ANT-177x : UDP and TCP over IP setup details

Contents

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Document info

Version	date	author	Comments
1.0	28-Nov-17	David M	Initial draft based on 2.3.6.6
1.1	1-Feb-18	David M	Minor changes
1.2	3-Mar-18	David M	2.3.7.1 added image of ANT-1773 with serial connection
2.0	5-Mar-20	David M	TCP over IP using 2.4.2.2

1. UDP over IP

1.1. ANT-177x Setup

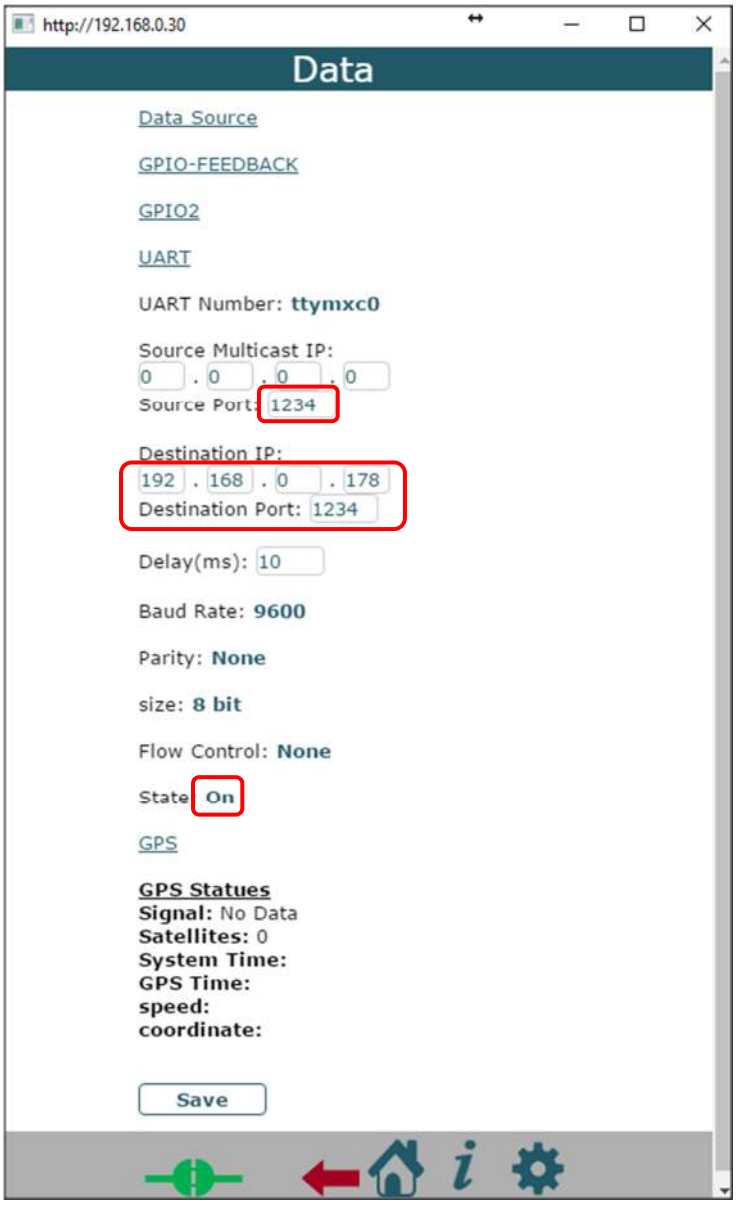
On the ANT-177x GUI navigate to UART setting on the Data page (Home -> Settings -> Data -> click UART to expand).

The UART settings should be as described in Figure 1 below

1.1.1. The "Source Port" and "Destination port" should be 1234
1.1.2. The "Destination IP:" is the PC (or sending devices) IP address, this case 192.168.0.178
1.1.3. "Baud Rate", "Parity", "Size" and "Flow Control" needs to such that it is compatible with the device receiving the serial data

After saving the settings the following should be noted about the State setting:
1.1.4. If the "State:" is Off it should be set to On and "save" clicked
1.1.5. If the "State:" is On it should be set to Off and "save" clicked, then set to On and save clicked again

Figure 1: UART settings



1.2. Serial data from PC to UART on ANT-177x

The connection from the PC to the ANT-177x is UDP over IP.

