



# **Data Collection for OPUS**

## **Software manual**

**Version 1.0**

**Software Version:**

**Last Revised: April 4, 2014**

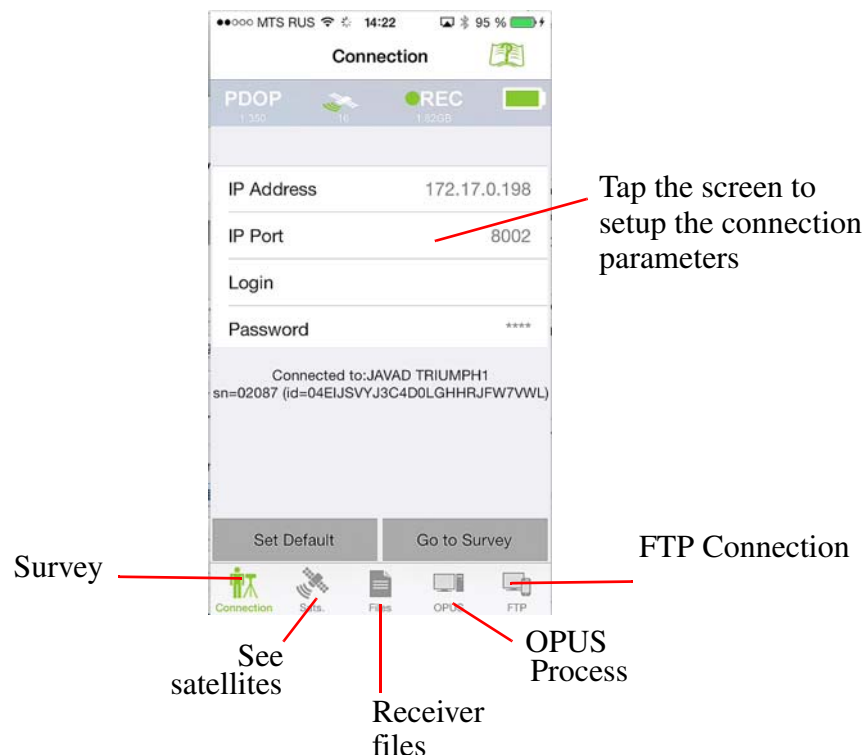
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# PURPOSE AND GENERAL DESCRIPTION

This application runs on iPhones, iPads and iPods with iOS 5.0 and newer (including iOS7). In these application notes iPhone 5 screenshots are used (iPad and iPhone 3G/4/4S user interface is the same excepting the screen size). Please see the full list of the supported devices in “Appendix A” on page 13.

The application is designed to connect to your Javad receiver using WiFi to control Post-Processing Surveying (Static, Kinematic and Stop&Go) and to download the raw data to process it on USGS OPUS and get results. OPUS supports Static surveying with 15 sec. logging rate and at least half hour occupation time. OPUS-RS mode is also supported, in this mode 5 sec. and more than 8 minutes files can be processed.








**Figure 1. Software interface**

The functions are organized into tabs and you can switch from tab to tab with icons on the bottom of the screen. There are 5 different tabs in the application:

## Purpose and general description

### Managing and Operating Receiver using iPad/iPhone

-  *Survey* tab is used to setup and control the surveying. Here the antenna height, site name, epoch rate and occupation time can be setup. Also you can monitor how many time remains and how many epochs are collected.
-  In *Satellites* tab the sky plot and table of satellites are shown. The data quality can be checked at any time.
-  *Receiver files* tab shows raw data files in the receiver memory. The files can be deleted to get more free space or downloaded into your iPhone/iPad for further processing.
-  In *OPUS process* tab your current raw data files in the iPhone/iPad are shown. They can be deleted from your iPhone/iPad and you can obtain coordinates. here
-  *FTP Connection* tab allow accessing to the iPhone/iPad from PC or other device desktop to get or put raw data.

Active tab is highlighted and other tabs are gray.

