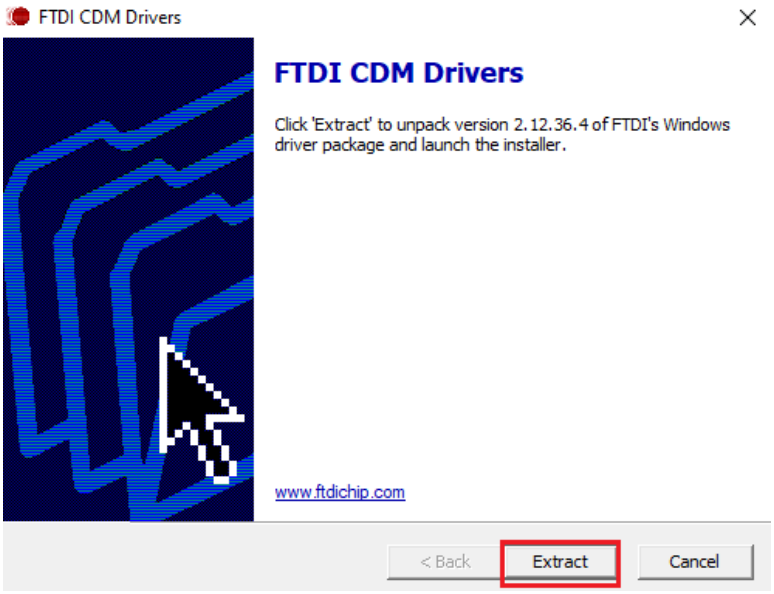
FRIENDS Serial Communication

Requirements:

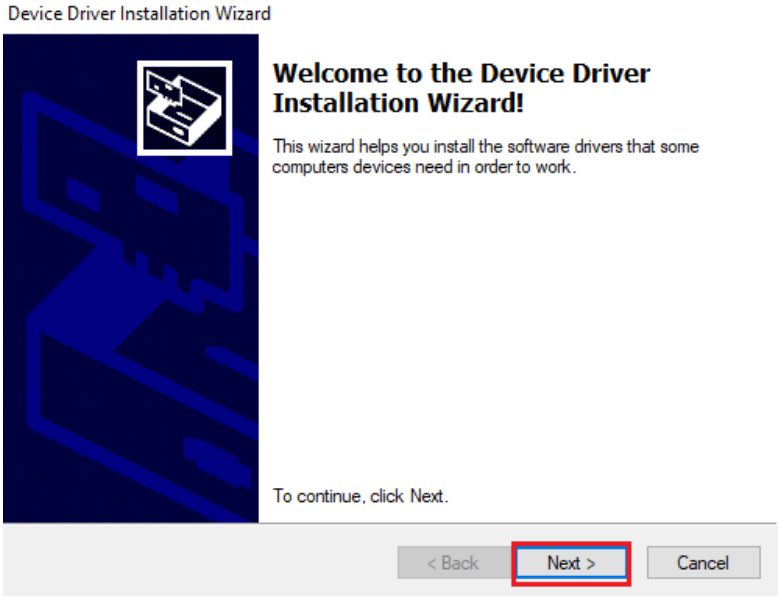
- Install VCP (Virtual Com Port) Driver.
- Install FRIENDS Serial Monitor.

Installation Process of VCP Driver:

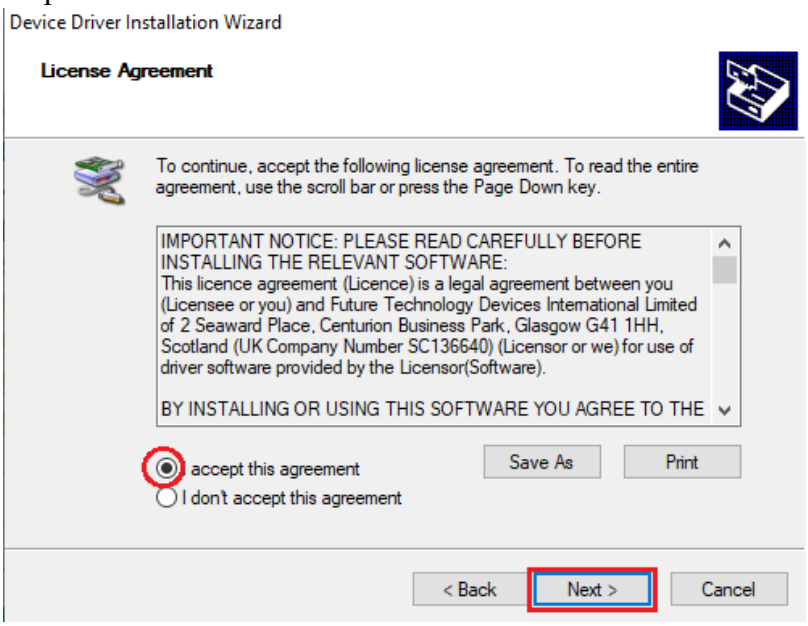
- Download VCP driver from this link: (https://ftdichip.com/drivers/vcp-drivers/).The downloaded zipped file may be named as CDM212364_Setup
- Unzip the downloaded file and open CDM212364_Setup
- Step 1:



