

## Wavelength Tuning of Electrically Tunable Filter Through USB Interface

The USB interface for Filter Wavelength Tuning (FWT) through a PC is equipped with USB-RS232 virtual serial port interface (USB B-type connector). The power supply is provided from either USB directly. It is easy to use any Serial COM Port Software in PC to control FWL, such as HyperTerminal and Tera Term. The command set is very simple and easy to drive the unit to find the home position, go to desirable center wavelengths of filter transmission or indicated positions.

### USB Driver Installation

Before controlling filter with a PC, USB driver must be installed on the computer. Instructions for installing the USB driver are included in the following section (Pop-up windows might look a little different depending on the operating system).

The USB driver may be periodically updated by the manufacturer of the USB interface chip. The latest USB interface driver may be freely downloaded from the Silicon Laboratories web site at: <http://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx>

Virtual Com Port (VCP) Drivers support a number of different operating systems. Please choose the right version to download and install it in your computer.

Here are the detail steps showing how to install USB driver with “CP210x\_VCP\_Windows.zip” downloaded from above link. The actual sequence of steps required for installing the driver may be different than what is shown here, depending on the operating system being used.

- 1) Unzip “CP210x\_VCP\_Windows.zip” to your local computer.

### Download and Install VCP Drivers

Downloads for Windows, Macintosh, Linux and Android below.

\*Note: The Linux 3.x.x and 4.x.x version of the driver is maintained in the current Linux 3.x.x and 4.x.x tree at [www.kernel.org](http://www.kernel.org).

### Software Downloads

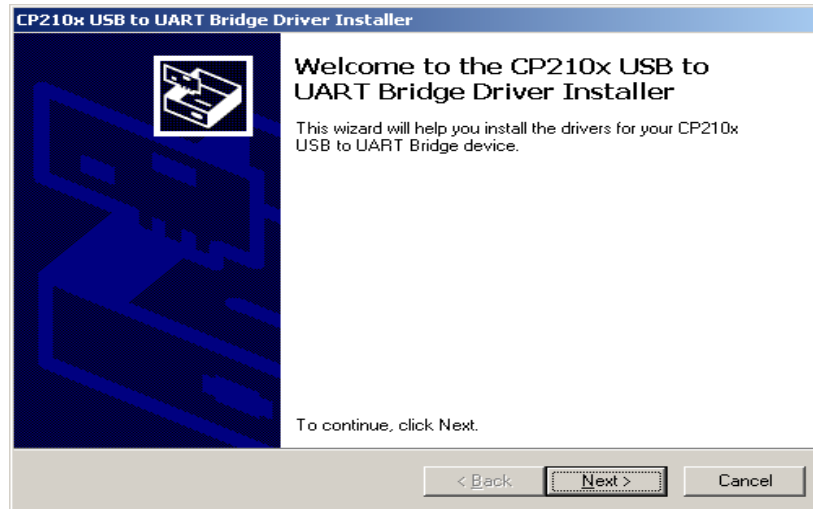
Software (10)

Software · 10

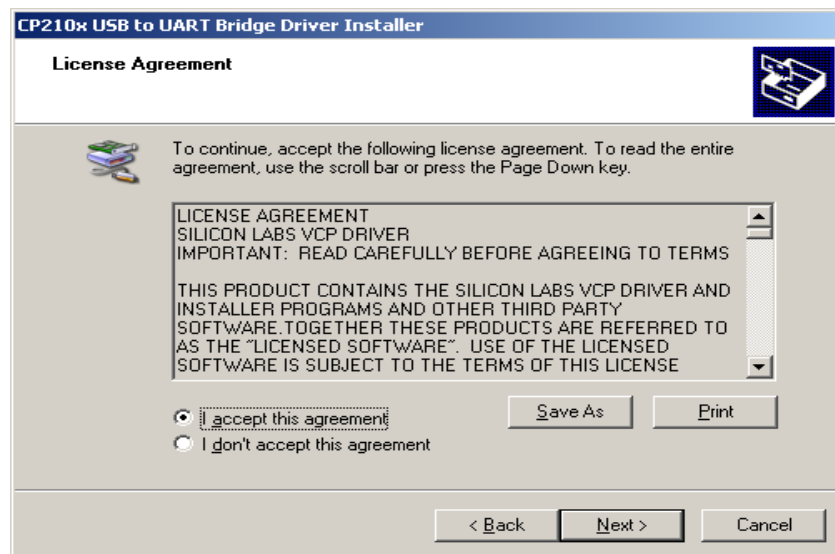
CP210x Universal Windows Driver	v10.1.10 1/13/2021
CP210x VCP Mac OSX Driver	v6.0 12/21/2020
CP210x Windows Drivers	v6.7.6 9/3/2020
CP210x Windows Drivers with Serial Enumerator	v6.7.6 9/3/2020
CP210x_5x_AppNote_Archive	9/3/2020