Some page can have enclosed pages and you can navigate page to page with control buttons or using navigation bar on the top of the screen.

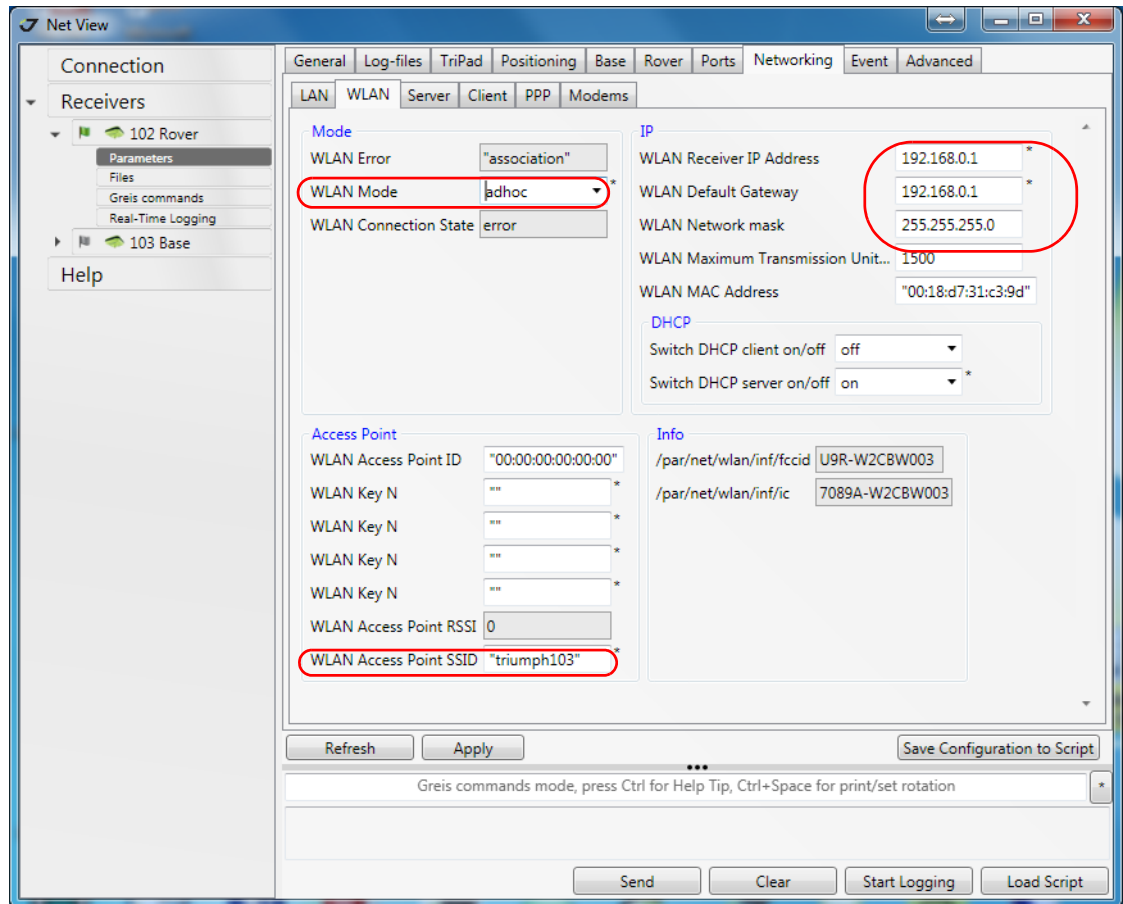
The screen tips with items explanation will be displayed for the first screen access. To turn this help on again, tap *Settings* ▶ *Post-Proc.* ▶ *Show help.*