NOTES:

- Most communication of this type are TCP over IP so programs like Tera-Term will **NOT** be able to send the data.

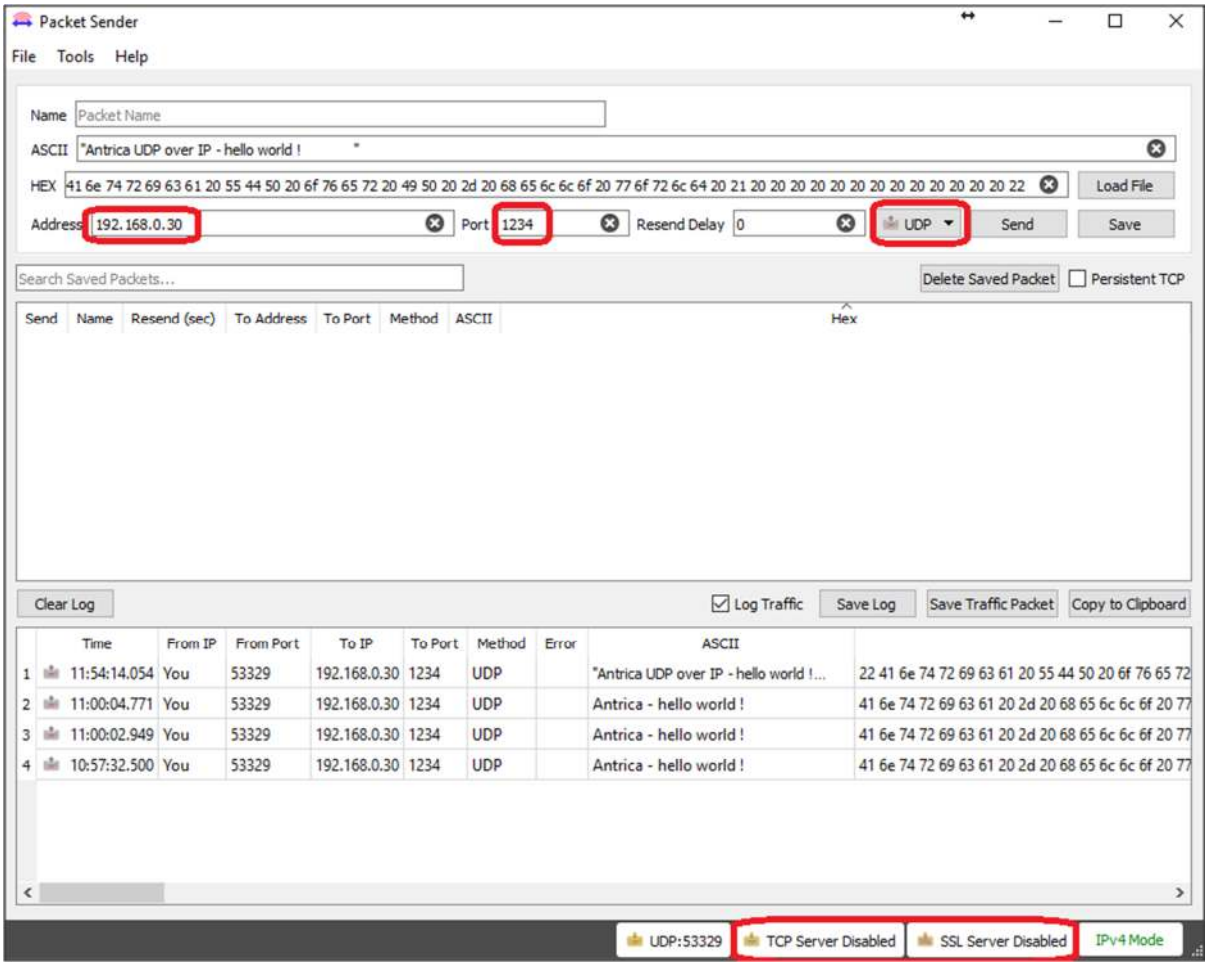
1.2.1. Sending UDP/IP data from PC to ANT-177x

