

ADS-B Plane Tracker



Version 1.0
tested by DLR Bremen

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1. Block Diagram

This Unit is able to receive ADS-B Signals on 1090Mhz.

The Signal is filtered with 30Mhz Bandwidth, amplified, and filtered again with 12Mhz Bandwidth. After demodulation, the decoded signals will be send parallel: LAN / USB / RS232 @ 115200 Baud 8,N,1

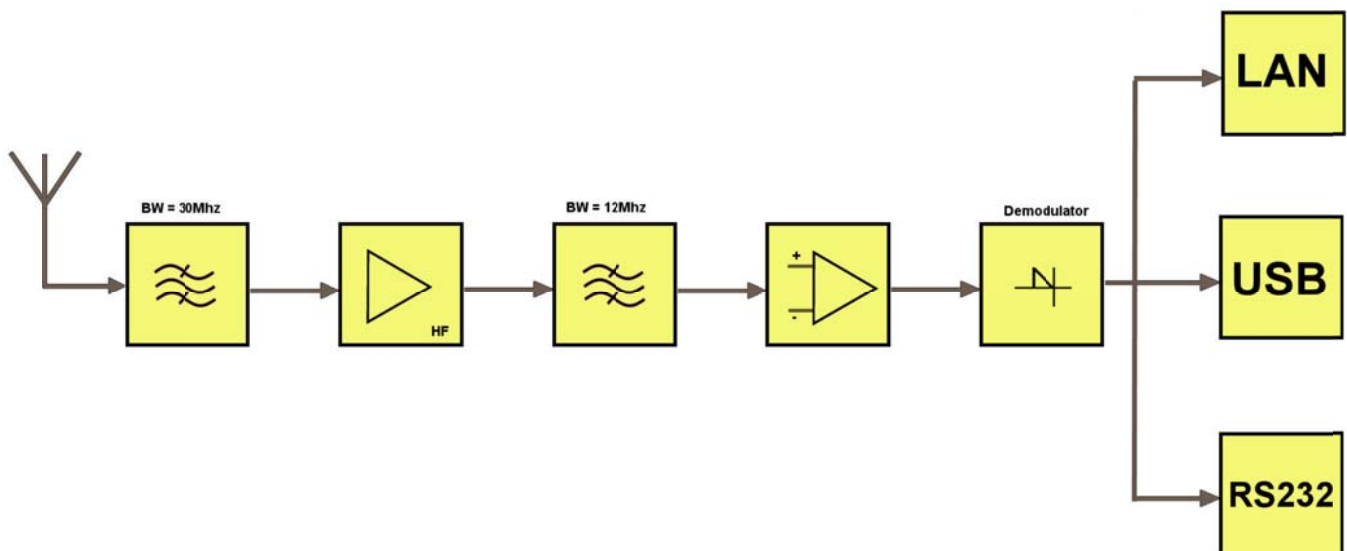


Fig. 1

2. Setup LAN

Configuration Tool from the ZIP File ConfigTool107_1.4.4.1_install:

For Installation, start **setup.exe** This will install the program to:

"C:\Program Files (x86)\WIZnet\Configuration Tool (ver 1.4.4.0)\"

2.1 Network Configuration.

WIZ107SR Configuration Tool (Network Configuration Page)