# 1. Managing and Operating Receiver using iPad/iPhone

## 1.1. Connection to TRIUMPH-2

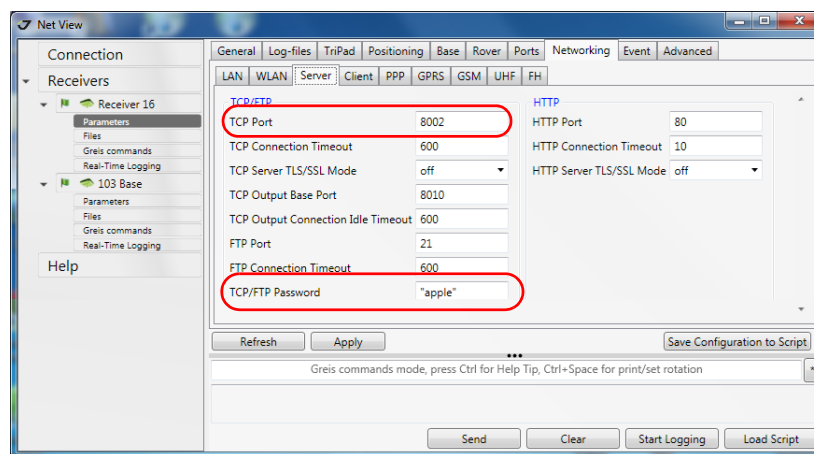
To use your iPad/iPhone with TRIUMPH-2, perform the following steps:

1. Start NetView on your PC, connect to TRIUMPH-2 using USB or Bluetooth, then click *Networking* ▶ *WLAN*.
2. Set *WLAN Mode* to *adhoc*.
3. Assign *WLAN Access Point SSID* name, e.g. *triumph103*.
4. Enter IP address (e.g. 192.168.0.1), gateway (e.g. 192.168.0.1) and Network mask (e.g. 255.255.255.0).
5. Set the DHCP parameters: client to *off*, and server to *on*. Click *Apply*.



**Figure 2. WLAN parameters**

6. Open *Server* tab. Configure access to the TRIUMPH-2: enter TCP Port (e.g 8002) and your own TCP/FTP Password (e.g. “apple”). Click *Apply*.



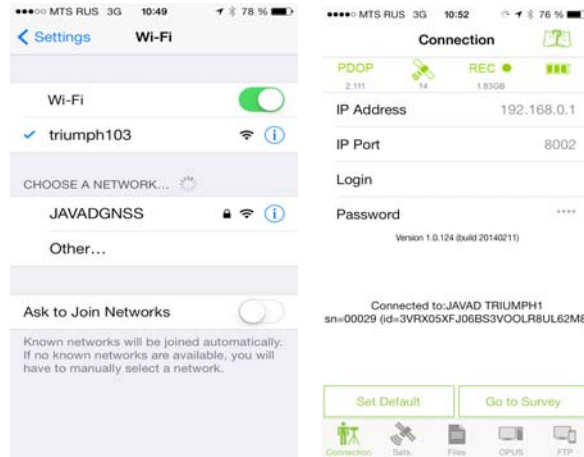
**Figure 3. Server tab parameters**

7. Reset TRIUMPH-2.

## Purpose and general description

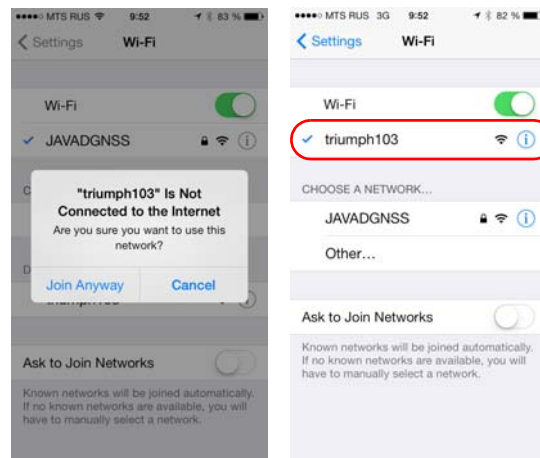
### Managing and Operating Receiver using iPad/iPhone

- On iPhone tap *Settings* ▶ *WiFi* and turn on WiFi.
- Just created WiFi access point SSID name (triumph103) should appear in the list of available networks. Click information icon near its name. Configuration screen appears (Figure 4).



