

This tutorial describes how to change the settings of the LAIRD BT900 Bluetooth module on the EmStat Pico development board.

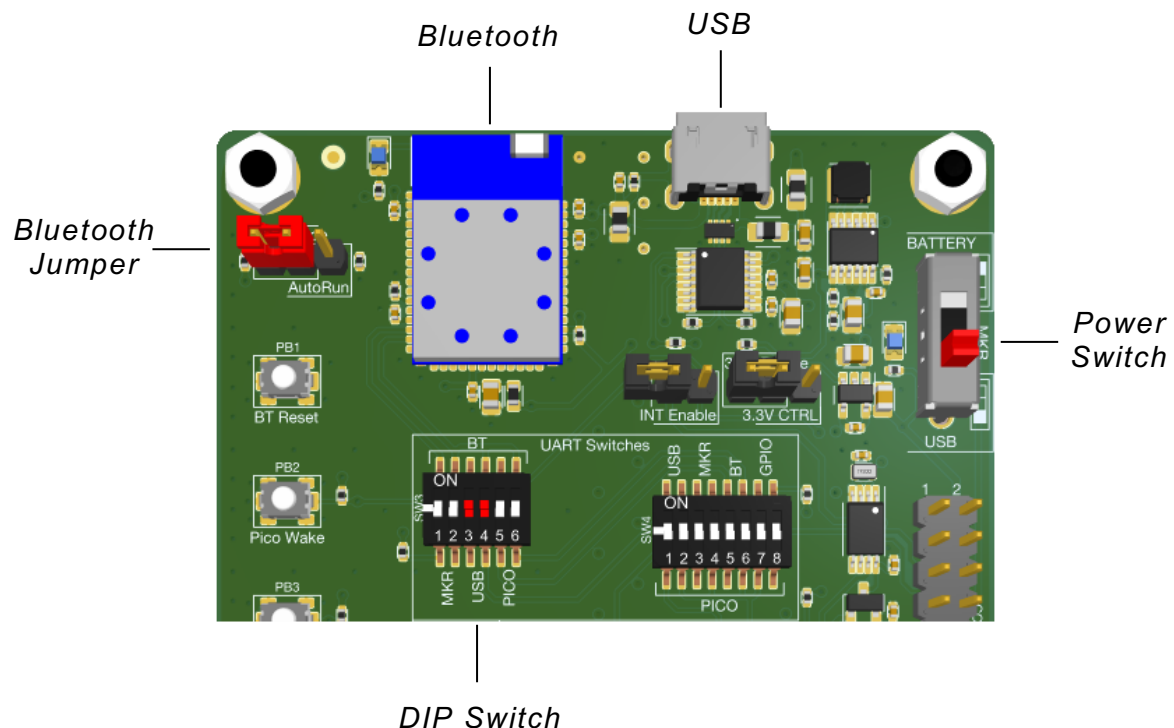
Contents

1	Bluetooth Development Mode	1
1.1	Board settings.....	1
1.2	Bluetooth communications	1
1.3	Uploading Script and Results	3
2	Bluetooth AutoRun Mode (Standalone Mode).....	5
2.1	Board Settings	5

1 Bluetooth Development Mode

In the Development Mode of the Laird BT900 Bluetooth module, interaction via a terminal program is possible. Users can upload new scripts to the Bluetooth module to allow for different functionality e.g. scripts that are focused on health-related subjects (heart rate, thermometer, etc.) or to transform the Bluetooth in a serial device (SPP) so that it functions as a wireless serial connection.

1.1 Board settings



To interact with the Bluetooth module via “UwTerminalX” The following settings on the Emstat Pico development board have to be set. All board settings needed for these steps are illustrated in **RED**.