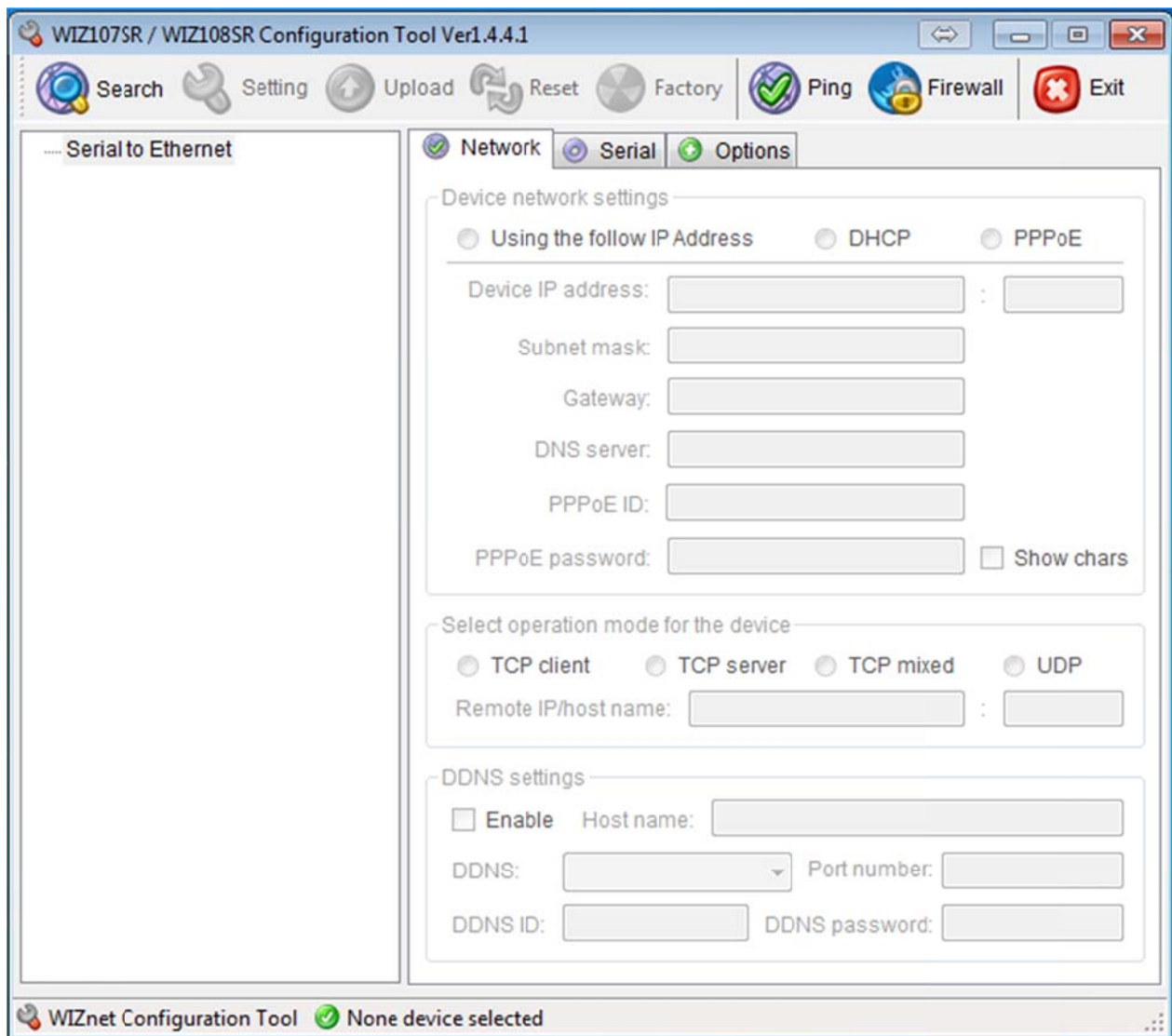
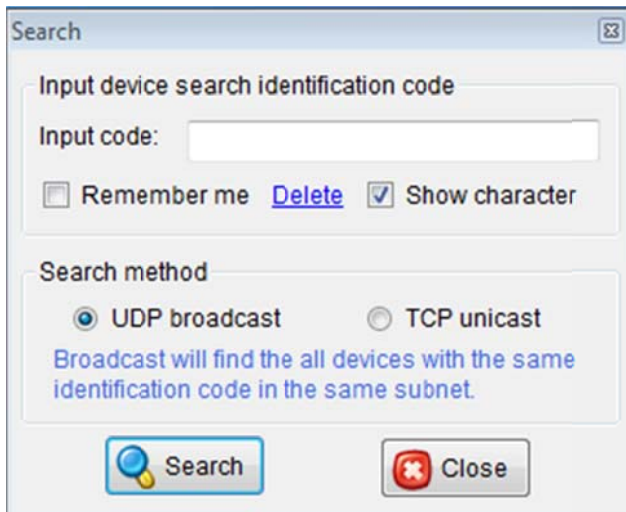


Fig. 2

2.2) Search

The Search function is used to search all devices existing in the same LAN or in WAN.