**Figure 4. WiFi Settings**

- Select *Static* and type in IP address, subnet mask, DNS the same you have assigned for TRIUMPH-2 in NetView (see Figure 2 on page 15).
- Now you can connect to the TRIUMPH-2. In the list of available WiFi networks tap to triumph102:



**Figure 5. Connection to TRIUMPH-2**

- WiFi connection is established. Now your TRIUMPH-2 is ready to be managed from your iPhone.
- Run PP application on your iPhone.

14. In connection dialog type in the same IP port and IP address as you set for TRIUMPH-2 or click *Set Default* button. Then in *Connection* page type IP address of the internal network, network port and login/password. The application will connect to your TRIUMPH-2 receiver.



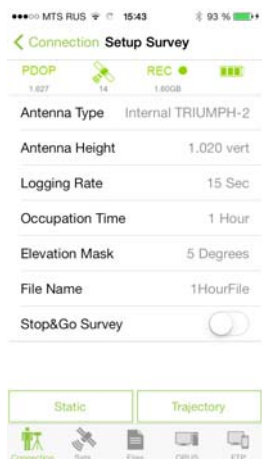
**Figure 6. Connection page**

## 1.2. Surveying

After connection is successfully established, you can see receiver ID and serial number. Use the *Connect* button to go to the next screen to configure your receiver for survey.

If a survey logging already started in the receiver you will see the appropriate information: logging file name and time till auto finish. Use *Go to Survey* button to switch to *Survey* screen to monitor the survey progress or to stop it.

The *Setup Survey* window allow setting antenna type, antenna height, logging rate, occupation time, elevation mask, file name and enabling/disabling site finishing without closing receiver file (it is useful for Stop&Go surveying, but unnecessary for OPUS processing).



**Figure 7. Setup Survey**

## Purpose and general description

### Managing and Operating Receiver using iPad/iPhone

To start Static site surveying or Kinematic Trajectory surveying, tap the needed button. *Surveying* page will appear and you will be able to monitor your surveying progress. The application instructs your receiver to finish logging automatically if *Static* surveying is selected and occupation time is set, so you can close the application or disconnect your iPhone/iPad from the receiver and wait till recording light is blinking on the receiver, that means data recording is on. Alternatively you can connect at any time to the receiver to monitor its status and to cancel the surveying using *Close File* button.

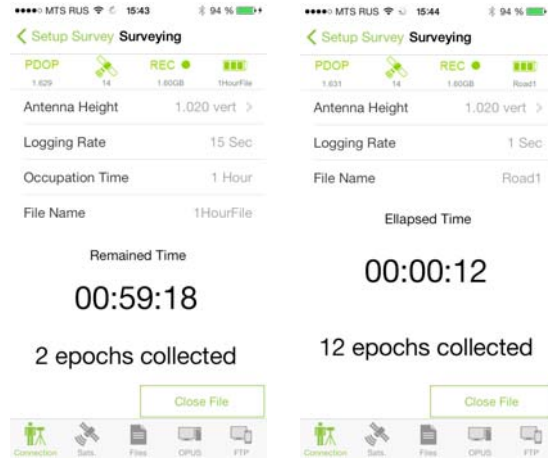


Figure 8. Surveying

For *Trajectory* surveying you have to close the recording file by tapping the *Close File* button or pressing the recording button on the receiver.