[Show 5 more Software](#)

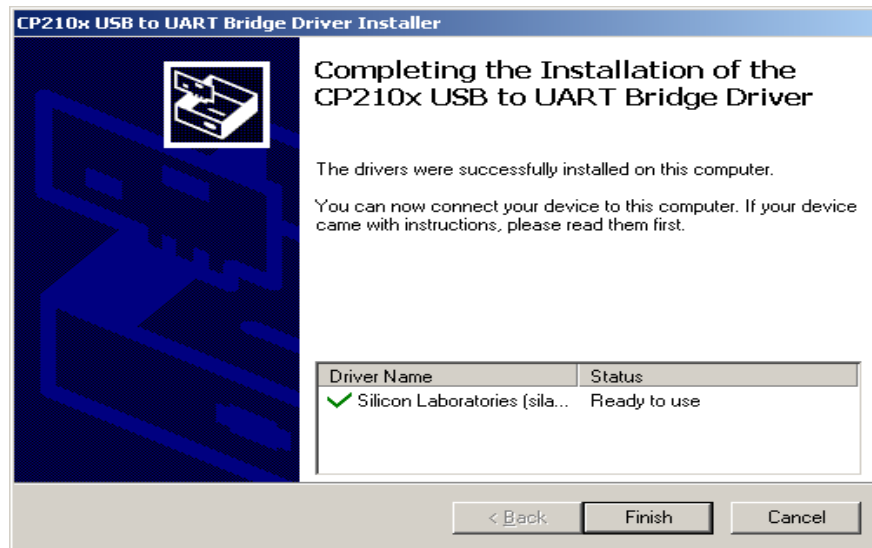
- 2) Run “CP210xVCPInstaller\_x64.exe” for 64 bits computer or “CP210xVCPInstaller\_x86.exe” for 32bits computer. A window similar to the one below should appear.



- 3) Click “Next” to continue. Accept the license agreement, as shown in the following image:



- 4) Click the “Next” button to finish the installation:



- 5) Connect the filter to the computer with attached USB cable. After a couple of seconds, PC will pop-up the “Found New Hardware” message and associates the USB driver to the hardware

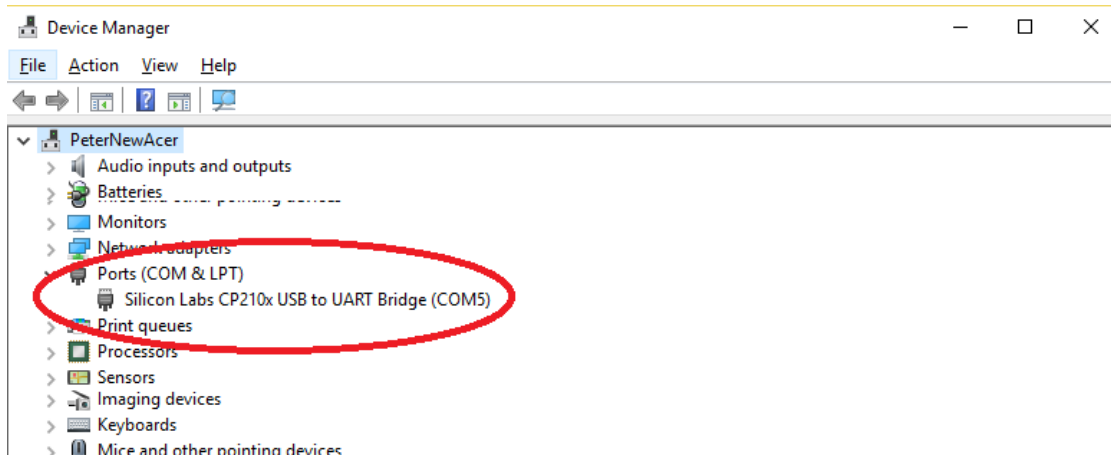


- 6) The following message will appear, to indicate that the hardware is ready to use.