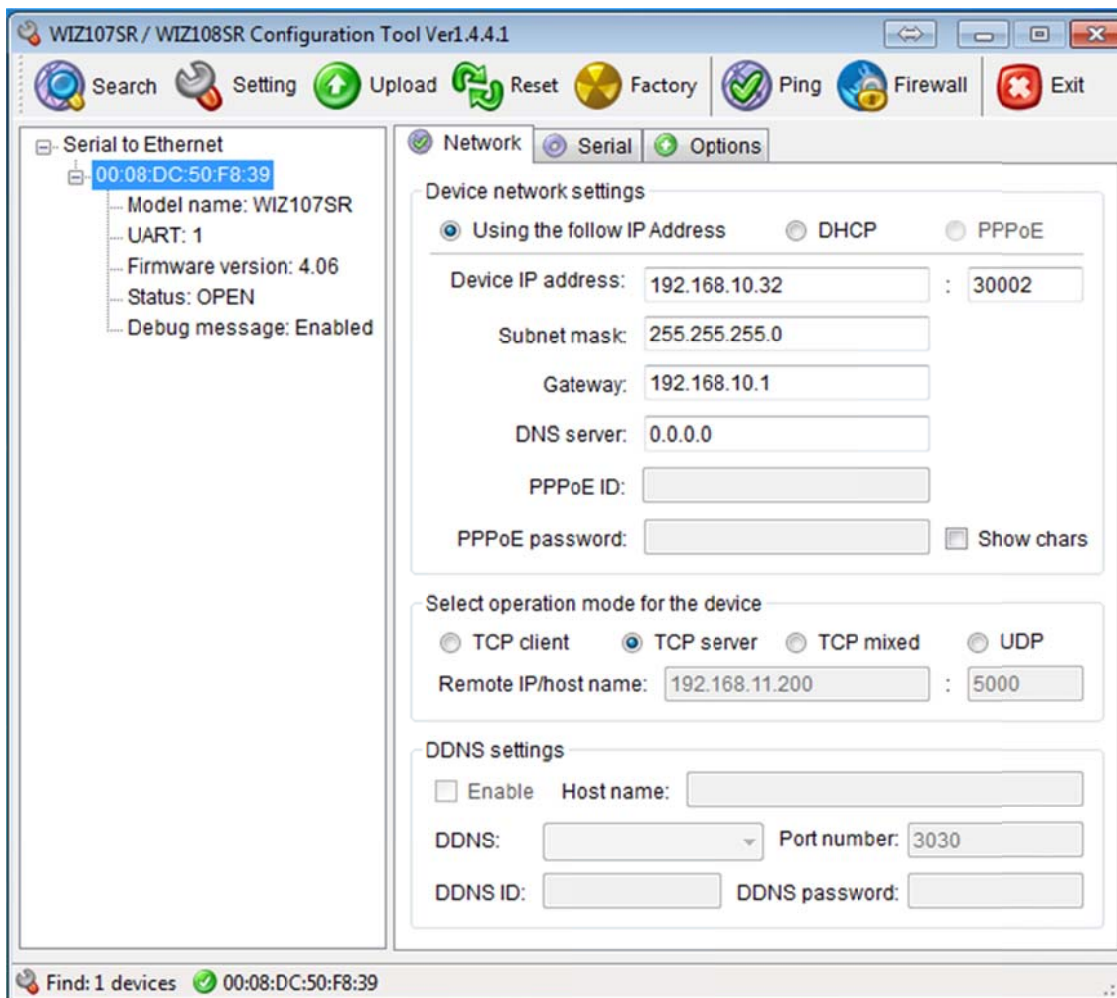


The Search dialog box is titled "Search" and contains the following elements:

- Input device search identification code**
 - Input code:
 - ☐ Remember me [Delete](#) ☒ Show character
- Search method**
 - ☒ UDP broadcast ☐ TCP unicast
 - Broadcast will find the all devices with the same identification code in the same subnet.
- Buttons**
 - Search
 - Close

Fig. 3

By using UDP broadcast as shown in Fig3., all connected devices in the same subnet will be found. If the TCP unicast method is checked, the specified IP address must be given as shown on Fig.4. The founded device will be listed in the “Serial to Ethernet” tree with its MAC address.



The WIZ107SR / WIZ108SR Configuration Tool Ver1.4.4.1 window shows the following configuration:

- Search** (selected), Setting, Upload, Reset, Factory, Ping, Firewall, Exit
- Serial to Ethernet**
 - 00:08:DC:50:F8:39
 - Model name: WIZ107SR
 - UART: 1
 - Firmware version: 4.06
 - Status: OPEN
 - Debug message: Enabled
- Network** (selected), Serial, Options
 - Device network settings**
 - ☒ Using the follow IP Address ☐ DHCP ☐ PPPoE
 - Device IP address: 192.168.10.32 : 30002
 - Subnet mask: 255.255.255.0
 - Gateway: 192.168.10.1
 - DNS server: 0.0.0.0
 - PPPoE ID:
 - PPPoE password: ☐ Show chars
 - Select operation mode for the device**
 - ☐ TCP client ☒ TCP server ☐ TCP mixed ☐ UDP
 - Remote IP/host name: 192.168.11.200 : 5000
 - DDNS settings**
 - ☐ Enable Host name:
 - DDNS: Port number: 3030
 - DDNS ID: DDNS password:

Find: 1 devices 00:08:DC:50:F8:39

Fig. 4

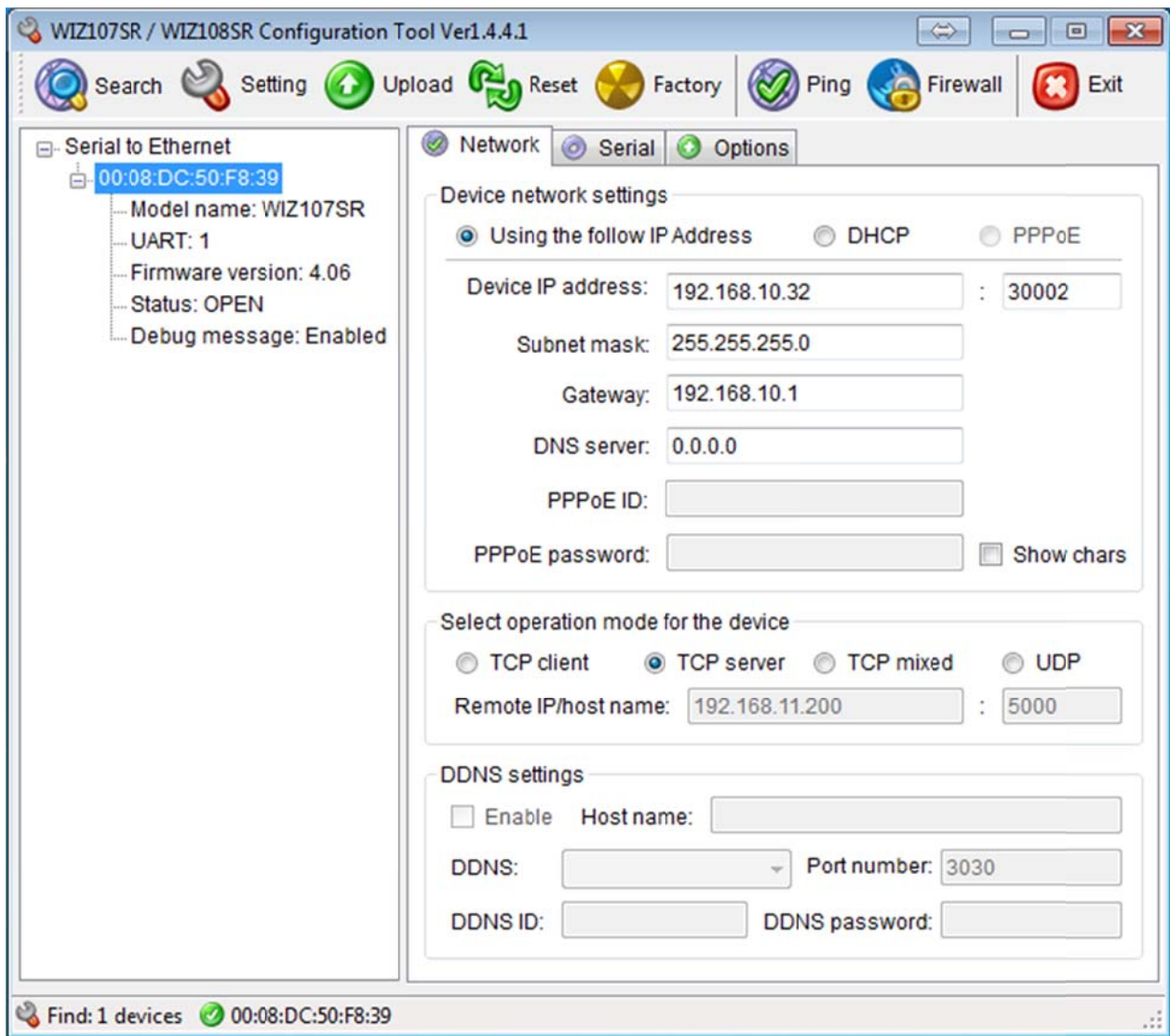


Fig.5

2.3) Setting

This function is to complete the configuration change.

If you select the MAC Address from the “Serial to Ethernet” tree, the default configuration value of the module will be displayed. Change the configuration and click “Setting” button to complete the configuration. The module will re-initialize with the changed configuration. Changed value is saved in the EEPROM of the module. Thus, the value is not removed even though power is disconnected.

2.4) Upload

Firmware will be uploaded through network (only network controller firmware)
 Programing of the receiver is made by using extra onboard MCU connection only.

2.5) Reset

Reset and restart the selected module if you select the MAC Address from the tree and click “Reset” button.

2.6) Factory

All value is initialized to Factory default value if you select the MAC Address from the tree and click “Factory” button.

2.7) Ping

Pop up the Simple Ping application program, you can test the ping operation.

2.8) Firewall

Pop up the Windows Firewall setup program.

2.9) Exit

Close the configuration Tool Program.

2.10) Search window

If you click “Search” button, all the MAC address on a same subnet, will be displayed this area. You can see the basic information such as Model name, Firmware version Etc.

2.11) Network Setting Method

Select IP setting mode, you can select one of Static, DHCP.

2.12) Network Operation Mode

Client / server / mixed: This is to select the communication method based on TCP. TCP is the protocol to establish the connection before data communication, but UDP just processes the data communication without connection establishment. The Network mode of ETHERNET MODUL can be divided into TCP Server, TCP Client and Mixed mode according to the connection establishing method. At the TCP server mode, ETHERNET MODUL operates as server on the process of connection, and waits for the connection trial from the client. ETHERNET MODUL operates as client at the TCP Client mode on the process of connection, and tries to connect to the server’s IP and Port. Mixed modes supports both of Server and Client. The communication process of each mode is as below. <TCP server mode Communication> At the TCP Server mode, ETHERNET MODUL waits for the connection requests.