A program like Packet Sender (https://packetsender.com) or Hercules SETUP utility (https://www.hw-group.com/products/hercules/index_en.html) can be used to transmitted data to the serial port on the ANT-177x via Ethernet. These programs can handle special characters such as "Carriage return" and "New Line"

The example used will be using Packet Sender; Setup Packet as shown in Figure 2 below

2.1.1.1. The Address is that of the ANT-177x
2.1.1.2. The Port has to be 1234
2.1.1.3. UDP is the type of transmission over IP. This is from a drop down selection menu
2.1.1.4. The TCP server and SSL Server are disabled. This can be done by clicking the highlighted section at the bottom of the image.

Figure 2: Packet Sender



1.2.2. View Serial data from ANT-177x

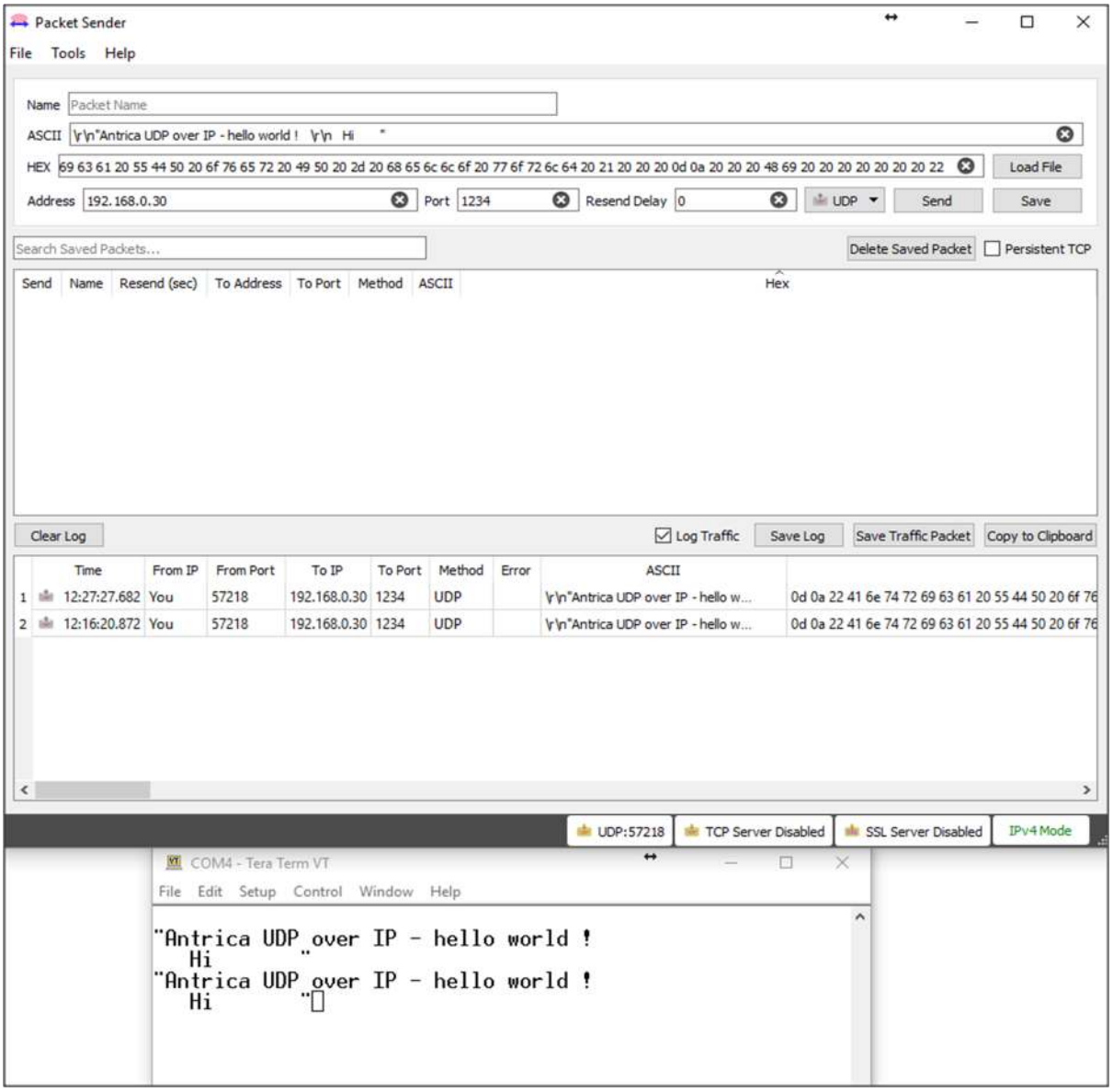
Using the Serial (9 way D-type to 3 way header) as serial connection can be made to a PC using a program like Tera Term.
The Term Term session will need the same setting for "Baud Rate", "Parity", "Size" and "Flow Control" as in the section ANT-177x Setup above.

