

SINGLE-CHIP USB TO UART BRIDGE



Product Description:

The CP2102 is a highly-integrated USB-to-UART Bridge Controller providing a simple solution for updating RS-232 designs to USB using a minimum of components and PCB space. The CP2102 includes a USB 2.0 full-speed function controller, USB transceiver, oscillator, EEPROM, and asynchronous serial data bus (UART) with full modem control signals in a compact 5 x 5 mm MLP-28 package. No other external USB components are required.

The on-chip EEPROM may be used to customize the USB Vendor ID, Product ID, Product Description String, Power Descriptor, Device Release Number, and Device Serial Number as desired for OEM applications. The EEPROM is programmed on-board via the USB allowing the programming step to be easily integrated into the product manufacturing and testing process.

Product Specification:

Single-Chip USB to UART Data Transfer

- Integrated USB transceiver; no external resistors required
- Integrated clock; no external crystal required
- Integrated 1024-Byte EEPROM for vendor ID, product ID, serial number, power descriptor, release number, and product description strings
- On-chip power-on reset circuit
- On-chip voltage regulator: 3.3 V output
- 100% pin and software compatible with CP2101

USB Function Controller

- USB Specification 2.0 compliant; full-speed (12 Mbps)
- USB suspend states supported via SUSPEND pins

Asynchronous Serial Data BUS (UART)

- All handshaking and modem interface signals
- Data formats supported:
 - Data bits: 5, 6, 7, and 8
 - Stop bits: 1, 1.5, and 2
 - Parity: odd, even, mark, space, no parity
- Baud rates: 300 bps to 1 Mbps
- 576 Byte receive buffer; 640 byte transmit buffer
- Hardware or X-On/X-Off handshaking supported
- Event character support
- Line break transmission

Virtual COM Port Device Drivers

- Works with existing COM Port PC applications
- Royalty-free distribution license
- Windows 98 SE/2000/XP
- MAC OS-9
- MAC OS-X
- Linux 2.40 and greater

USBXpress™ Direct Driver Support

Example Applications

- Upgrade of RS-232 legacy devices to USB
- Cellular phone USB interface cable
- PDA USB interface cable
- USB to RS-232 serial adapter

Supply Voltage

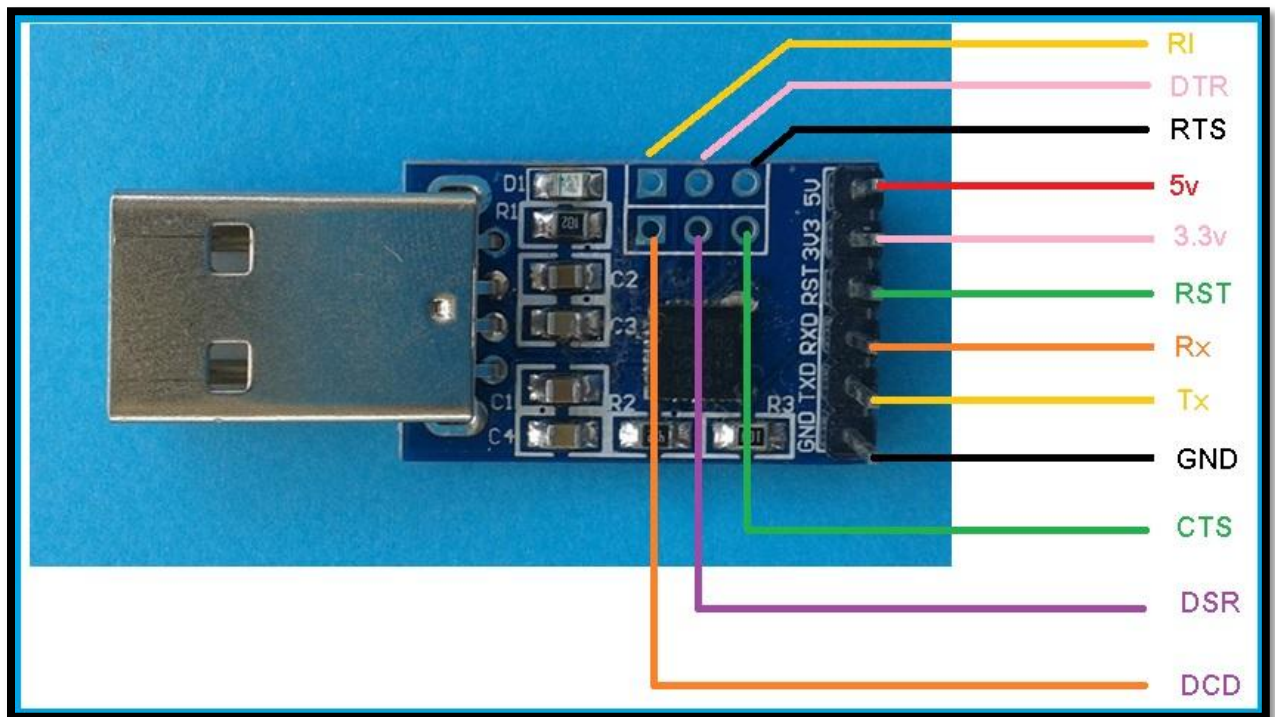
- Self-powered: 3.0 to 3.6 V
- USB bus powered: 4.0 to 5.25 V