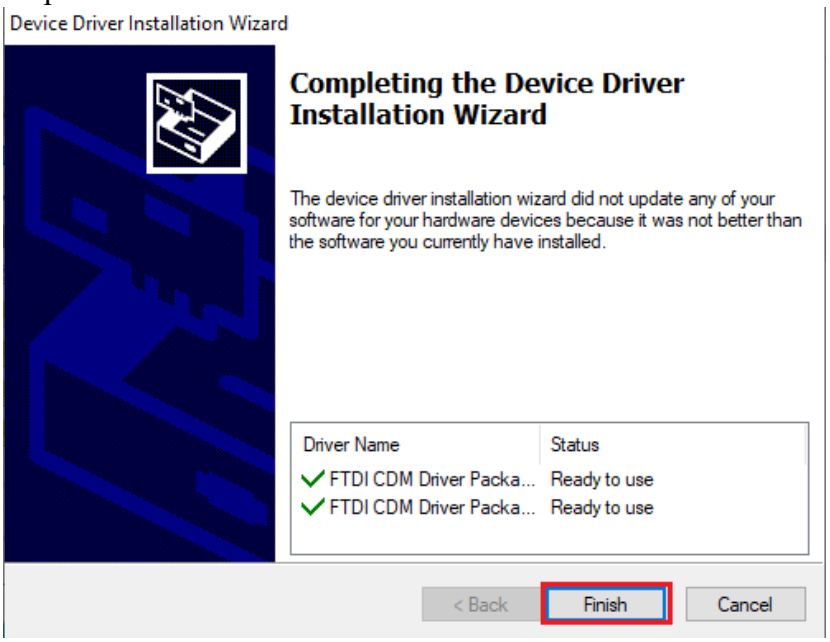
- Step 2:



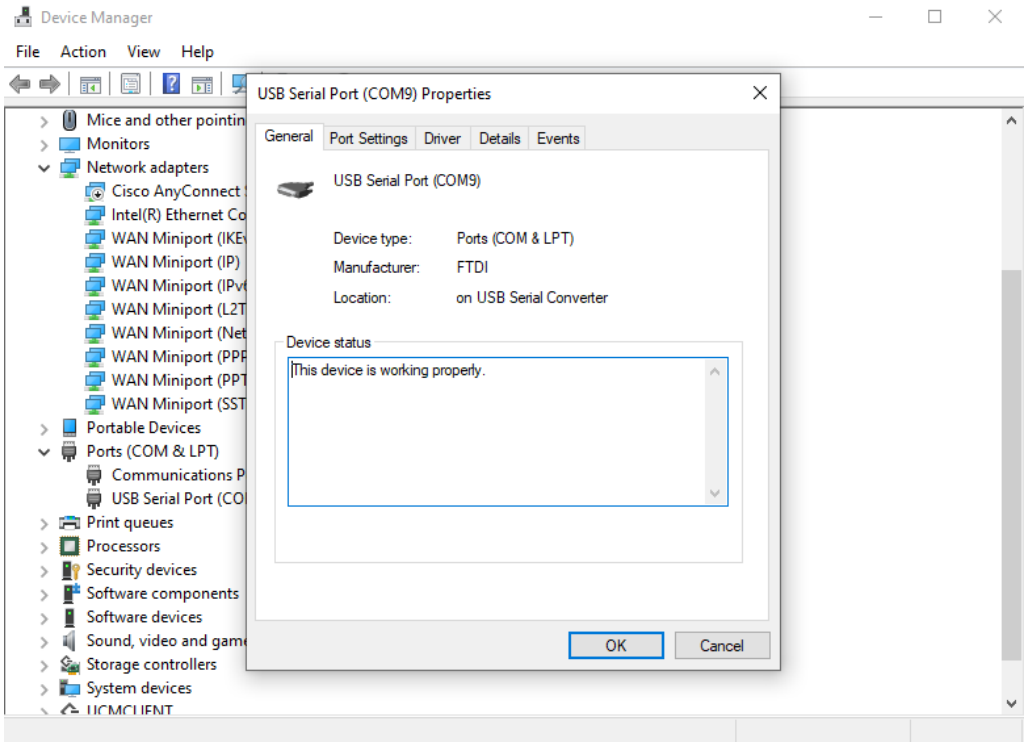
- Step 3:



- Step 4:

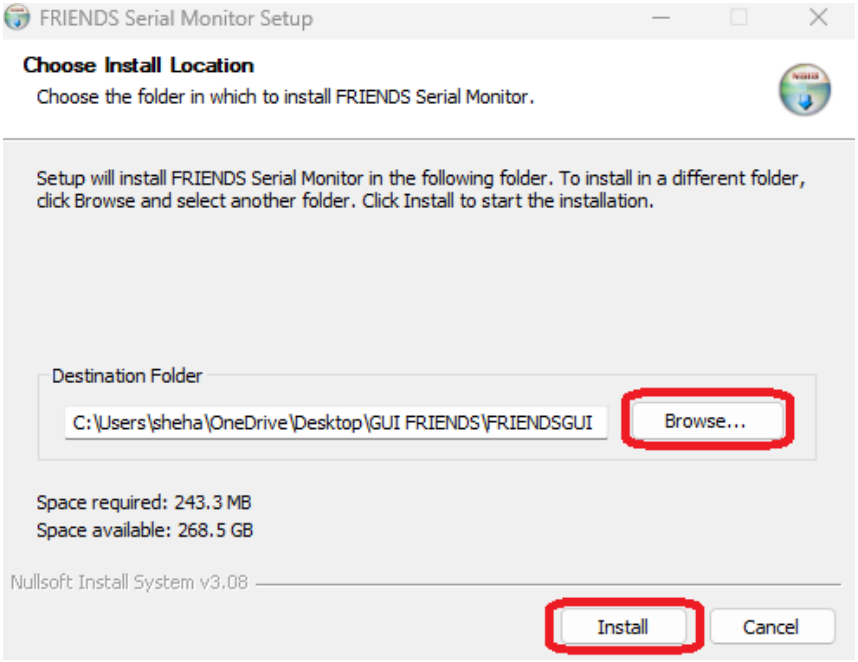


- When FRIENDS is connected to the computer by USB, a serial port appears after installing the VCP driver.

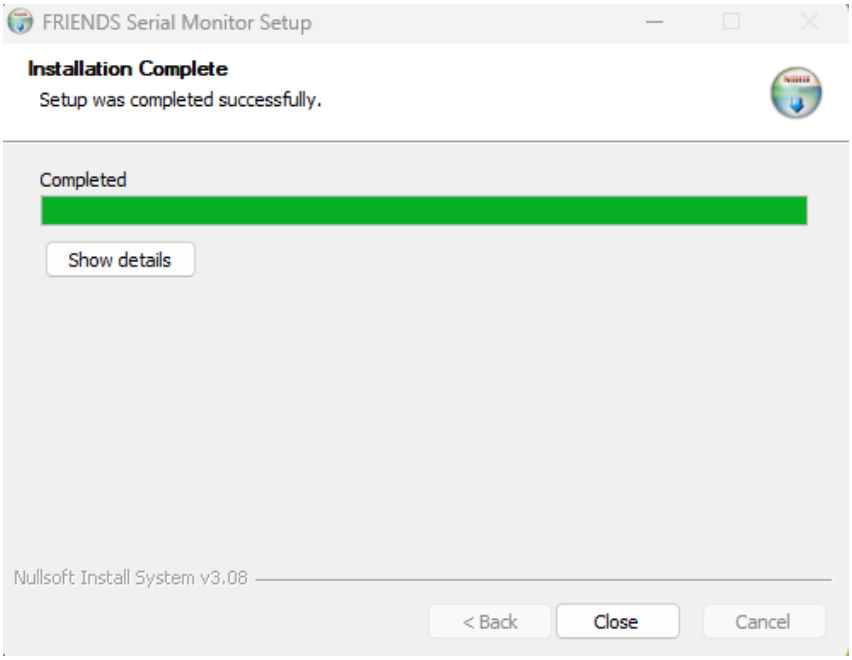


Installation process of FRIENDS serial monitor:

