CP2105-EK

CP2105 EVALUATION KIT USER'S GUIDE

1. Kit Contents

The CP2105 Evaluation Kit contains the following items:

- CP2105 Evaluation Board
- Two RS232 Serial Cables
- USB Cable
- Quick Start Guide

2. Relevant Documentation

Application notes can be found on the Interface Application Notes page for all fixed-function devices: www.silabs.com/interface-appnotes.

- **AN721: USBXpress™ Device Configuration and Programming Guide** — Customize the VID, PID, serial number, and other parameters stored in the CP2105 one-time programmable ROM.
- **AN197: Serial Communications Guide for CP210x** — Programming guide for using the Virtual COM Port (VCP) drivers.
- **AN169: USBXpress® Programmer's Guide** — Programming guide for using the USBXpress drivers.
- **AN220: USB Driver Customization** — VCP or USBXpress driver customization tool.
- **AN223: Runtime GPIO Control for CP210x** — Programming guide and DLL for runtime control of the CP2105 GPIO pins.
- **AN571: CP210x Virtual COM Port Interface** — USB interface details for CP210x devices.

3. Software Setup

The software packages and documentation for the CP2105 kit can be found on the device page (https://www.silabs.com/interface/usb-bridges/classic/device.cp2105) and include the following:

- CP210x Drivers (Software & Tools Tab)
- USBXpress Host SDK (Software & Tools Tab)
- Documentation: (Tech Docs Tab)
  - CP2105 data sheet
  - CP2105 Evaluation Kit User's Guide (this document)

3.1. USBXpress Driver Development Kit

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 using the USBXpress drivers.

The USBXpress drivers are available here: https://www.silabs.com/developers/direct-access-drivers.

Click the USBXpress Development Kit link in the Downloads section to download the USBXpress drivers. Run the installer and follow the steps to install the software to the desired location. The default installation directory is *C:\SiliconLabs\MCU\USBXpress_SDK*.

Further installation instructions for the WinCE drivers can be found in the *ReadMe.txt* file contained inside the driver package.

4. CP2105 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 CP2105 evaluation board.
3. Connect one end of the RS232 serial cable to the DB-9 connector on the CP2105 evaluation board.
4. Connect the other end of the RS232 serial cable to the target serial device.
5. (Optional) Connect the second RS232 serial cable to the second DB-9 connector on the CP2105 evaluation board.
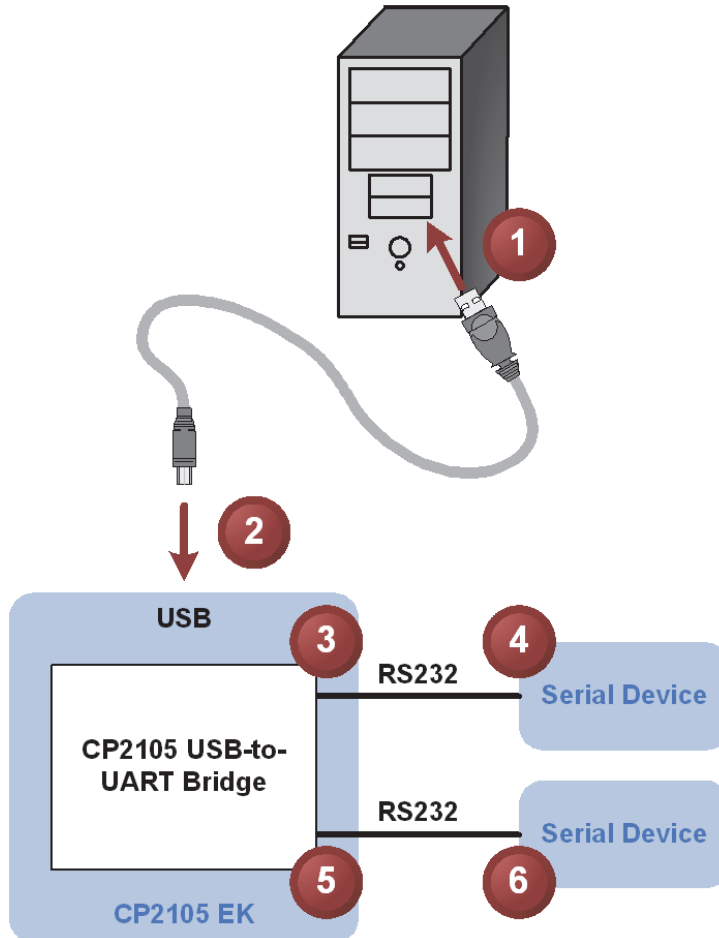6. (Optional) Connect the other end of the second RS232 serial cable to the second target serial device.