The example shown in Figure 3 below shows that Packet Sender can send the message:

<Carriage return><New Line>
"Antrica UDP over IP – hello world!
<Carriage return><New Line>
Hi "

As can be seen in the lower portion of Figure 3 below the message has been sent twice by clicking the "send" button twice.

Figure 3: Data seen out of ANT-177x UART / Serial



1.3. Serial data from UART on ANT-177x to PC

1.3.1. Sending data from ANT-177x via on bard UART

If using Tera Term from the setup in Serial data from PC to UART on ANT-177x above data can either be copied and pasted or typed in.

1.3.2. Viewing Data from ANT-177x from UDP / IP connection

A program called SocketTest (https://sourceforge.net/projects/sockettest/), but this requires Java to be installed, can be used to view the packets from the ANT-1777x Ethernet connection. So, the example is that the following was copied and pasted into the Tera Term

<Carriage return><New Line>
"Antrica UDP over IP – hello world!
<Carriage return><New Line>
Hi "

and then "this is typing" was typed in, see Figure 4 below. Tera Term will require a few setting changes to enable easy viewing of the characters typed. So, setup -> terminal; "Receive:" set to "AUTO", and check "local echo"

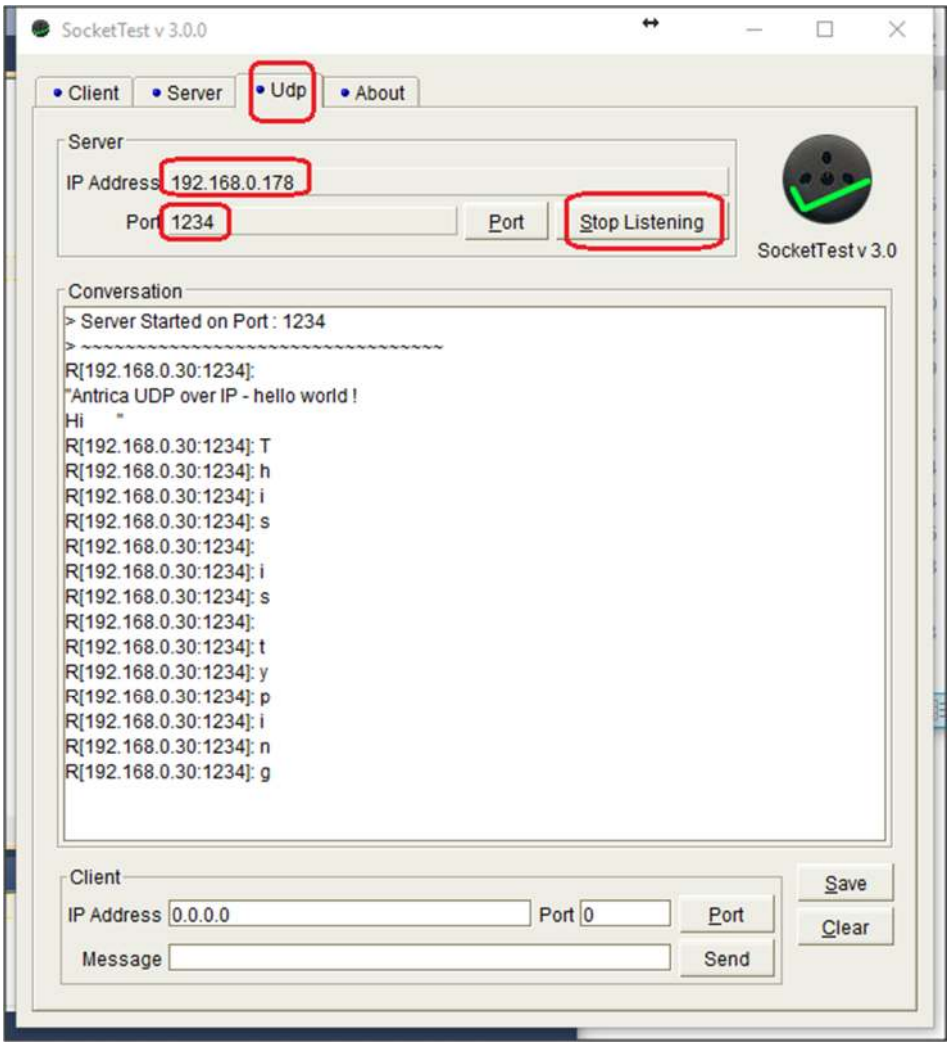
Figure 4 : Term Term serial input

Using the SocketTest program. Setup is shown in Figure 5 below; select the UDP tab, the server details are the PC and the port is 1234. Click "Start Listening" (and this will then change to "stop listening".