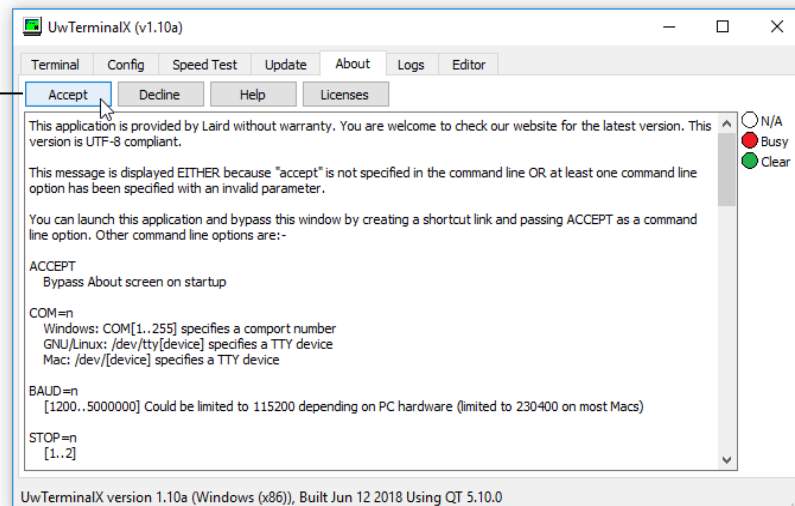
1. The middle two switches (3, 4) on SW3 need to be set in the ON position (Top).
2. The jumper needs to be on the **left** two positions underneath the text “Dev Mode”.
3. Connect the USB cable to the USB connector
4. Power-up the board by settings the power switch to USB (bottom)

1.2 Bluetooth communications

Setting up communications with the Bluetooth via the PC terminal emulator (communications) program and upload your first script.

- On my.palmsens.com you can find all necessary examples and programs for working with the Bluetooth module. Copy the zip to your Desktop and unpack.
- Open the folder and double click the “UwTermianIX.exe”, This is the recommended terminal program by Laird. Then press “Accept”.

Accept

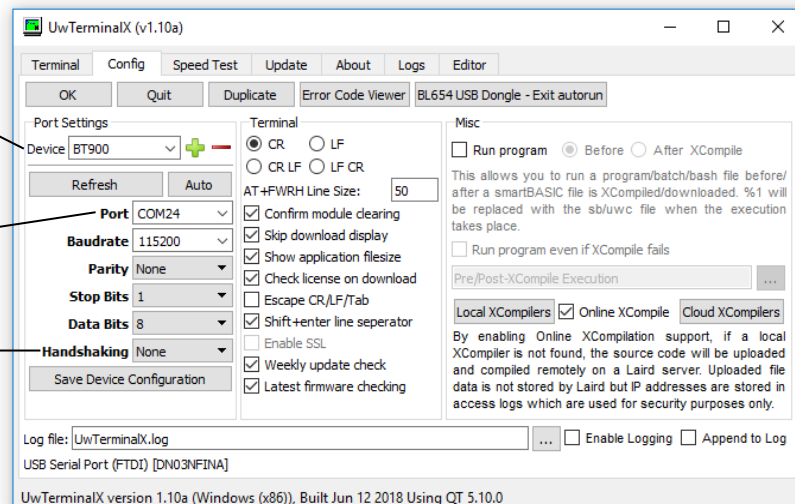


- Enter the correct input to the Terminal. For this example COM24 is selected. Check to which COM port the device is connected.

Select
"BT900"

Select the
right Com
Port

Select
"None"



1.3 Uploading Script and Results

If the settings were made correctly, then follow the next three actions which should result in similar outputs.

- Action 1: Press “Enter”. The Bluetooth module should respond with “00” as shown.