Package

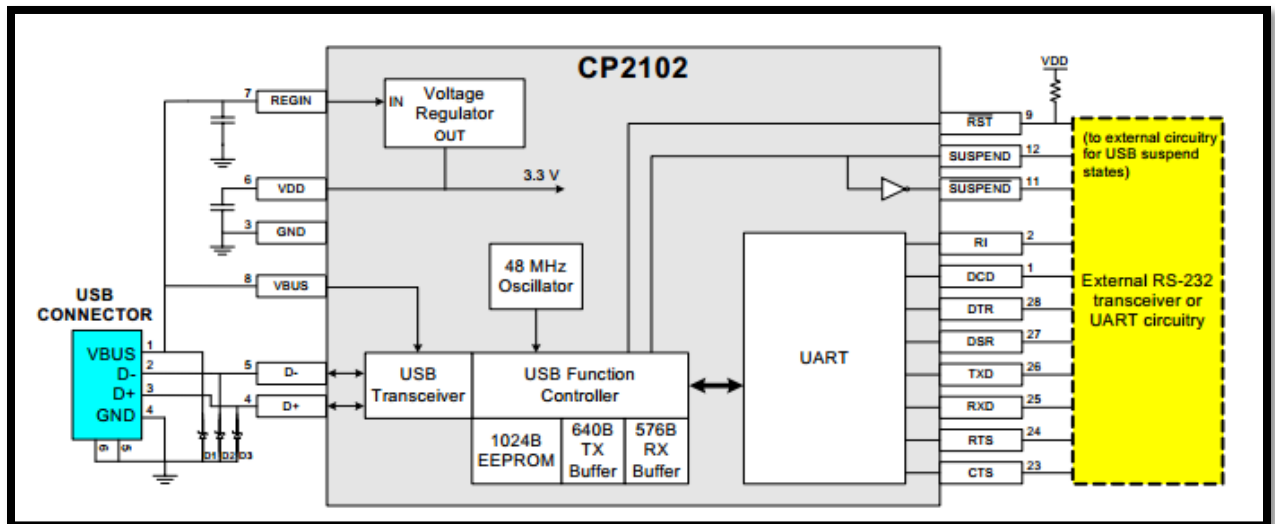
- Lead free 28-pin MLP (5 x 5 mm)

Temperature Range: -40 to +85 °C

Pin Configuration:



System Diagram:



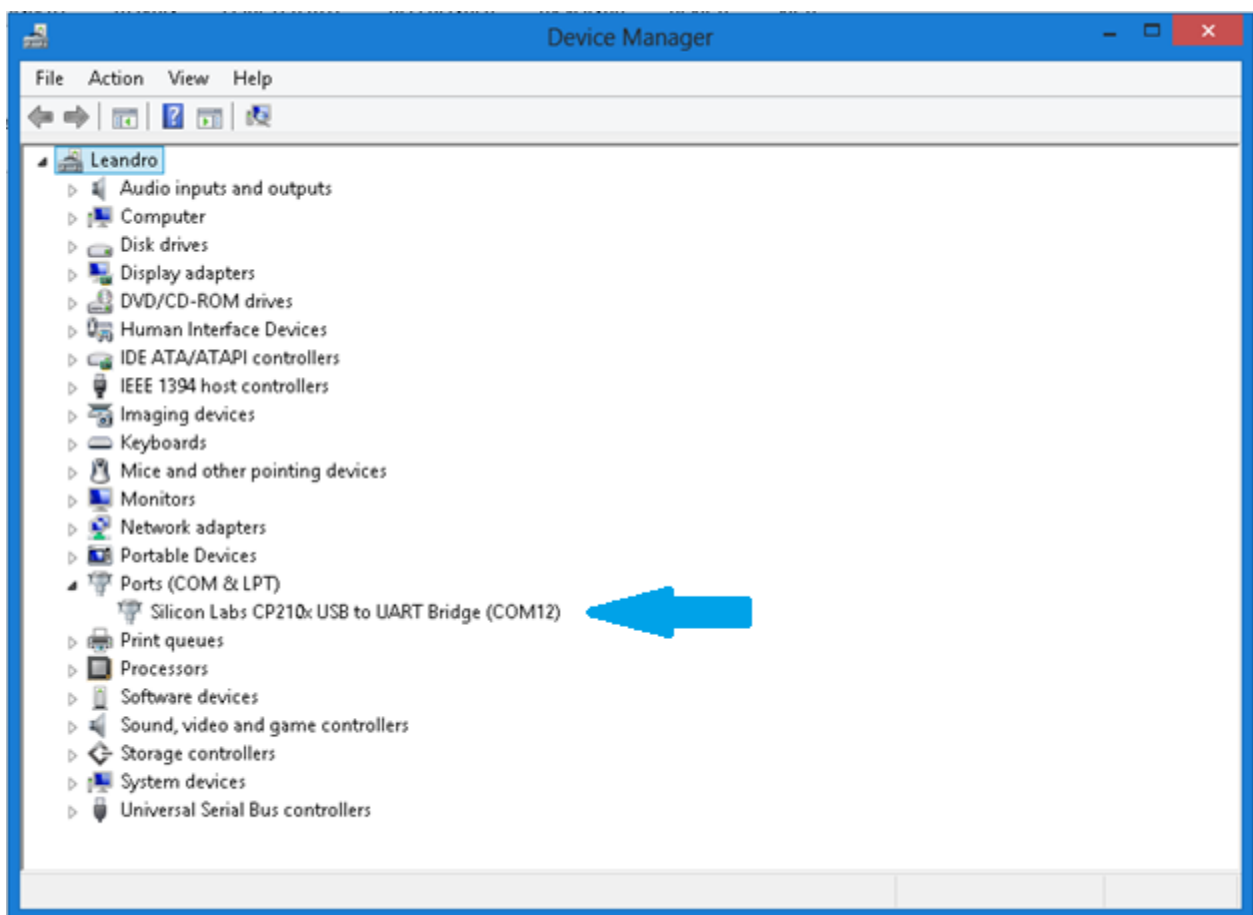
How to test:

Initialization:

When you first connect the device to your computer. You will notice that D1 which is a red LED will light up, this means that the device is powered up. You need to install a driver for the CP2102. You may download it here:

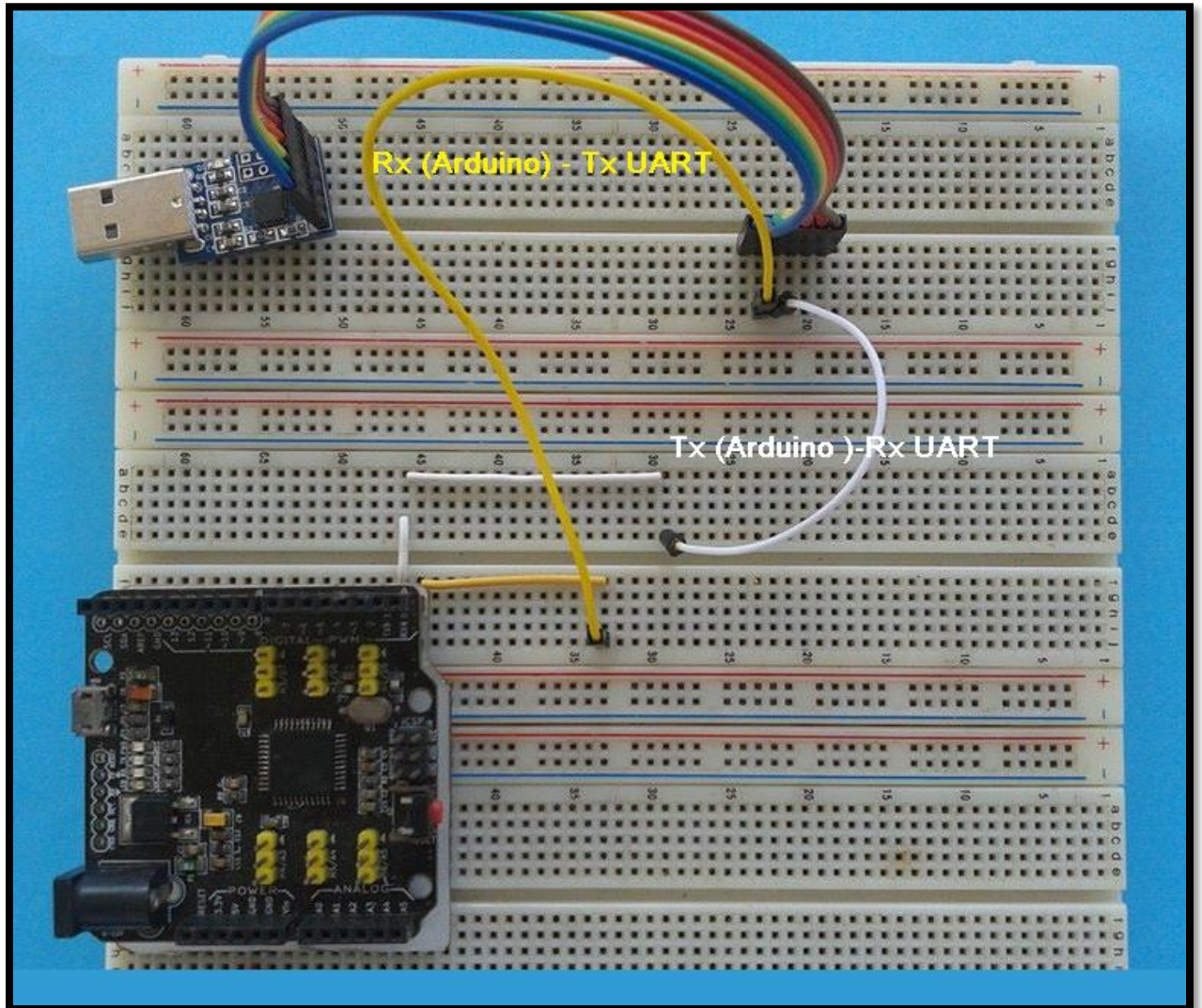
<http://www.silabs.com/products/mcu/pages/usbtouartbridgevcpdrivers.aspx>

Extract the .rar file and double click on **CP210xVCPInstaller**, this will take a few minutes. After installing the driver, you may check if the device is ready by opening the device manager, found in the computer's control panel.