Packets can also be seen out of the serial of the ANT-177x; if the ANT-177x IP address is put into the client section (near the bottom), along with port 1234. It appears that only text can be sent and no special characters.

As can be seen in Figure 5 in the conversation window, if a copy and paste is used the message comes out in one block and a typed in message is transmitted character by character.

Figure 5 : SocketTest setup and "decode"



2. TCP over IP

2.1. ANT-177x Setup

The ANT-1773 requires upgrading to 2.4.2.2, the code is located:
https://www.dropbox.com/s/xyftp1lckfvialp/version_2.4.2.2.rar?dl=0
The upgrade guide is:
https://www.dropbox.com/s/s42wyfy6h4gpyhj/ANT-177x_FirmwareUpgrade.pdf?dl=0
but the SD card method is recommended:
https://www.dropbox.com/s/yao2uvc4xfgcgqw/SD%20Update%20Guide.pdf?dl=0
but this will reset the ANT-177x so if the config file is required to be save then see:
https://www.dropbox.com/s/s8rc4e1f8w58yu0/ANT-177x_ConfigSaveRestore_NeptuneGuard.pdf?dl=0

In this example the ANT-1773 is on 192.168.1.51.

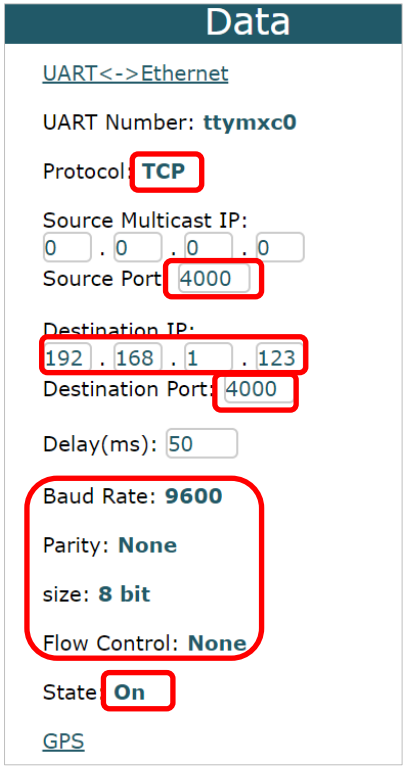
The UART settings should be as described in Figure 6 below

Navigate to Setup of Home -> Settings -> Data -> "UART<->Ethernet"

2.1.1. Protocol to be TCP
2.1.2. The "Source Port" and "Destination port" can as required, in this example it's 4000
2.1.3. The "Destination IP:" is the PC (or sending devices) IP address, this case 192.168.1.123
2.1.4. "Baud Rate", "Parity", "Size" and "Flow Control" needs to such that it is compatible with the device receiving the serial data

