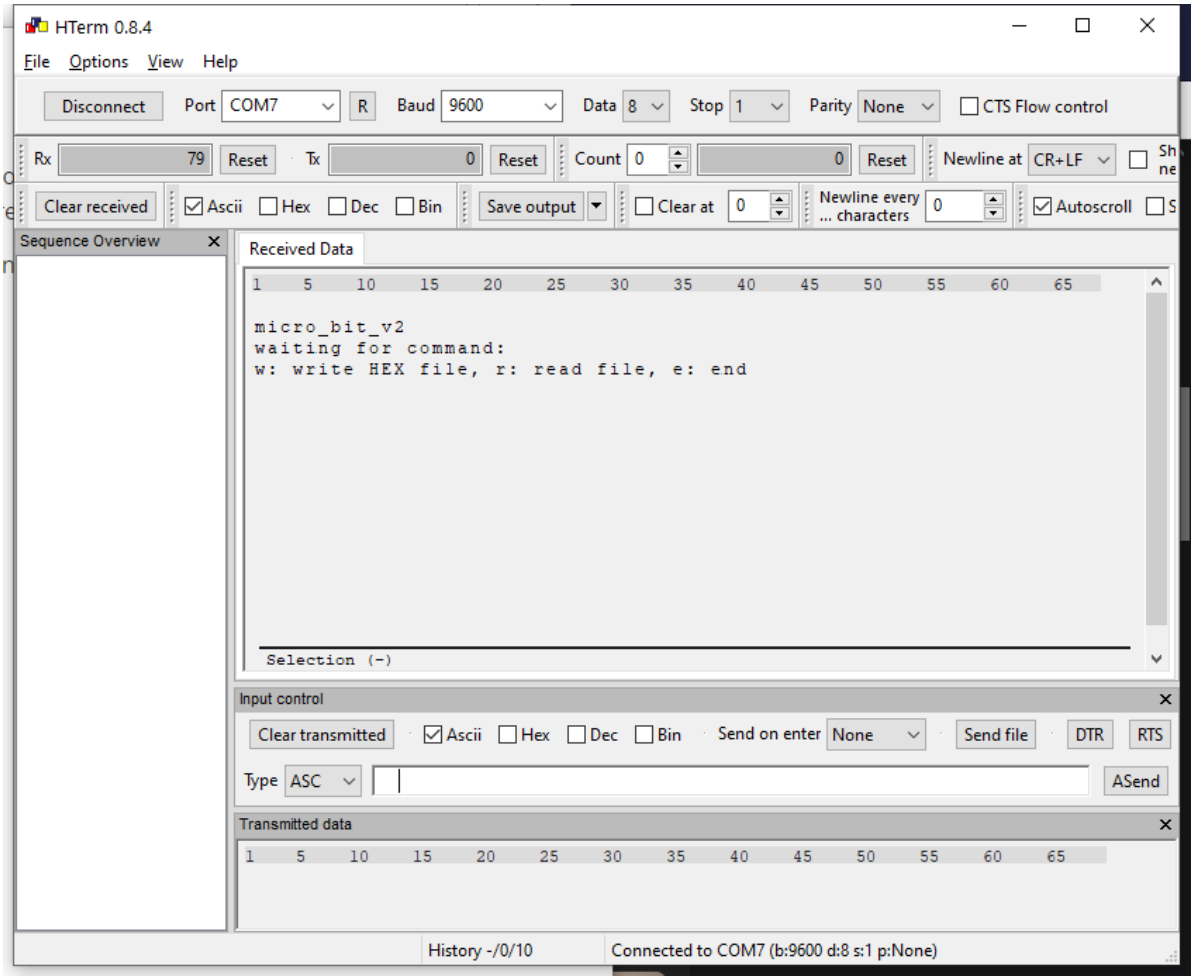
# Manual Serial TPS Programming

Sometimes it's useful to manualle program the TPS/SPS only with a terminal program. (Useful if you try to program via mobile, tablett...)