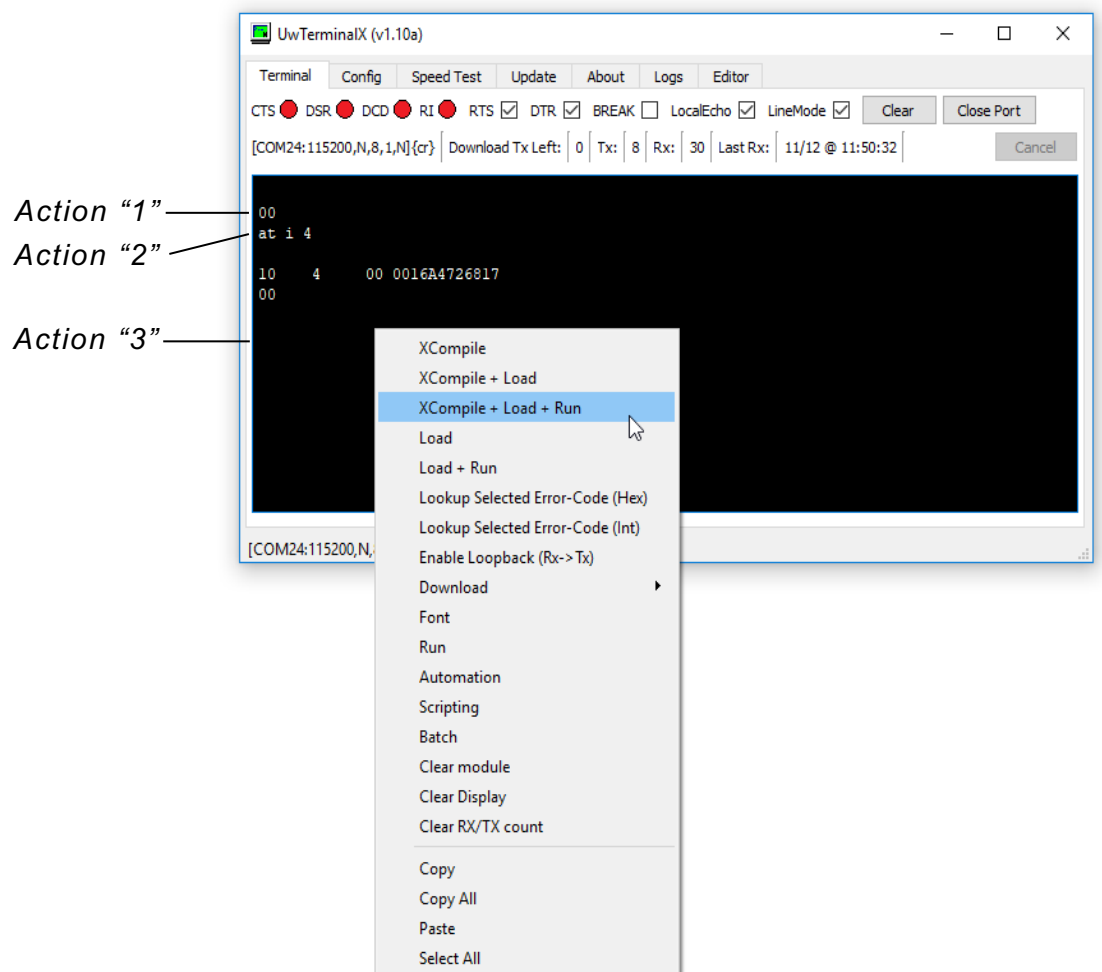
When there is a script already running on the Bluetooth module a clear command should be send. the command "AT&F 1" should clear and reboot the Bluetooth module.

- Action 2: Type “at i 4” and press Enter. The Bluetooth module should respond with the MAC address. In this example “0016A4726817”.
- Action 3: Right click the window, a pop-up should appear. Now select “XCompile + Load + Run”. You should be able to select a file to upload. There are two scripts in folder “EmstatPicoScripts” you can choose to upload:

Script 1: A Serial Port Profile (SPP) Script for Classic Bluetooth named:
`$autorun$.SPP.UART.PicoDev.Debug.sb`