After saving the settings the following should be noted about the State setting:
2.1.5. If the "State:" is Off it should be set to On and "save" clicked
2.1.6. If the "State:" is On it should be set to Off and "save" clicked, then set to On and save clicked again

Figure 6 : serial setup in ANT-1773 web GUI



IP address 192.168.1.123 is the desktop PC

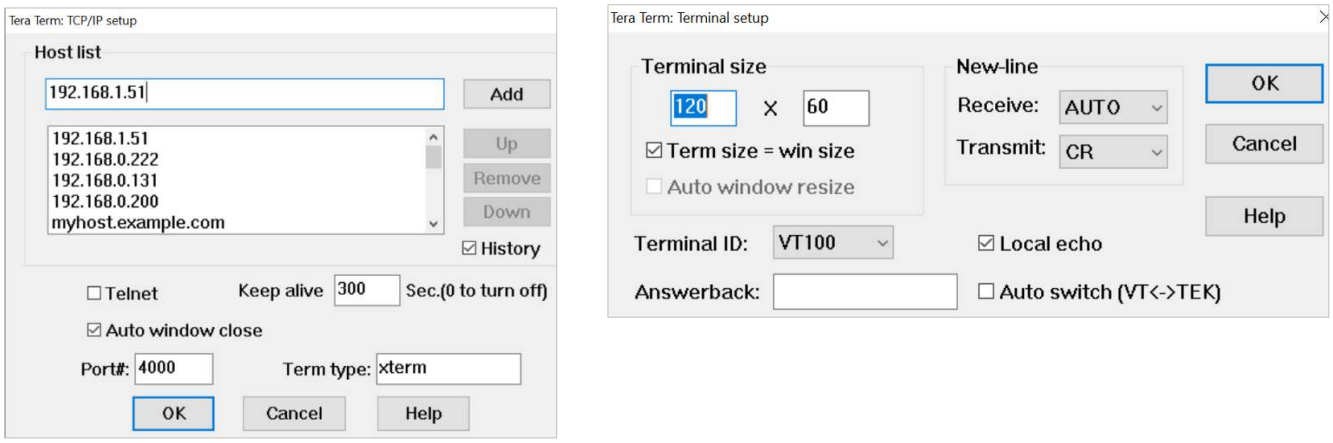
2.2. Serial data from PC to UART on ANT-177x

The connection from the PC to the ANT-177x is TCP over IP, a program like Tera Term will work

2.2.1. Sending TCP/IP data from PC to ANT-177x

The "TCP over IP" connection using Tera Term.