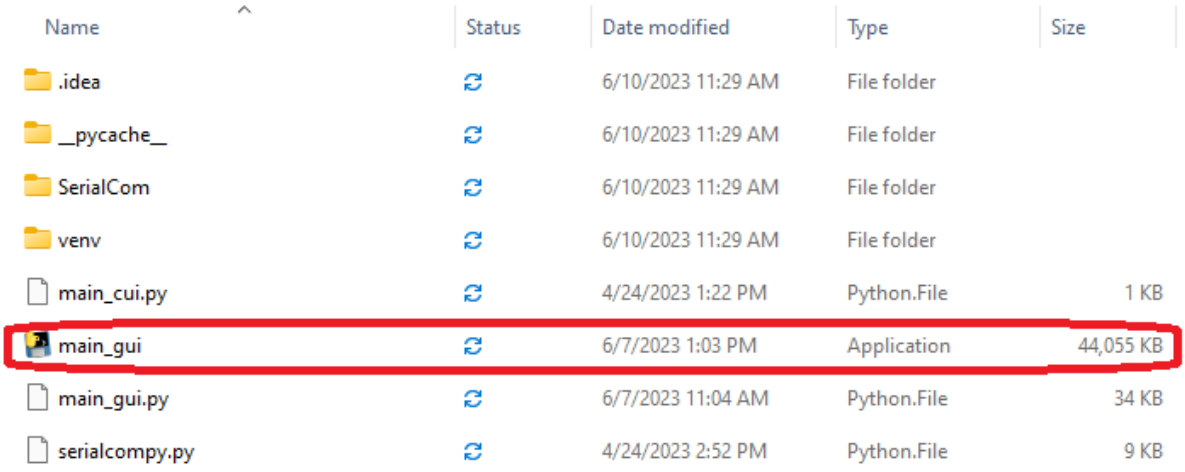
- Open Friends Serial Monitor.exe
- Choose the installation path by pressing browse and select install.



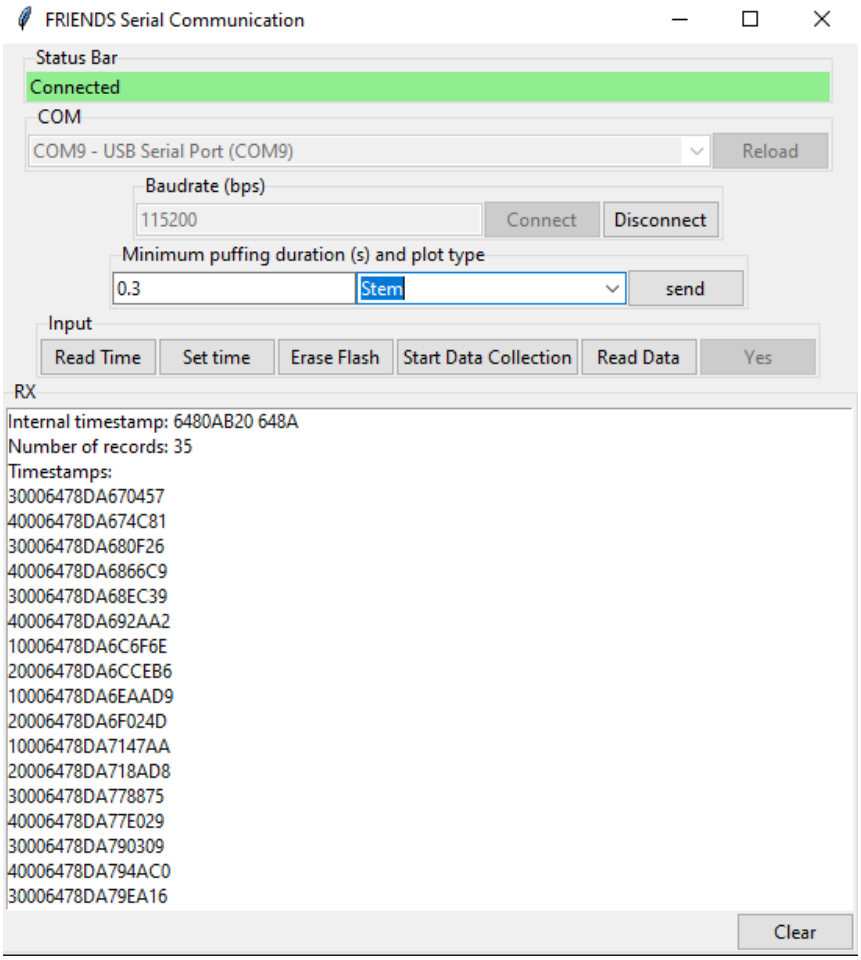
- The installation process will start and then press close button after the installation is complete.