Figure 1. Hardware Setup

5. CP2105 Software Interface

If the Virtual COM Port drivers are used, the CP2105 will appear as two COM ports in the Device Manager, as shown in Figure 2. The CP2105 will always use the lowest available COM ports for operation. For instance, if COM ports 1 and 2 are in use by other peripherals and applications, the CP2105 will use COM 3 and COM 4.

The CP2105 functions identically to two COM ports from the reference point of both the host application and the serial devices, and it can support serial device control requests defined in the Microsoft Win32® Communications API. Examples for how to communicate with the device as two serial COM ports are included in AN197 on the www.silabs.com/interface-appnotes page or in the USBXpress Host SDK.

If the USBXpress drivers are used, the CP2105 will appear as two USB USBXpress devices as shown in Figure 2. Examples for how to communicate with the device using the USBXpress interface are included in AN169 on the www.silabs.com/interface-appnotes page.
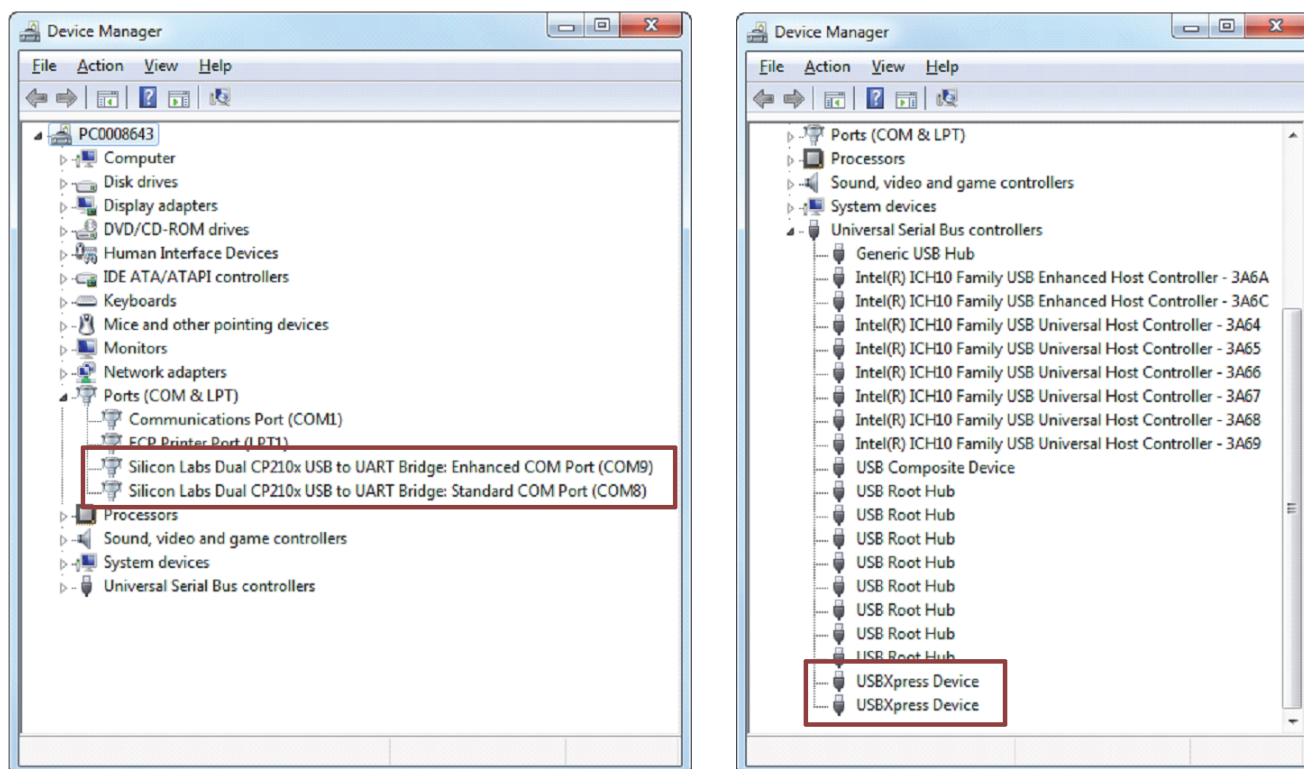
Figure 2. CP2105 in Device Manager