For example the setting for Network is: **192.168.10.32:30002**

IP: **192.168.10.x** where x = 1-255 and the Port :**3000y** where y=1-9

SUB: **255.255.255.0**

Gate: **192.168.10.x** (often x = 1)

2.13 Serial Configuration.

The serial settings used by Hardware are shown on the Fig.6.

These settings should not be changed.

If you have command **Factory** these settings must be reentered again manually.

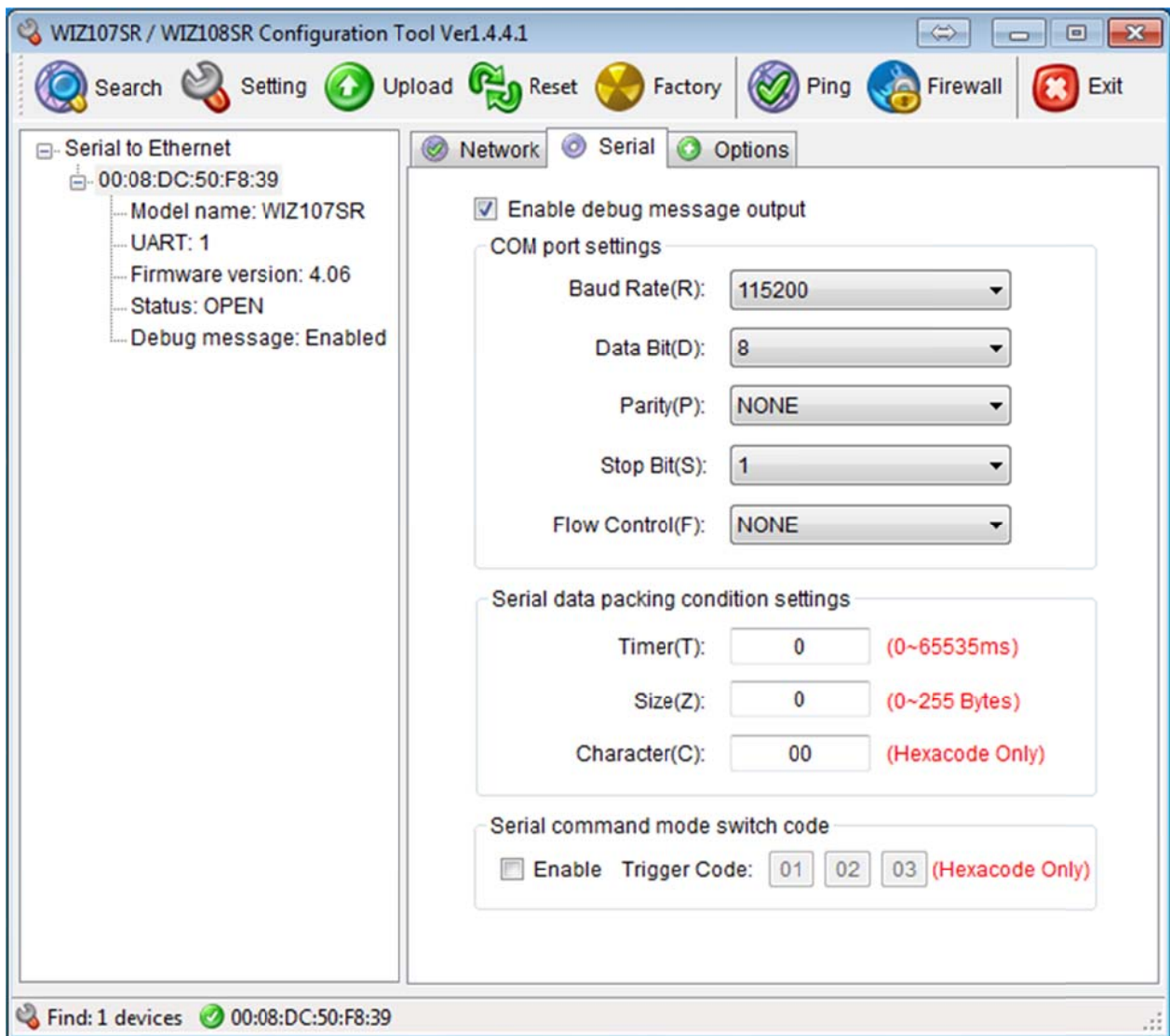


Fig. 6

Serial Setup

115200, 8, N, 1, N

3. Setup USB

This unit uses FTDI USB to Serial bridge **FT234x**

Latest driver can be downloaded here:

<http://www.ftdichip.com/Products/ICs/FT234XD.html>

<http://www.ftdichip.com/Drivers/D2XX.htm>

Windows 7 upwards to Windows 10 will normally recognize the USB Interface.