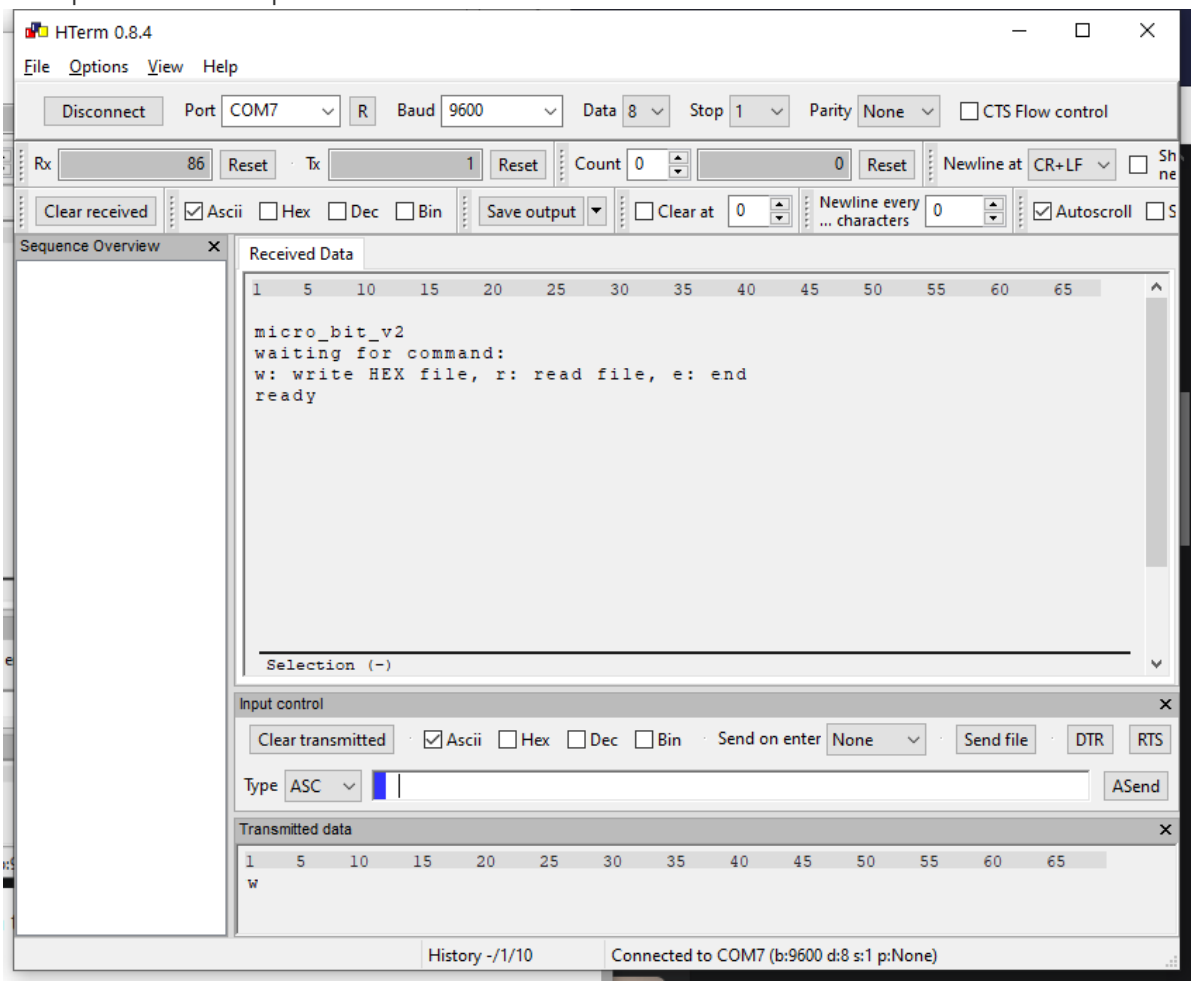
For manually serial programming you'll need a terminal program. For the PC I like hterm, but there are many different apps out.

For serial programming you'll need the COM port (determine on windows as shown in the video). Simply open the COMport with 9600 baud 8N1.