- Go to the installation directory and open main_gui to run the FRIENDS Serial Monitor.



The FRIENDS Serial Communication GUI:



Status Bar: It shows the connectivity status between the computer and the FRIENDS device. It turns into "green" and shows "connected" when the connection between the two devices have been established after selecting the appropriate COM port and baud rate.

COM: Appropriate COM port should have been selected for establishing the connection for a particular FRIENDS device.

Baudrate: For the FRIENDS device, the baudrate will be 115200.

Reload: If the appropriate comp port for the device doesn't show in the options, reload button should be pressed to get the appropriate comp port.

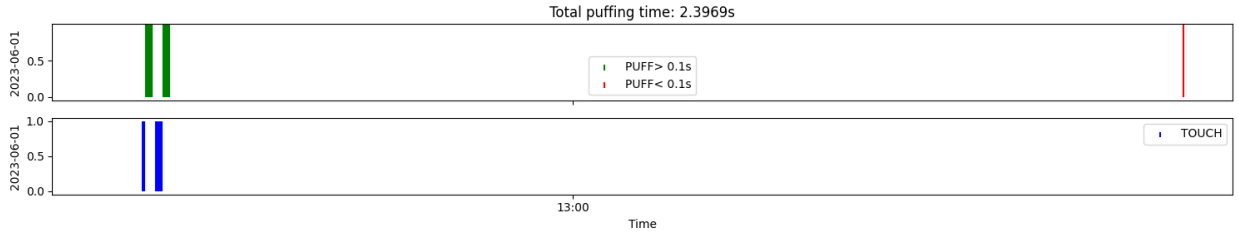
Connect: After setting the comp port and baud rate, connect button should be pressed to establish the connection between the computer and the FRIENDS device

Disconnect: To turn off the connection, disconnect button should be pressed.

Minimum puffing duration: By setting minimum puffing duration, user can separate the puffing events in the plots based on this threshold. By default, the value of this entry is 0.0.

Example:

For minimum puffing duration 0.1s:



Plot types: Three plot types (Stem, Step, and Line) are available for user selection to generate the plots.

Read Time: This button returns the device's actual time in POSIX format.

Set Time: This button set the local time in POSIX format to the device.

Erase flash: This button will erase the device's flash memory. It requires a confirmation (YES) and "Yes" button will be enabled after pressing this button. At the beginning, the erase button will be disabled. After saving the data and generating the plots by "Read Data" button, the erase button will be enabled.

Start Data Collection: This button should be pressed before start collecting the data. It will set the local time in POSIX format to the device and erase the flash memory of the device and make it ready to start the data collection.

Read Data: This button has multiple tasks. It reads the flash memory, generate 3 text files, and also generate the graphs from the data.

