drivers and Product Information CD-ROM.

■ Added installation instructions for USBXpress Driver Develoment Kit in Section "2. Software Setup".

■ Added screenshots in Section "4. CP2102 Software Interface", for the Device Manager window after correct installation of driver software.

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CONTACT INFORMATION

Silicon Laboratories Inc.
400 West Cesar Chavez
Austin, TX 78701
Tel: 1+(512) 416-8500
Fax: 1+(512) 416-9669
Toll Free: 1+(877) 444-3032

Email: MCU@silabs.com
Internet: www.silabs.com

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