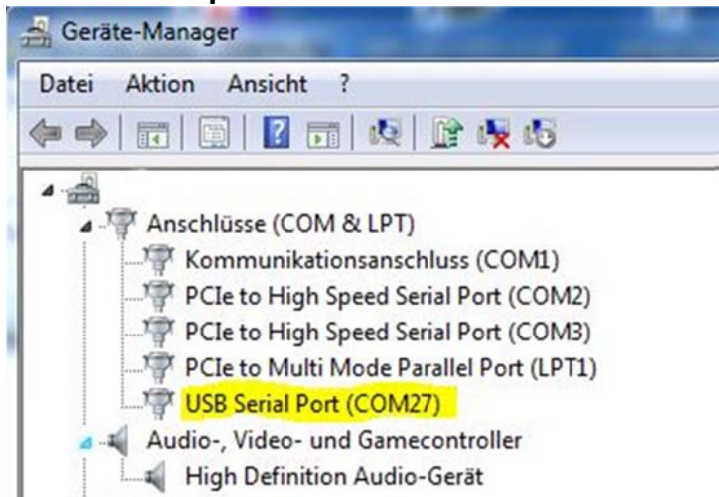


Fig. 7

For use in your Application you have to enter the new Port. (Here it's **COM27**)
Serial Setup 115200, 8, N, 1

4. Setup RS232

Using the RS232 3.5mm Jack, connect it with the Cable to your Computer Com-Port

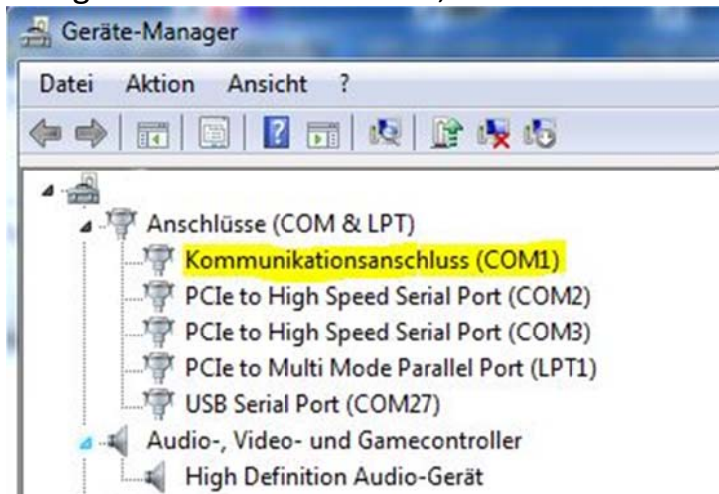


Fig. 8

(Here it's **COM1**)

Serial Setup 115200, 8, N, 1

5. PC-Software

There is a variety of software applications that can use the data from the receiver and displays them (AVR format). Here we will explain how to get the receiver to work with two of the most popular programs:

ADSBScope and **PlanePlotter**.

To use the IP-receiver with Planeplotter as Mode-S-Receiver you have to choose **"AVR receiver TCP"**.