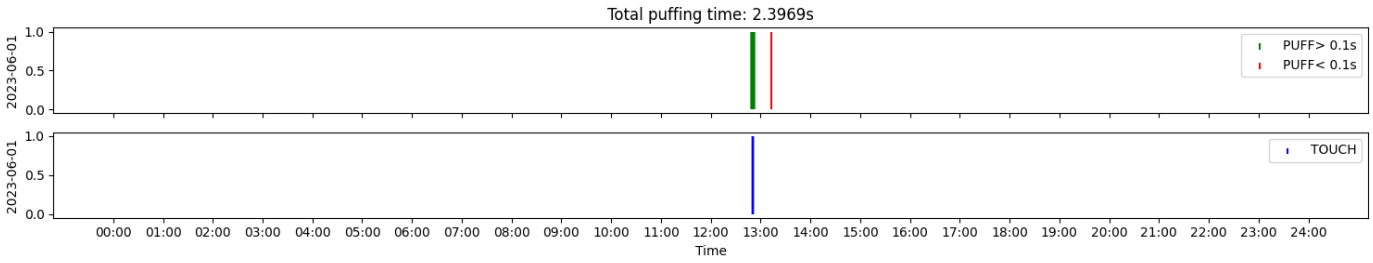
- File 1: It contains the local time in human readable format (e.g., Local Time: 2023-06-05 13:06:47.836938), device's internal timestamp (e.g., Internal timestamp: 647E2437 E3EB), and event's timestamps in **POSIX** format in flash memory.
- File 2: it contains the local time in human readable format (e.g., Local Time: 2023-06-05 13:06:47.836938), device's internal timestamp (e.g., Internal timestamp: 647E2437 E3EB), and event's timestamps in **human readable format** in flash memory.
- File 3: It contains a data table with four columns (Event, Date, Range, Duration_in_seconds). One can find each complete event's occurring date, time range and duration from this table. Example:

```
Event       Date                                Range   Duration_in_seconds
Touch 2023-06-01 12:50:31.016953-12:50:31.298843   0.28188999999838416
Touch 2023-06-01 12:50:32.059174-12:50:32.401505   0.34233099999983096
Touch 2023-06-01 12:50:32.922745-12:50:33.166534   0.24378900000010617
 PUFF 2023-06-01 12:50:36.435272-12:50:36.807465    0.3721929999956046
 PUFF 2023-06-01 12:50:38.667374-12:50:39.008987   0.34161300000414485
 PUFF 2023-06-01 12:50:41.279938-12:50:41.542358    0.2624199999991106
```

After pressing the “Read Data” button, a file dialog will be popped up and it will require a path and a filename to save that 3 files. File 1 will be saved by the given name, file 2 will be saved as given name_converted and file 3 will be saved as given name_duration.

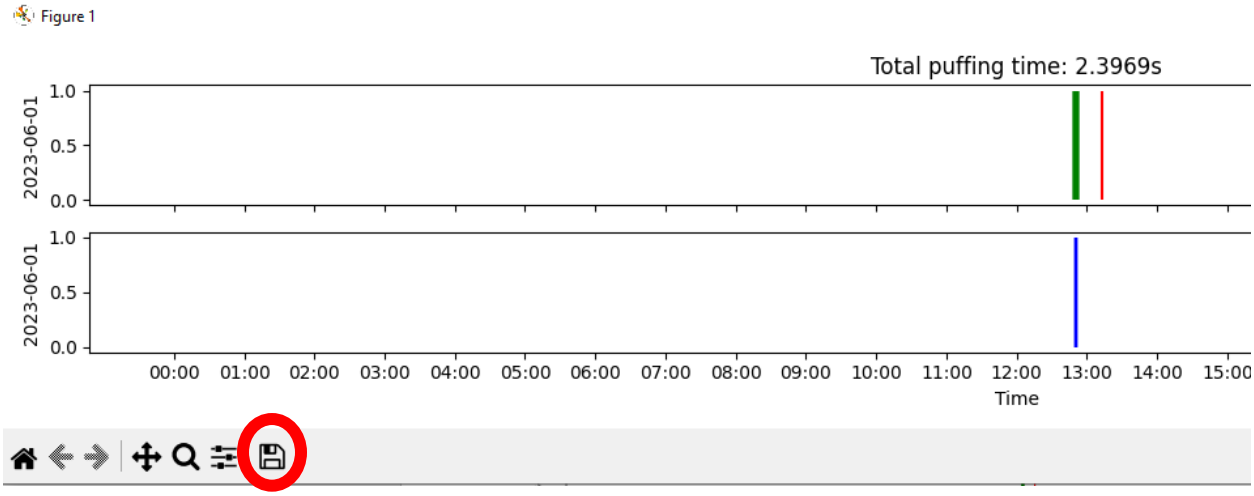
After saving the 3 files, the system will generate plots from the data. The number of plots depends on the number of days in the data (one plot for one day). Time from 00:00 to 24:00 represents the horizontal axis x.

Example:



Clear: This button will clear all the text in RX monitor

Save the plot: For saving the plot, press the icon that is marked by red circle below.



N.B.: If any issue occurs while reading the data, please clear the Rx monitor by pressing clear button and try again. This may solve the issue.