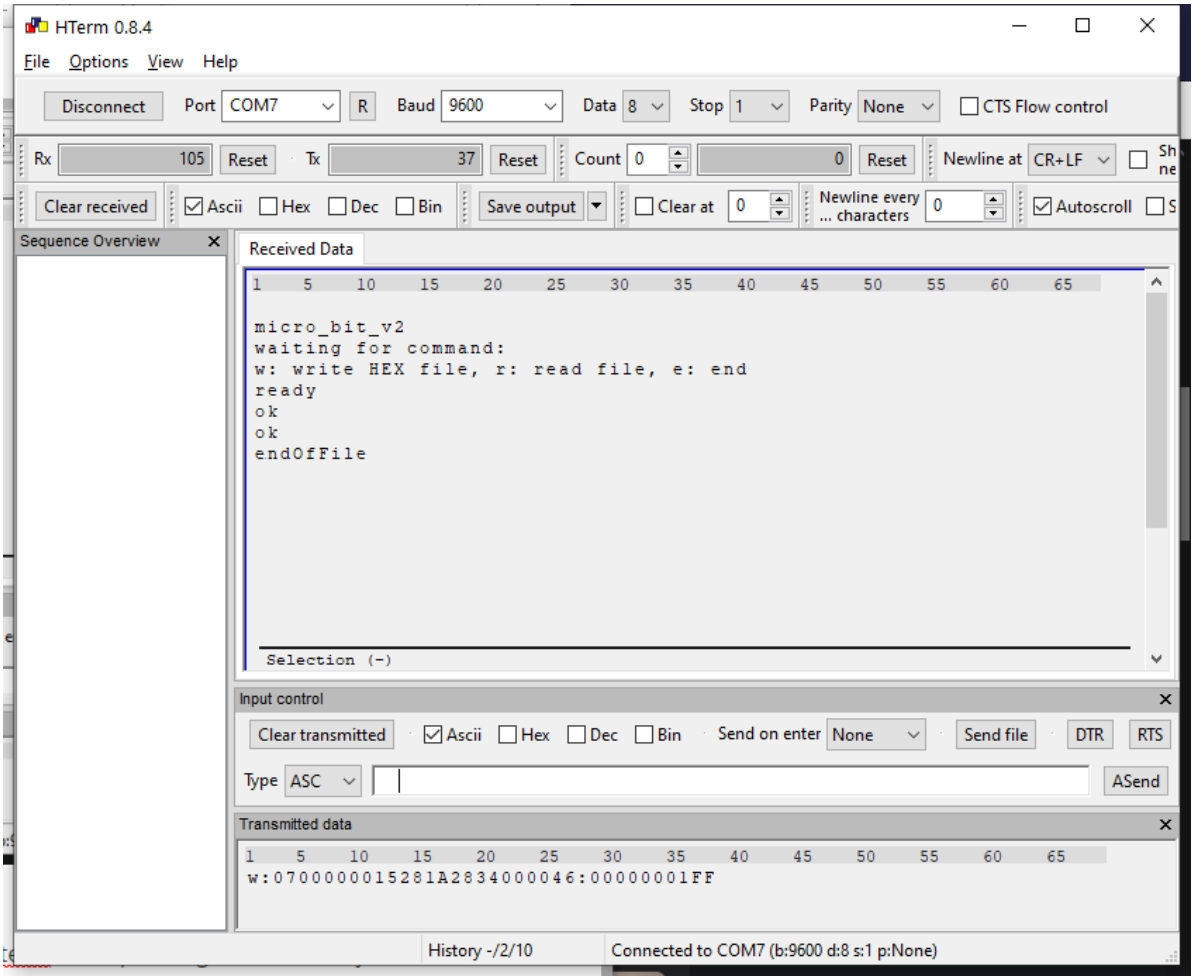

Then reset the microbit with **A** pressed. When you see the diamond, in the terminal you will see the output of the microbit. (Show above) The microbit will show you the possible command. With **r** you can readout the loaded TPS file as HEX.

Then press **w** in the input field of hterm:

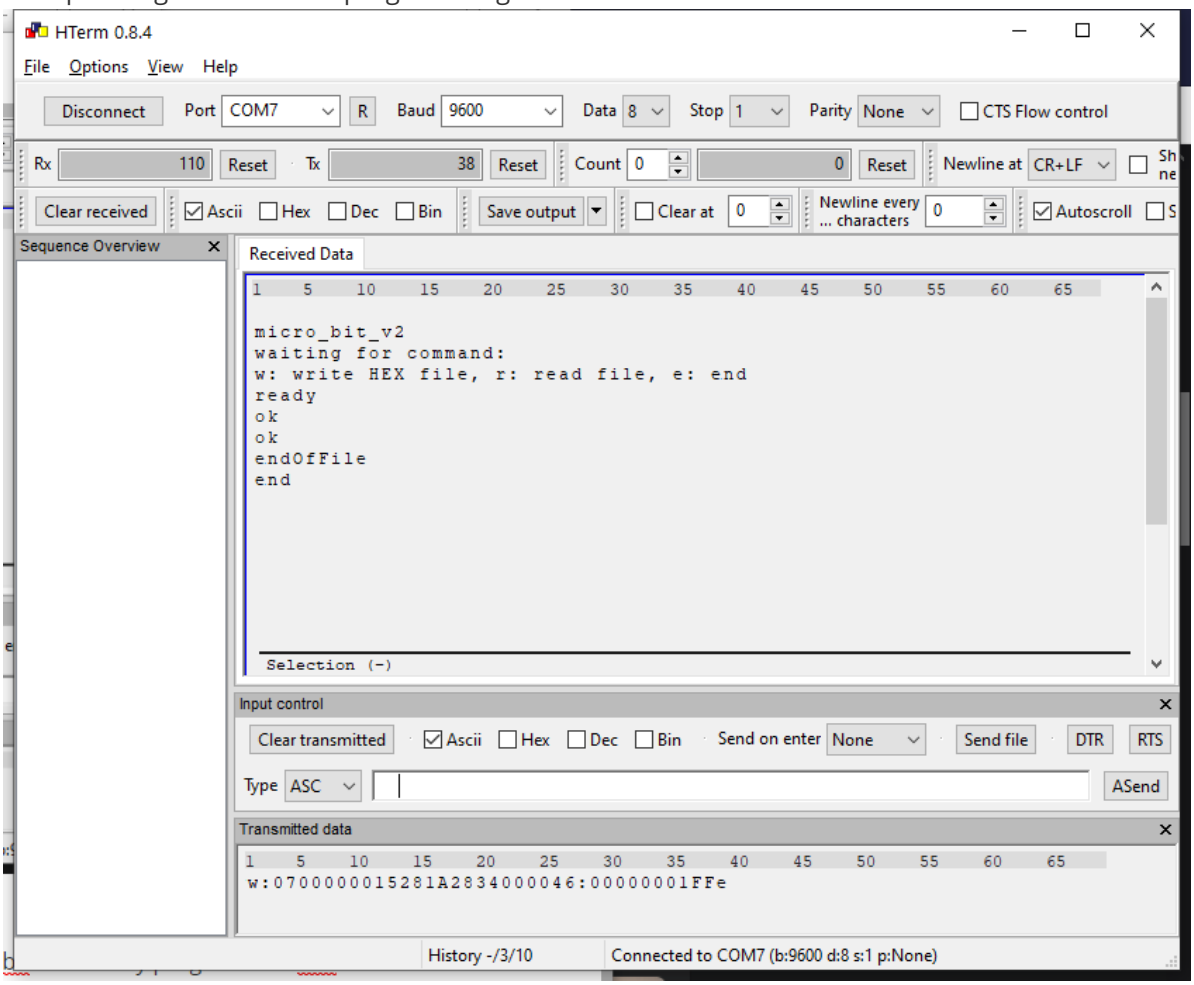



you will see `ready` as answer and an arrow down on the microbit.

Now you can copy your hex file line by line into the input field of the hterm. After pressing enter on every line, the microbit should answer with `ok`. After the last line the microbit will answer with `endoffile`.


HTerm 0.8.4
File Options View Help
Disconnect
Port COM7
R
Baud 9600
Data 8
Stop 1
Parity None
CTS Flow control
Rx 105
Reset
Tx 37
Reset
Count 0
0
Reset
Newline at CR+LF
Clear received
Ascii
Hex
Dec
Bin
Save output
Clear at 0
Newline every ... characters 0
Autoscroll
Sequence Overview
Received Data
1 5 10 15 20 25 30 35 40 45 50 55 60 65
micro_bit_v2
waiting for command:
w: write HEX file, r: read file, e: end
ready
ok
ok
endOfFile
Selection (-)
Input control
Clear transmitted
Ascii
Hex
Dec
Bin
Send on enter None
Send file
DTR
RTS
Type ASC
ASend
Transmitted data
1 5 10 15 20 25 30 35 40 45 50 55 60 65
w:0700000015281A2834000046:00000001FF
History -/2/10
Connected to COM7 (b:9600 d:8 s:1 p:None)

Now pressing **e** will end the programming mode.




microbit will answer with `end` and than restart. The newly programmed TPS file should now run.