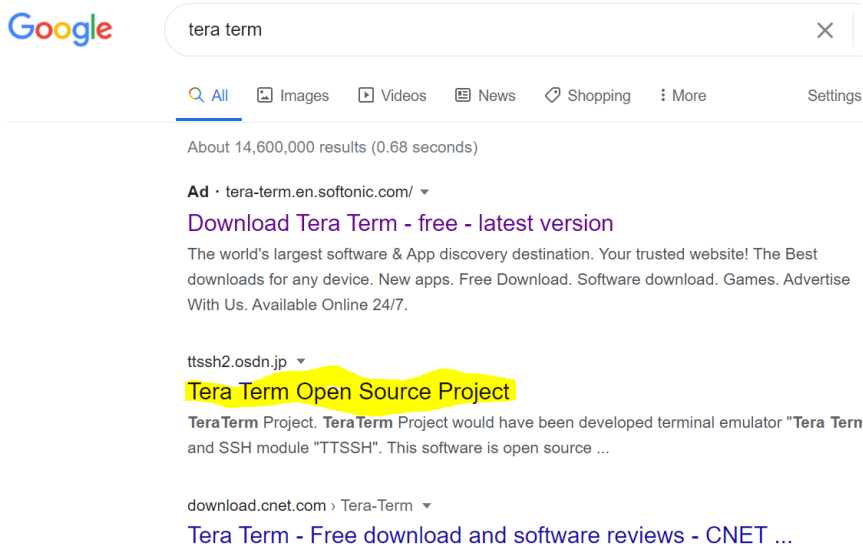


## Serial Port Setting

The serial port number used by the FWT unit will be assigned at the time when the software for the CP210x USB to UART Bridge Controller Software is called upon. It may vary, from installation to installation. You could check which port is assigned to it by PC Device Manager, as indicated below.



## Tera Term Application Installation



[\[Project page\]](#) [\[License\]](#) [\[Download\]](#) [\[Document\]](#) [\[Snapshot\]](#) [\[SourceCode\]](#) [\[Users ML\]](#) [\[Com](#)

**8352654** (Today: **249** Yesterday: **1194**)

## TeraTerm Project

TeraTerm Project would have been developed terminal emulator "Tera Term" and SSH module succession version and is being officially recognized by the original author. Development is co

## Download

Latest version is available from OSDN [download page](#). Current latest release is [4.105](#).

If you can get latest development version, the source code is available from [SVN repository](#). A Here is the [Old release](#), however we recommend using the latest release as possible.

## Manual

Following manuals are available.

These manuals are the latest contents. New feature not including the release version will be w However, a user can check next version contents. Tera Term developer can preliminarily respo

- [Tera Term Help Index](#)
- [MACRO for Tera Term](#)

## Support

Operating System: Windows 7, Windows 95/98/ME, Windows NT/2000

**Download Package list**

**Tera Term** (37 items

**4.105** (2 files

**Name** ▲

[teraterm-4.105.exe](#)

[teraterm-4.105.zip](#)

**4.104** (2 files

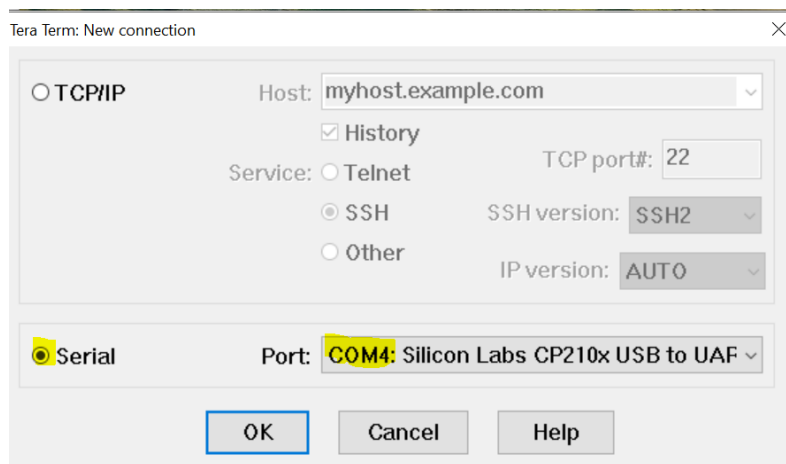
**4.103** (2 files

Follow the computer screen instruction to finish instal Tera Term.