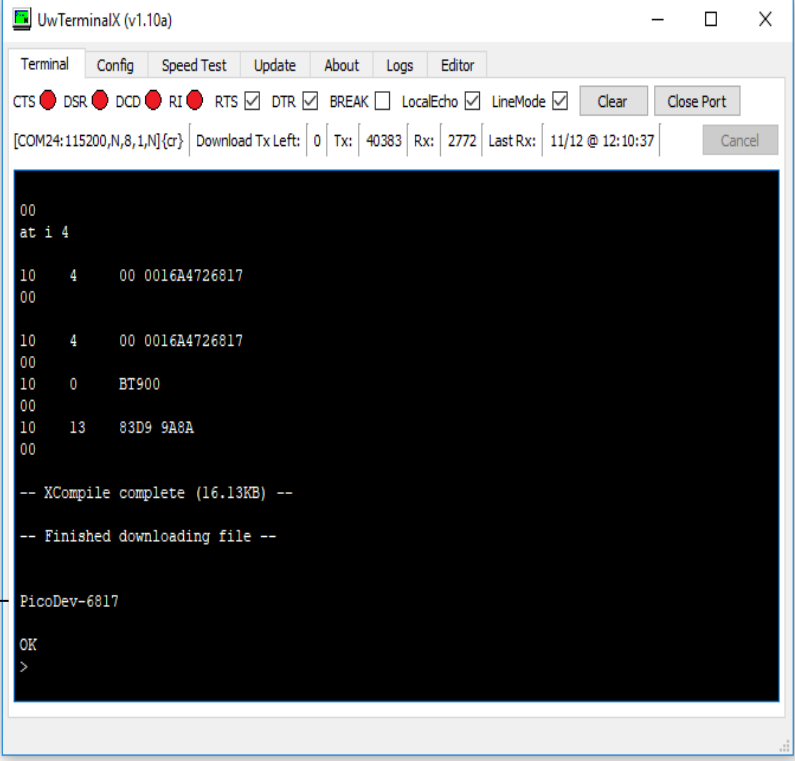
The above script is the default that is pre-installed on every EmStat Pico development board.

Script 2: A Virtual Serial Port (vSP) Script for Bluetooth Low Energy (iOS devices only support BLE) named: `$autorun$.VSP.UART.PicoDev.sb`



If everything went accordingly the output should be similar. Now we are able to connect to the Bluetooth device with another Bluetooth capable device e.g. mobile, tablet, PC, etc. When connected we can send data to the Bluetooth device, which, depending on the configuration of the DIP switches can send the data to the Arduino MKR or Emstat Pico.