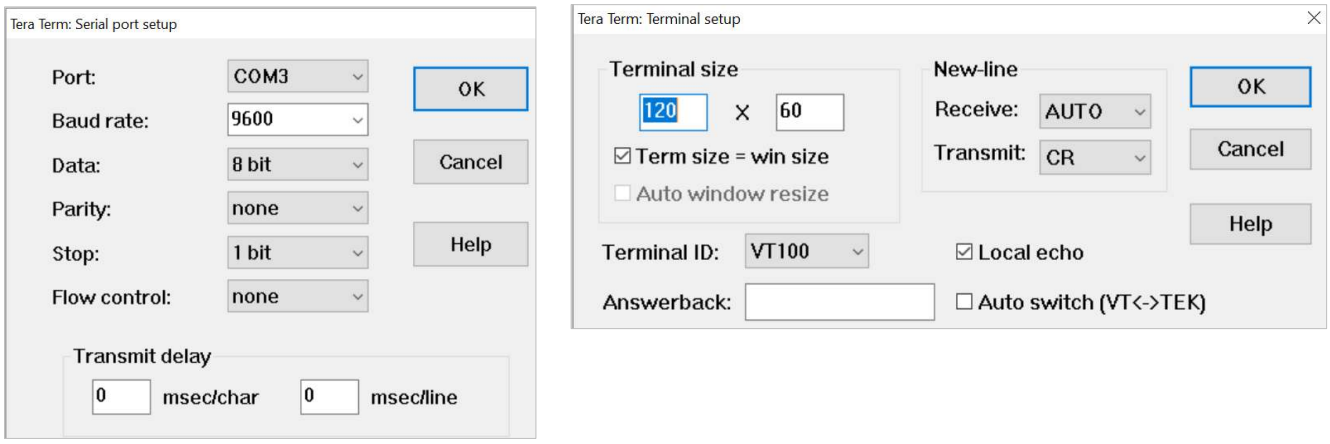
Figure 7 : TCP over IP terminal setup



2.2.2. View Serial data from ANT-177x

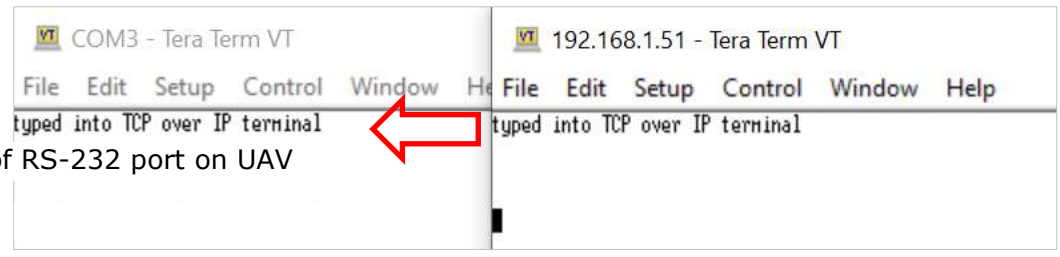
The physical RS-232 data port using Tera Term to connect

Figure 8 : RS-232 port setup



The string "typed into TCP over IP terminal" is typed in the TCP-over-IP Tera Term window. This appears on the Tera Term RS-232 serial port window.

Figure 9 : TCP-over-IP -> Serial port data flow



Text out of RS-232 port on UAV

2.3. Serial data from UART on ANT-177x to PC

Unfortunately, the TCP over IP ***from*** the ANT-177x is not detected by Tera term so another program is required to view the packets from the ANT-177x. The example used here is "netcat".

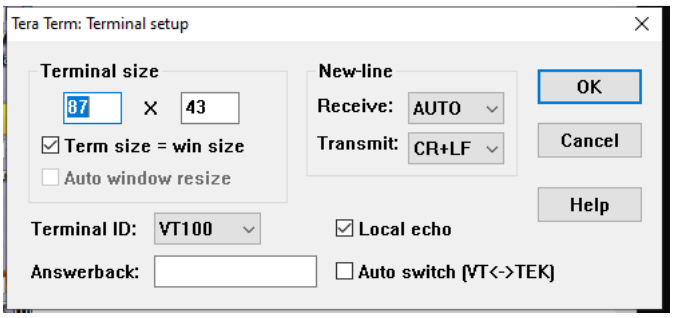
This is available within MobaXterm or as DOS executable.

MobaXterm - https://mobaxterm.mobatek.net/

DOS executable, nc.exe is within the file netcat-win32-1.12.zip downloadable from :
https://montcs.bloomu.edu/Networking/Software/netcat/
or https://eternallybored.org/misc/netcat/

Tera Term setup for the RS-232 connection to the ANT-177x is shown in Figure 10.