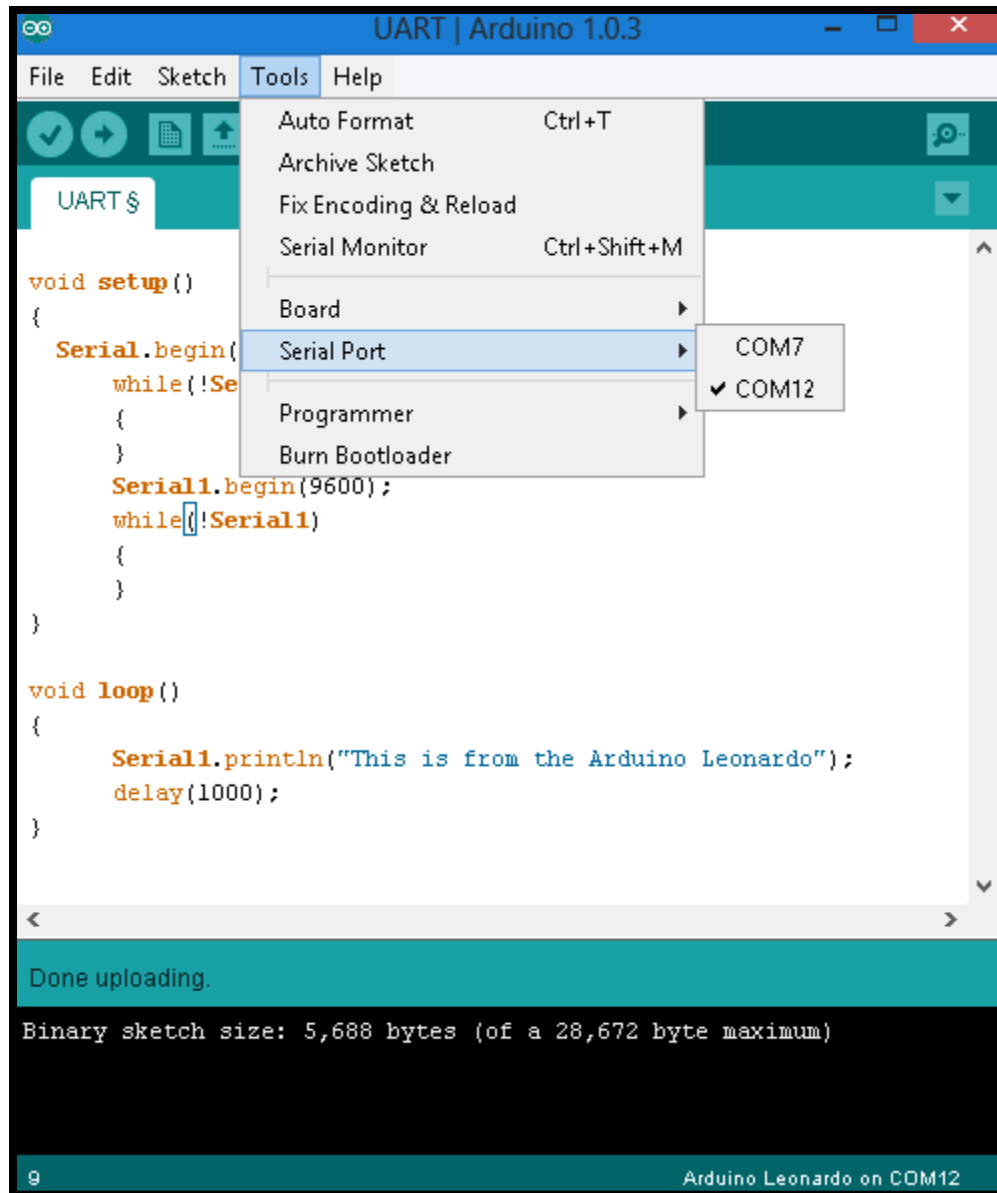


In this Tutorial we will use the Arduino Leonardo to send messages to the CP2102 UART.

Follow this wiring diagram:



Connect both the UART bridge and the Arduino Leonardo to the computer. You may have notice that there will be two options in the serial port, check in the computer's device manager which port is used by the Arduino and upload the sample sketch.



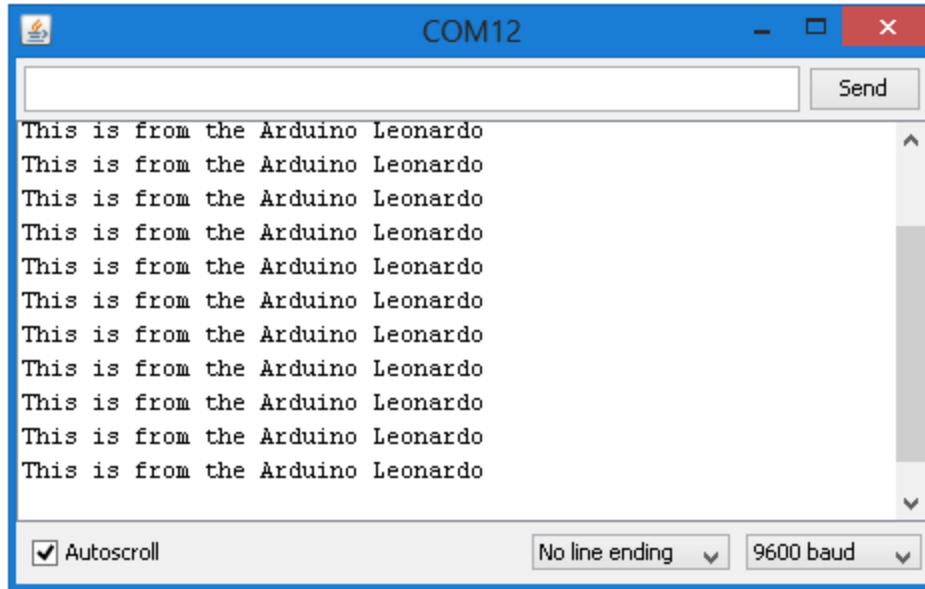
Sample Sketch:

```
void setup()
{
  Serial.begin(9600);
  while(!Serial)
  {
  }
  Serial1.begin(9600);
  while(!Serial1)
  {
  }
}

void loop()
{
  Serial1.println("This is from the Arduino Leonardo");
  delay(1000);
}
```

Results:

In this sketch the Arduino Leonardo is using the Serial to communicate with the PC, while Serial1 is used to communicate with the UART bridge. The arduino is continuously sending the message [This is from the Arduino Leonardo](#) to the UART. To view the message simply select the Serial port that the UART is using, then open the Serial Monitor.



Serial Monitor