6. Target Board

The CP2105 Evaluation Kit includes an evaluation board with a CP2105 device preinstalled for evaluation and preliminary 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.

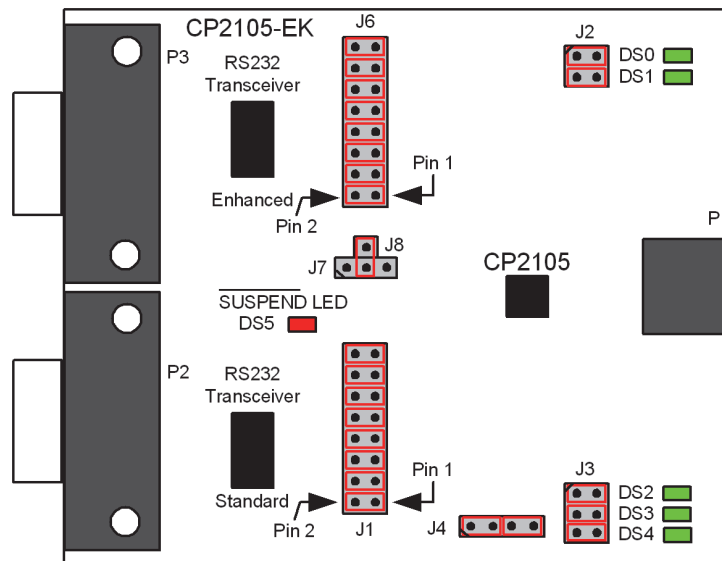|	
P1	USB connector for USB interface
P2	DB9 connector for Standard RS232 interface
P3	DB9 connector for Enhanced RS232 interface
J1	Standard UART signal access connector
J2, J3	GPIO access connector
J4	Power connector
J6	Enhanced UART signal access connector
J7, J8	SUSPEND LED source connector
DSS–DS4	Green GPIO LEDs
DS5	Red SUSPEND indicator LED

Figure 3. CP2105 Evaluation Board with Default Shorting Blocks Installed

6.1. LED Headers (J2, J3)

Connectors J2 and J3 are provided to allow access to the GPIO pins on the CP2105 when in GPIO mode. Place shorting blocks on J2 and J3 to connect the GPIO pins to the five green LEDs DS0–DS4. These LEDs can be used to indicate active communications through the CP2105. Table 1 shows the LED corresponding to each header position. When using the CP2105 in Modem mode, the shorting blocks on J2 and J3 should be removed.

Table 1. J2 and J3 LED Locations

LED	Pins
DS0	J2[1:2]
DS1	J2[3:4]
DS2	J3[1:2]
DS3	J3[3:4]
DS4	J3[5:6]

SILICON LABS

6.2. Universal Serial Bus (USB) Interface (P1)

A Universal Serial Bus (USB) connector (P1) is provided to facilitate connections to the USB interface on the CP2105. See Table 2 for the USB pin definitions.

Table 2. USB Connector Pin Descriptions

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

6.3. UART Signals (P2, P3, J1, J6)

Two RS232 transceiver circuits and DB-9 connectors (P2, P3) are provided on the evaluation board to connect the CP2105 virtual serial ports to external serial devices. See Table 3 for the RS232 P2 and P3 pin descriptions. The J2 and J6 connectors are provided to facilitate direct access to the CP2105's UART signals. Shorting blocks on J1 are required to connect the Standard UART signals to P2, and the shorting blocks on J6 are required to connect the Enhanced UART signals to P3. See Table 4 for J1 and J6 pin descriptions.