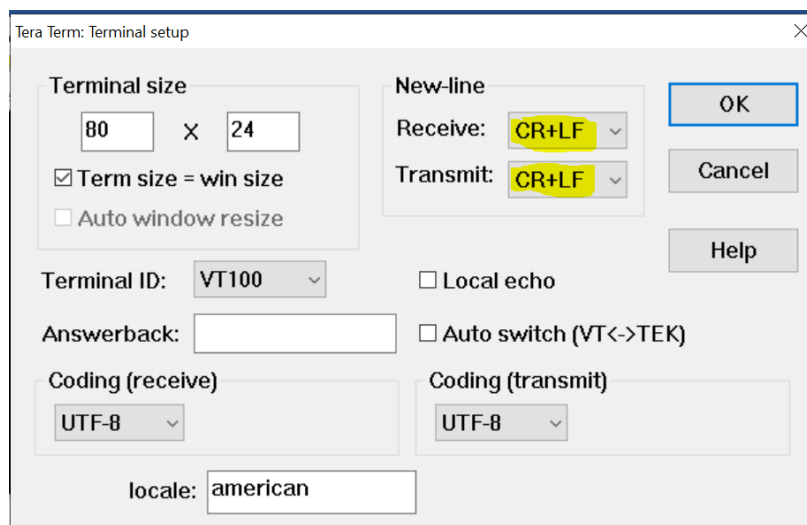
The user must ensure that the correct COM port is selected when running the application software, such as Tera Term, otherwise the computer will not be able to communicate with the unit.

Tera Term should have the same settings with the FWT unit.

Open Tera Term, select serial and select COMs installed in your computer. See below highlight in yellow. Then click OK button



From Setup menu, click Terminal, set Receive and Transmit setting as below in yellow. Then click OK button, see below:



From Setup menu, click serial port, set all highlighted in yellow setting then click new setting button. See below:

Tera Term: Serial port setup and connection

Port: COM4

Speed: 115200

Data: 8 bit

Parity: none

Stop bits: 1 bit

Flow control: none

New setting

Cancel

Help

Transmit delay

0 msec/char 0 msec/line

*Please remember that even all the settings above have been setup initially, it is also necessary to check them whenever using filter late on.*

Now, application is ready to work.

### **Example of control interface:**

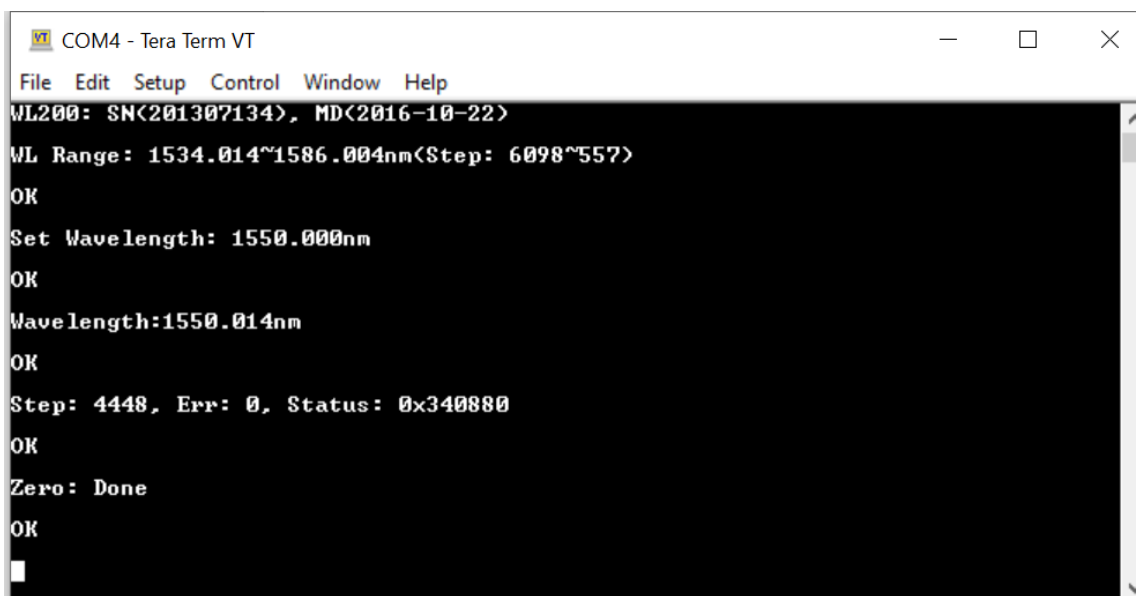
Input dev? Return, Screen show first 3 lines.