Figure 10 : RS-232 port setup



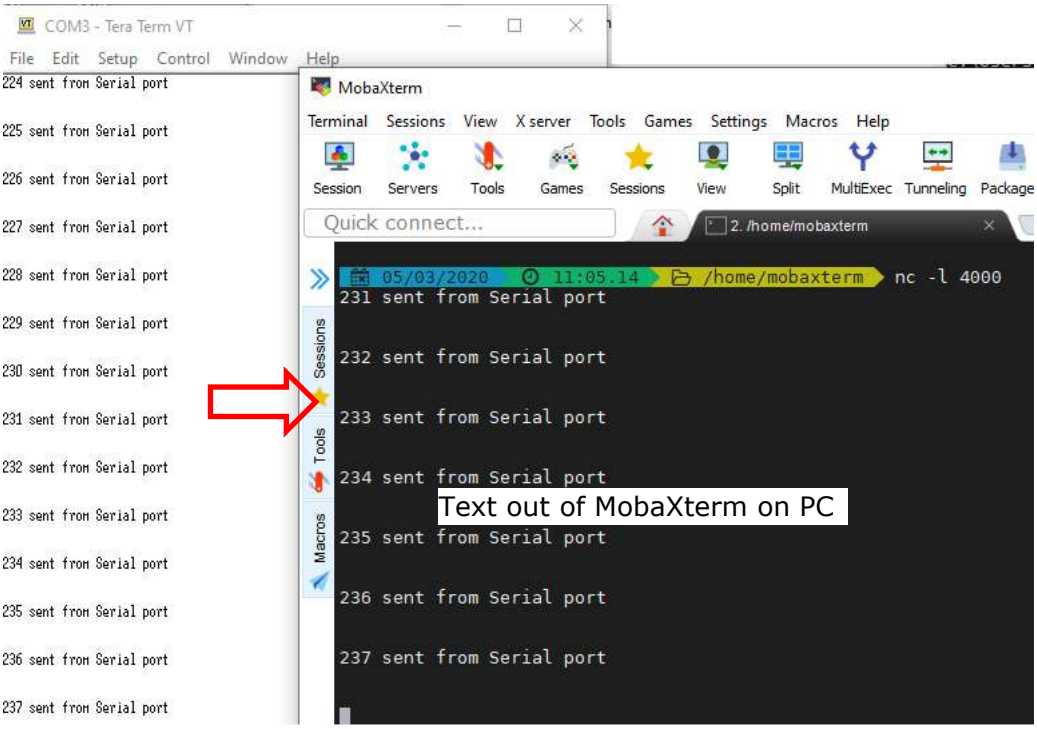
2.3.1. MobaXterm nc command

In this guide the MobaXterm nc command is used with the line:

```
nc -l 4000
```

In Figure 11Figure 12 a simple script was used to send messages from the Tera Term window with an increasing number for line ID. The response can be seen in the MobaXterm window.

Figure 11 : TCP-over-IP -> Serial port data flow using MobaXterm nc command



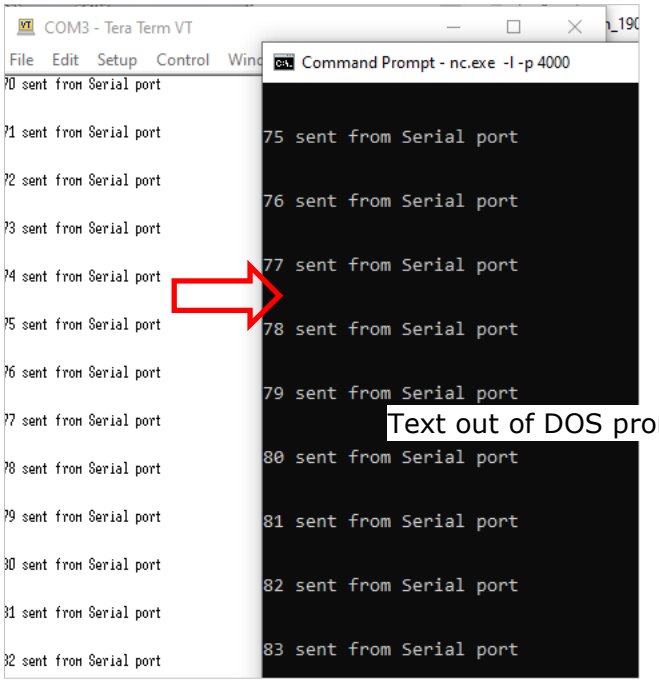
2.3.2. DOS prompt nc.exe

In this guide the nc.exe DOS command is used with the line:

```
nc.exe -l -p 4000
```

In Figure 12, again a simple script was used to send messages from the Tera Term window with an increasing number for line ID. The response can be seen in the DOS prompt.

Figure 12 : TCP-over-IP -> Serial port data flow using DOS nc.exe



Text out of DOS prompt on PC

3. UAV modules connectivity

3.1. ANT-1773 / Nano