Table 3. RS232 Pin Descriptions

Pin	Signal	CP2105 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 4. J1, J6 Pin Descriptions

Pins	Signal	CP2105 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
9-10	DCD*	Input	Data Carrier Detect
11-12	DSR	Input	Data Set Ready
13-14	CTS	Input	Clear to Send
15-16	RTS	Output	Request to Send
*Note: J6[9-10] Pins must be disconnected during a programming operation.			

6.4. Power Connector (J4)

This header (J4) is included on the evaluation board to provide several power options. The following describes the functions of the pins.

- Pins 1–2 connect CP2105 VIO input (Pin 5) to CP2105 VDD (Pin 6). Remove the shorting block to power VIO from an external source.
- Pins 3–4 connect the main +3 V net to the CP2105 VDD (Pin 6). The main +3 V net powers the other components (five green LEDs and RS-232 Sipex Part) on the board.

6.5. $\overline{\text{SUSPEND}}$ LED Source Selector(J7, J8)

These headers (J7, J8) are included on the evaluation board to provide several options for the $\overline{\text{SUSPEND}}$ LED source. The following describes the function of each pin:

- J7[1:2] connects CP2105 Standard UART $\overline{\text{SUSPEND}}$ output (Pin 1) to the $\overline{\text{SUSPEND}}$ LED.
- J7[2:3] connects CP2105 Enhanced UART $\overline{\text{SUSPEND}}$ output (Pin 17) to the $\overline{\text{SUSPEND}}$ LED.
- J7[2]:J8[1] connects the main +3 V net to the $\overline{\text{SUSPEND}}$ LED. This will cause the $\overline{\text{SUSPEND}}$ LED to act as a power LED.
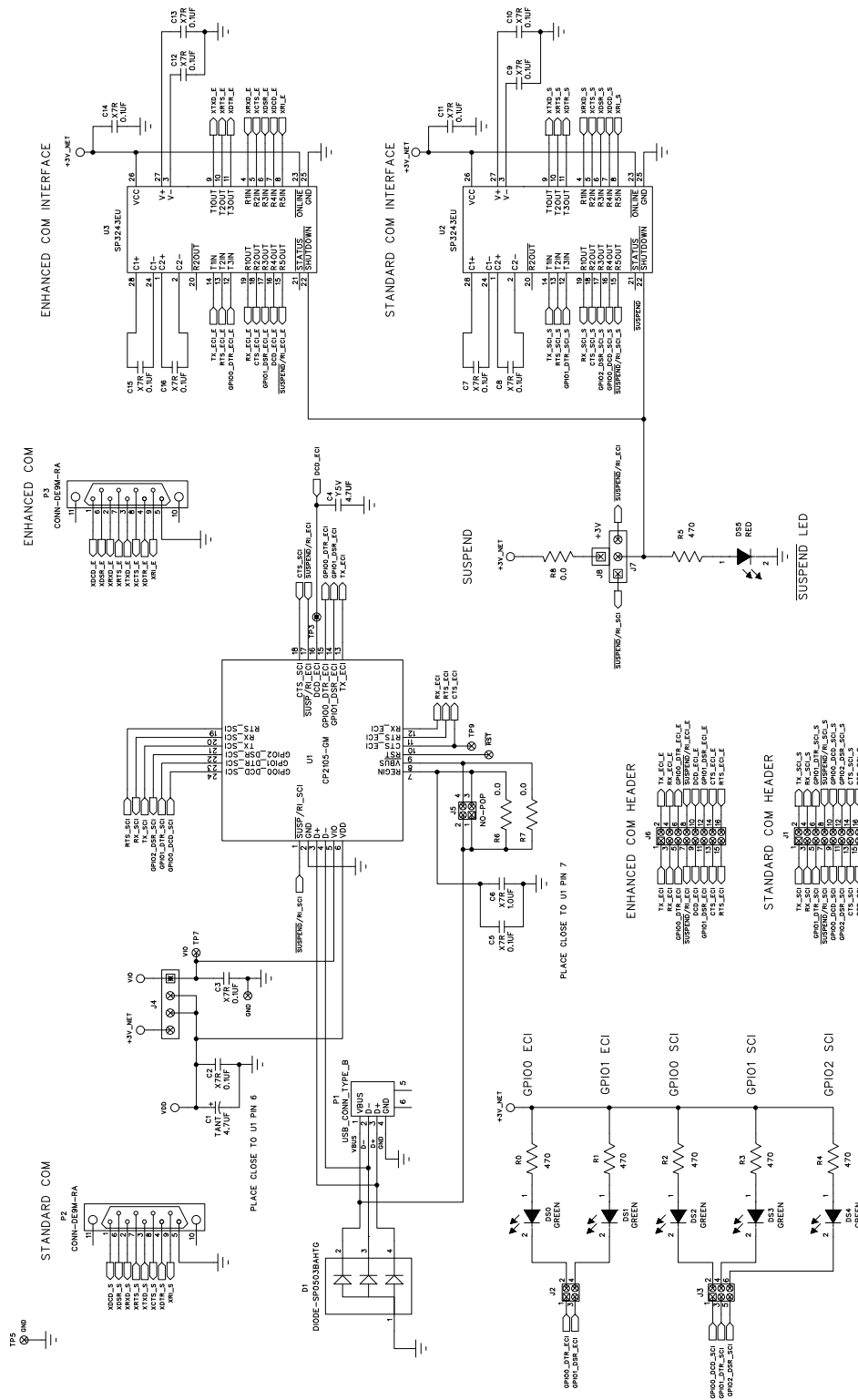
7. Schematic