Input WL1550 return, screen show 4<sup>th</sup> and 5<sup>th</sup> lines

Input WL? return Screen show 6<sup>th</sup> and 7<sup>th</sup> lines

Input S? return, screen show 8<sup>th</sup> and 9<sup>th</sup> lines

Input Z? return, screen show last two lines.



## RS232 Commands

String commands are not case sensitive. All command and response lines are terminated by carriage return pair (“\r\n” or <CR><n>).

A correctly entered command is acknowledged at completion with “OK”. An incorrect command or data entry generates the message: “ER: x”, “x” is the error code. The RS232 commands used by FWT are listed in Table .

**Table 2: FWT RS232 Commands**

Command	Response	Description
<b>CMD?\r\n</b>	Command list	List all commands
<b>DEV?\r\n</b>	WL200: 123~F, 2016-08-20\r\n	Read device information
	WL Range: 1050-1170nm\r\n	
	OK\r\n	
<b>FC\r\n</b>	Freq. Calibration: \r\n	Run Frequency Calibration
	OK \r\n	
<b>S&lt;n&gt;\r\n</b>	Step: x\r\n	Move to step <n>
	OK \r\n	
<b>S?\r\n</b>	Step: x, Err: 1, Status: 0x340c82 \r\n	Read current step
	OK \r\n	
<b>SB&lt;n&gt;\r\n</b>	SB: n\r\n	Move backward n steps
	OK \r\n	
<b>SF&lt;n&gt;\r\n</b>	SF: n\r\n	Move forward n steps



	OK \r\n	
<b>WL&lt;x&gt;\r\n</b>	Set Wavelength: 1060.00nm\r\n	Set to Wavelength x(nm)
	OK \r\n	
<b>WL?\r\n</b>	Wavelength: 1060.01nm\r\n	Read current Wavelength in nm
	OK \r\n	
<b>Z\r\n</b>	“Zero: Done\r\n” or “Zero: Not Done\r\n “	Go to Zero position
	OK \r\n	
<b>Z?\r\n</b>	Go tot Zero\r\n	Read Zero status
	OK \r\n	

Response for “CMD?”:

DEV? Read device information

FC Run Frequency Calibration

SBn Move backward n steps (*each step will shift center wavelength by ~0.007nm with S/N: 201307940-941*)

SFn Move forward n steps (*each step will shift center wavelength by ~0.007nm with S/N: 201307940-941*)

Sn Move to step n

S? Read current step

WLx Set to WL x (in nm)

WL? Read current WL (in nm)

Z Go to zero position

Z? Read Zero status

OK

#### **Response Code (including Error Code):**

4 – Busy

5 -- Wait

6 – Command in progress

7 – Command received

8 – Empty input

40 – Error command

41 -- Error Value or value Over limit

42 – Not in range

43 – Error response

- 44 – Error in initialization
- 45 – Error Check sum
- 46 – Error in erasing memory
- 47 – Over time
- 50 – Error address
- 51 – Error length
- 52 – Error format
- 53 – Error ID
- 54 – Error in writing EEPROM/Flash memory
- 55 – Error in reading EEPROM/Flash memory

***Important Note***

***The center wavelength of filters is calibrated with an optical spectral analyzer (SOA).  
Due to SOA' accuracy, the calibrated wavelengths of the filter may be different (a little  
but should be a constant) from the obtained with another SOA.***

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