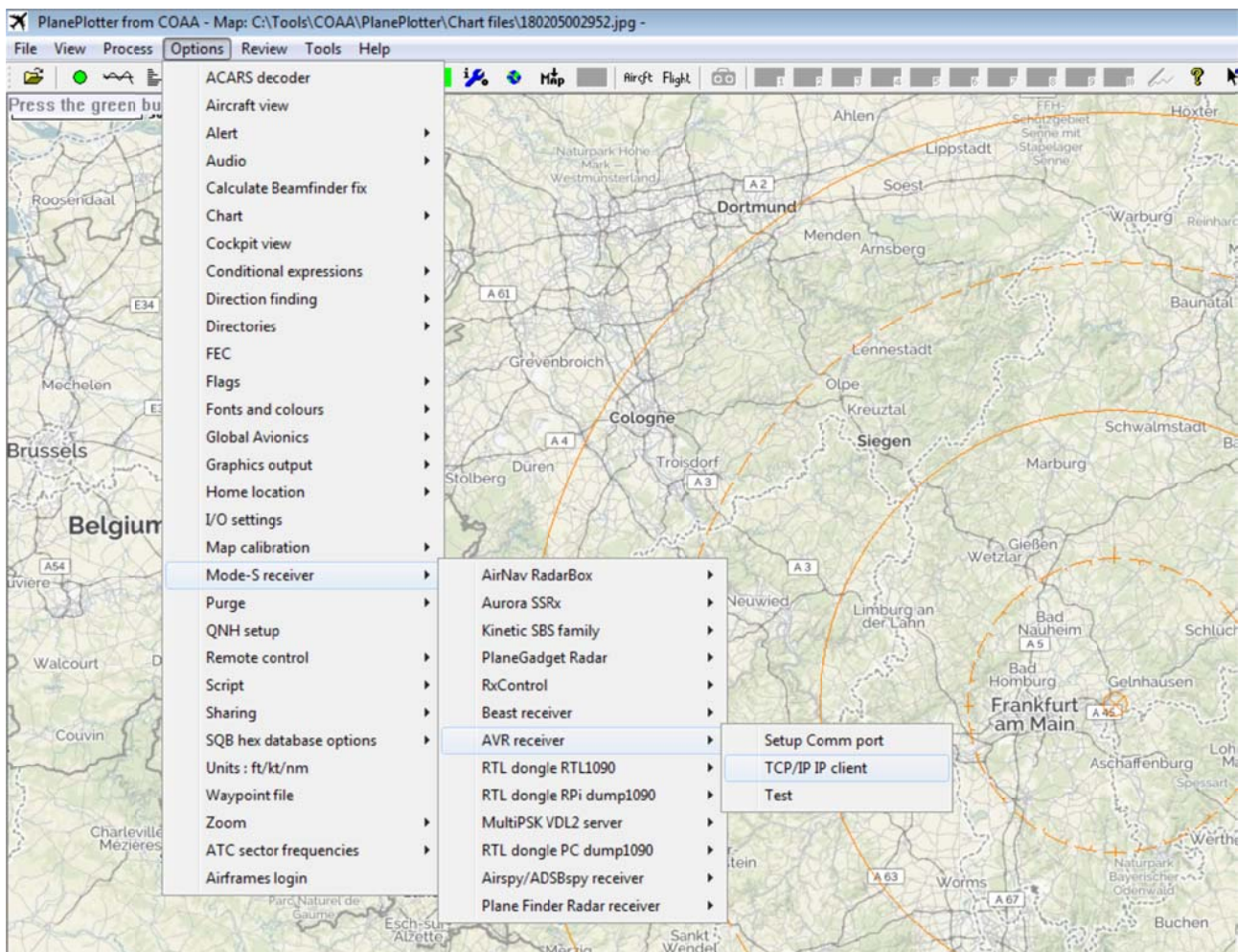


Fig. 9

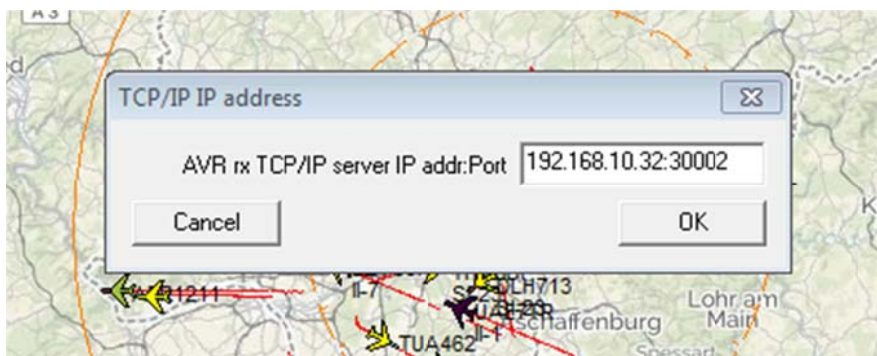


Fig. 10

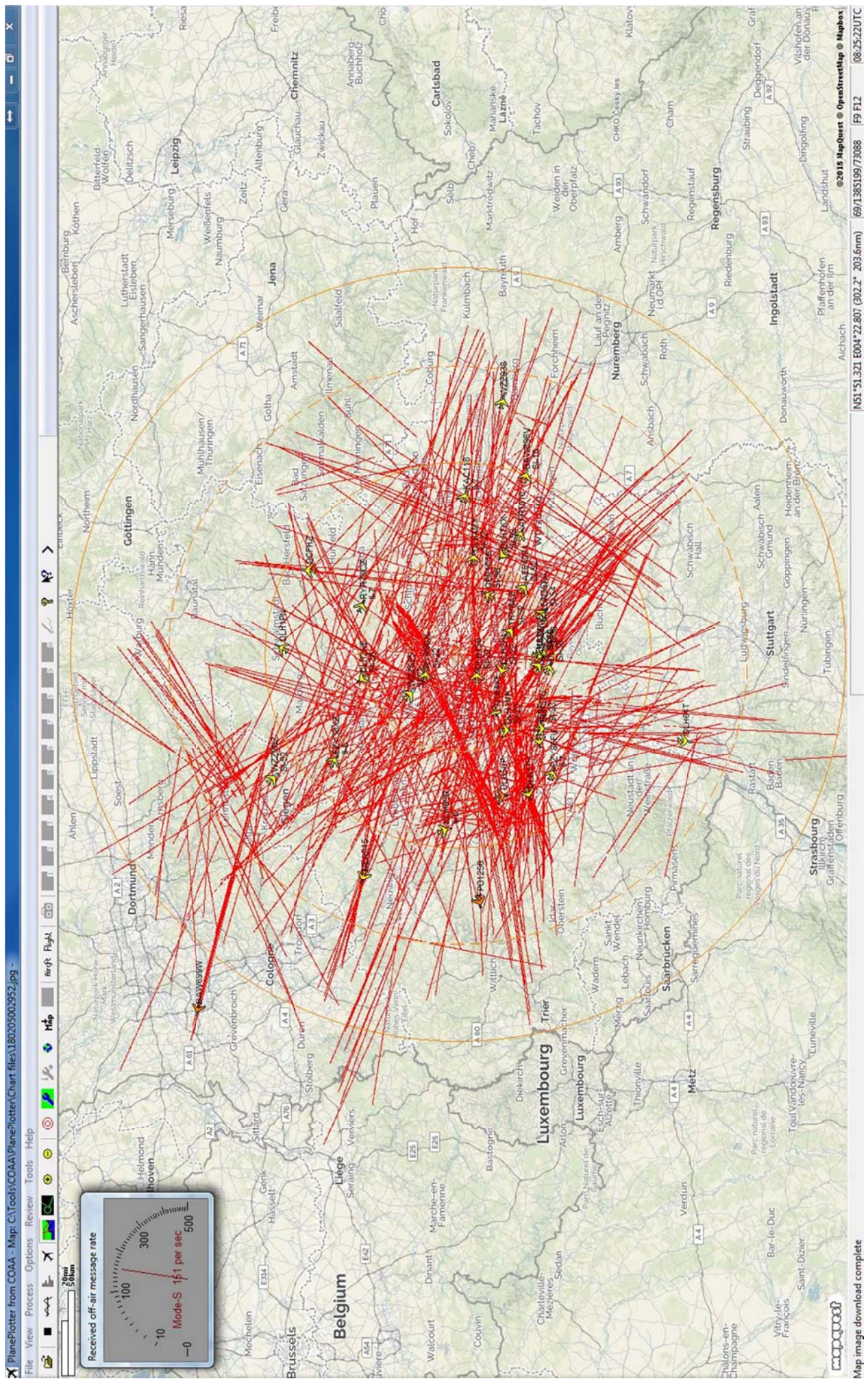


Fig. 11 $R=200\text{km}$ $D=400\text{km}$ $A=125663\text{km}^2$

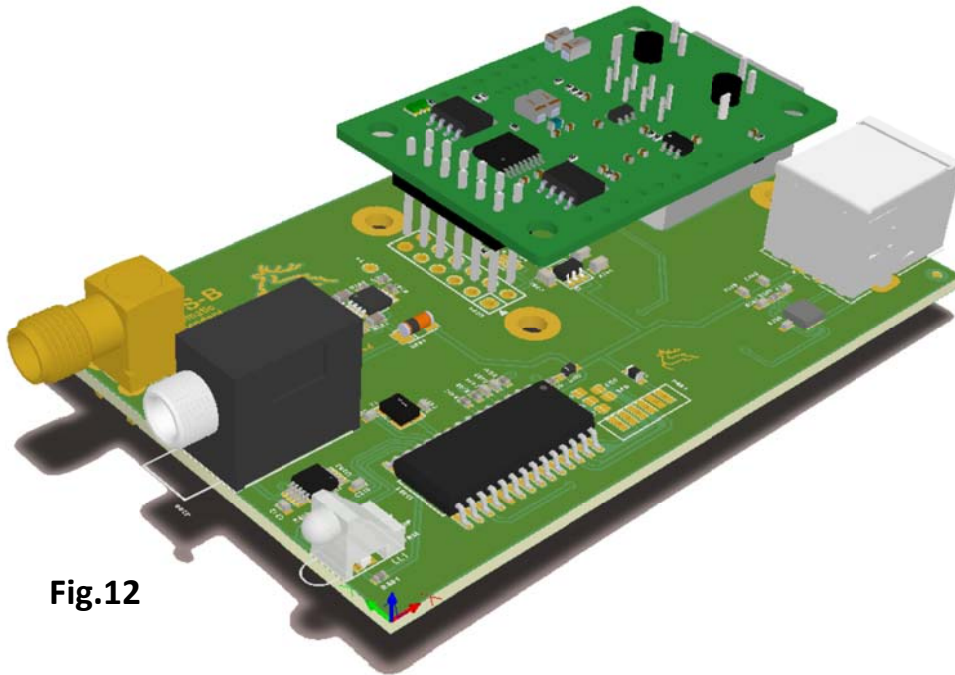


Fig.12

6. Connections

USB: Supply for Plane Tracker

USB: Virtual Com Port

LAN: TCP/IP 10/100 Mhz

LAN: Virtual ComPort

**3.5mm Stereo Panel Jack to
Serial ComPort**

3.5mm Stereo	Sub-D 9Pol
Tip =>	2 RX
Ring	NC
Sleeve =>	5 GND



Antenna:

The Unit has a 50 Ohm right angle PCB SMA Jack.

It's prepared for passive mode Antenna.

Caution if an external active antenna is used.

Then check that no Voltage goes over the SMA Jack into the Unit.

7. CE Conformité Européenne

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EG-Konformitätserklärung

- TBD



Rücknahme & Entsorgung:

Die von uns gebauten Artikel werden von uns entsprechend der Rücknahmeverordnung entgegengenommen. Einen kostenfreien Rücksendeschein können Sie bei uns anfordern.



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