Bluetooth



The screenshot shows the UwTerminalX (v1.10a) interface. The terminal window displays the following output:

```
00
at i 4

10 4 00 0016A4726817
00

10 4 00 0016A4726817
00

10 0 BT900
00

10 13 83D9 9A8A
00

-- XCompile complete (16.13KB) --
-- Finished downloading file --

PicoDev-6817

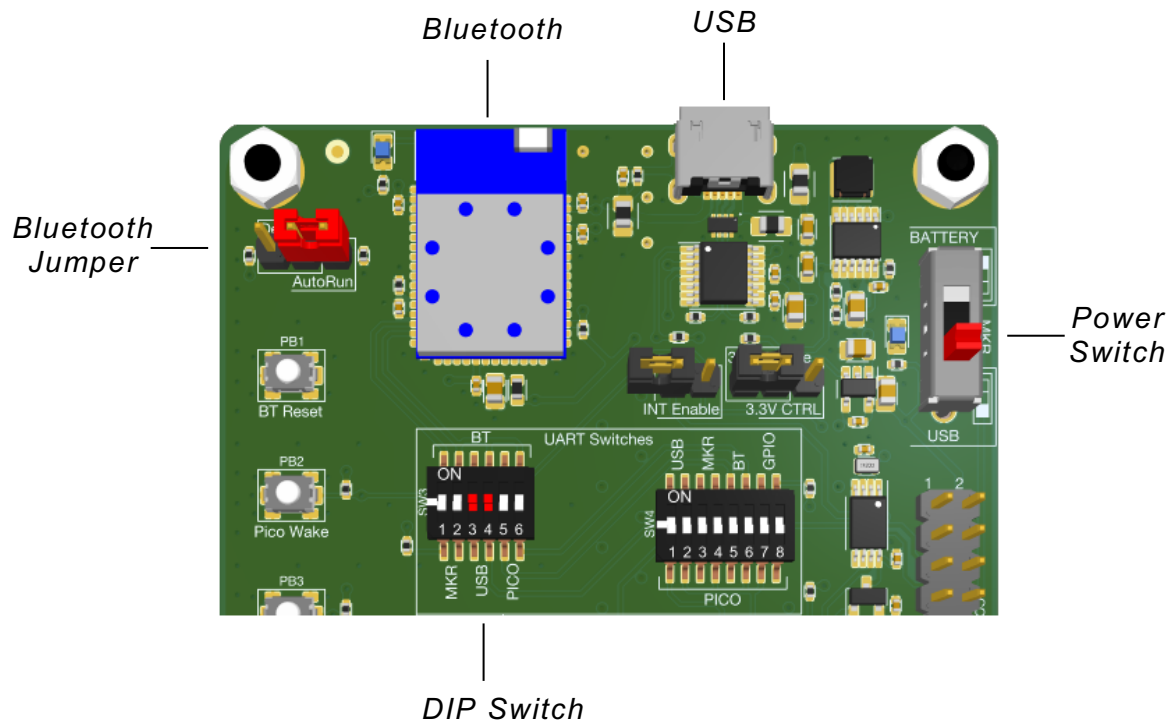
OK
>
```

The terminal window also shows a status bar at the top with various settings and statistics, including 'COM24:115200,N,8,1,N}{cr}', 'Download Tx Left: 0', 'Tx: 40383', 'Rx: 2772', and 'Last Rx: 11/12 @ 12:10:37'.

2 Bluetooth AutoRun Mode (Standalone Mode)

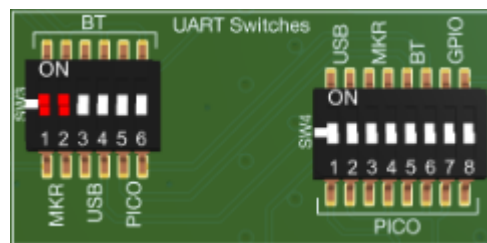
In this mode the script that has been uploaded to the Bluetooth module is executed on power-up of the development board. Now, every time the board powers up the script will autorun and no more actions are needed to work with the Bluetooth.

2.1 Board Settings

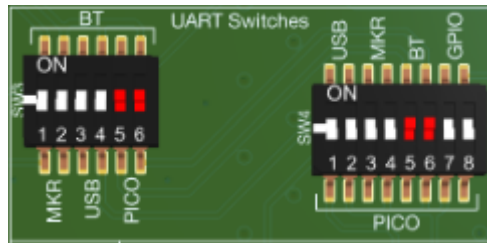


When the desired script has been uploaded to the Bluetooth module, AutoRun can be set. This will enable the Bluetooth to run the set script when the device is powered on. The following setting on the Pico Development board have to be made. All board settings needed for these steps are illustrated in **RED**.

- The middle two switches 3, 4 on SW3 need to be set in the ON position (Top)
 - For other **configurations** :
 - Arduino MKR** : Switches 1, 2 on SW3 need to be set in the ON position (Top) to connect to the Arduino MKR



- **Emstat Pico** : Switches 4, 5 on SW3 and 5,6 on SW4 need to be set in the ON position (Top) to connect to the Emstat Pico.



2. The Jumper needs to be on the **right** two position above the Text “AutoRun”
3. Connect the USB cable to the USB connector
4. Power-up the board by settings the power switch to USB (bottom)