Figure 4. CP2105 Evaluation Board Schematic

SILICON LABS

CP2105-EK

DOCUMENT CHANGE LIST

Revision 0.1 to Revision 0.2

■ Updated Windows installation instructions for VCP drivers.
■ Updated Windows installation instructions for USBXpress drivers.

Revision 0.2 to Revision 0.3

■ Updated Figure 3 with shorting blocks installed.

Revision 0.3 to Revision 0.4

■ Updated "Figure 2. CP2105 in Device Manager" on page 3.

Revision 0.4 to Revision 0.5

■ Updated "1. Kit Contents" to change CD-ROM to DVD.
■ Added "2. Relevant Documentation".
■ Updated "3. Software Setup" to point to the drivers on the website.
■ Updated Figure 1 and Figure 2.

Revision 0.5 to Revision 0.6

■ Updated "Kit Contents" on page 1 to remove DVD and change RS232 Serial Cable to Two RS232 Serial Cables.
■ Updated "Relevant Documentation" on page 1.
■ Updated "Software Setup" on page 1.

Revision 0.6 to Revision 0.7

■ Corrected J1 and J6 Description for Figure 3.
■ Added note for J6[9:10] pins to Table 4.
■ Updated C4 value in Figure 4.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Interface Development Tools *category:*

Click to view products by Silicon Labs *manufacturer:*

Other Similar products are found below :

DP130SSEVM ISO3086TEVM-436 ADP5585CP-EVALZ CHA2066-99F AS8650-DB MLX80104 TESTINTERFACE I2C-CPEV/NOPB ISO35TEVM-434 416100120-3 XR18910ILEVB XR21B1421IL28-0A-EVB EVAL-ADM2491EEBZ MAXREFDES23DB# MAX9286COAXEVKIT# MAX3100EVKIT MAX13235EEVKIT XR21B1424IV64-0A-EVB CMOD232+ MAX13042EEVKIT+ MAX14838EVKIT# MAXCAM705OV635AAA# MAX9205EVKIT DS100BR111AEVK/NOPB DC241C MAX9286RCARH3DB# DC1794A SN65HVS885EVM EVB81112-A1 DFR0257 XR22404CG28EVB ZLR964122L ZLR88822L EVK-U23-01S EVK-W262U-00 DC196A-B DC196A-A DC327A OM13585UL MAX16972AGEEVKIT# MARS1-DEMO3-ADAPTER-GEVB MAX7315EVKIT+ PIM511 PIM536 PIM517 DEV-17512 STR-FUSB3307MPX-PPS-GEVK MAXREFDES177# EVAL-ADM2567EEBZ EVAL-ADN4654EBZ MAX2202XEVKIT#