## 1.3. Satellites and receiver files

After connection with receiver is established you can monitor satellites status. Go to *Satellites* tab to see *Satellite table* and *SkyPlot*. Use the buttons on the bottom, to switch between *SkyPlot* and *Satellites*:



Figure 9. Satellites and SkyPlot



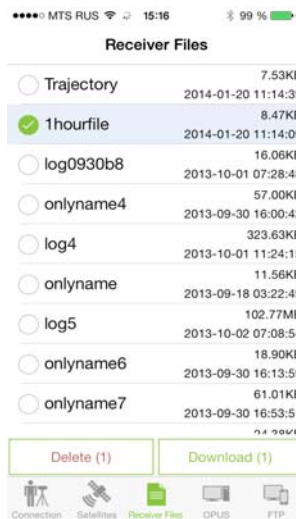
Satellite table includes satellite number (PRN and FCN for GLONASS), receiver healthy status (H means Healthy (OK) and I means Invalid), elevation and azimuth, signal-to-noise ratios for each satellite signal. There is the status code with its description for each satellite at the end of the table.

On the SkyPlot screen the sign for the satellite (yellow for GPS, blue for GLONASS, green for Galileo, blue for BeiDou and purple for SBAS) and its number are shown.

**Note:** If a satellite is ok it has sign with “wings”, unhealthy satellites are without such wings.

## 1.4. Receiver files downloading

After the survey is complete, you can switch to *Files* tab. There is list of raw files in the receiver in this tab. On the left the raw file name is shown and the file size with creation date is on the right. Tapping to a file you can select. The unneeded files can be deleted (*Delete* button). To download the files to the iPhone/iPad, select them and tap *Download*.



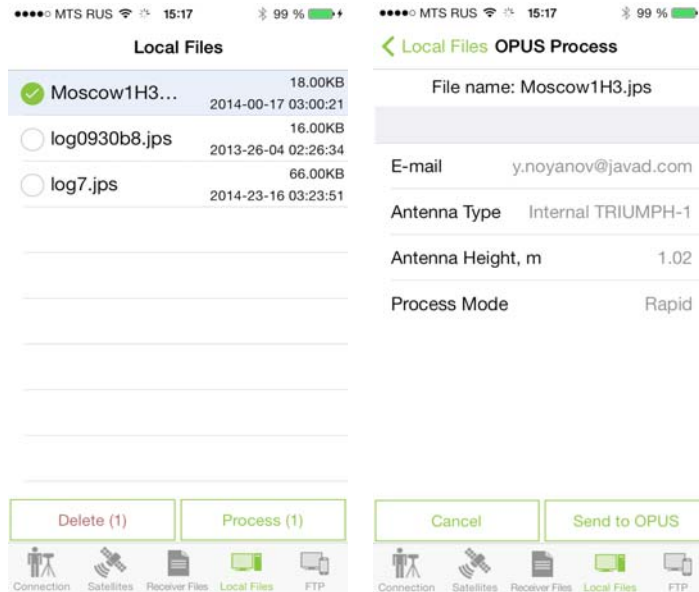
**Figure 10. Receiver files**

## Purpose and general description

Managing and Operating Receiver using iPad/iPhone

# 1.5. OPUS Processing

The files downloaded to iPhone/iPad can be process on OPUS server. Open the *OPUS* tab to see the list of raw files available on your iPhone/iPad (local files). Select the files by tapping and marking them. The selected files can be deleted by tapping the *Delete* button or sent to OPUS by tapping the *Process* button.



**Figure 11. OPUS process**

By tapping the *Process* button the software converts the file to RINEX and shows the file information. You should add the following information:

- e-mail address to get answer from OPUS server;
- antenna ID;
- antenna height (OPUS does not support slant antenna, so the application converts slant antenna into vertical one);
- type of process, it can be Static or Rapid Static.

Tap *Send to OPUS*. Application connects to OPUS server, send the data and get response from the server.



**Figure 12. Response from OPUS and OPUS solution report**

The processed coordinates will be received via email on your iPad/iPhone or PC.

## 1.6. Exchange data

There are two abilities to get data from the application: you can export loaded files to a cloud server like DropBox, OneDrive etc. or to activate FTP server and connect to the device from PC.

### Cloud exchange

To send loaded jps file to another application e.g. to a cloud service use *Export* button. List of installed application will appear and you can select to which application send to.

## Purpose and general description

### Managing and Operating Receiver using iPad/iPhone

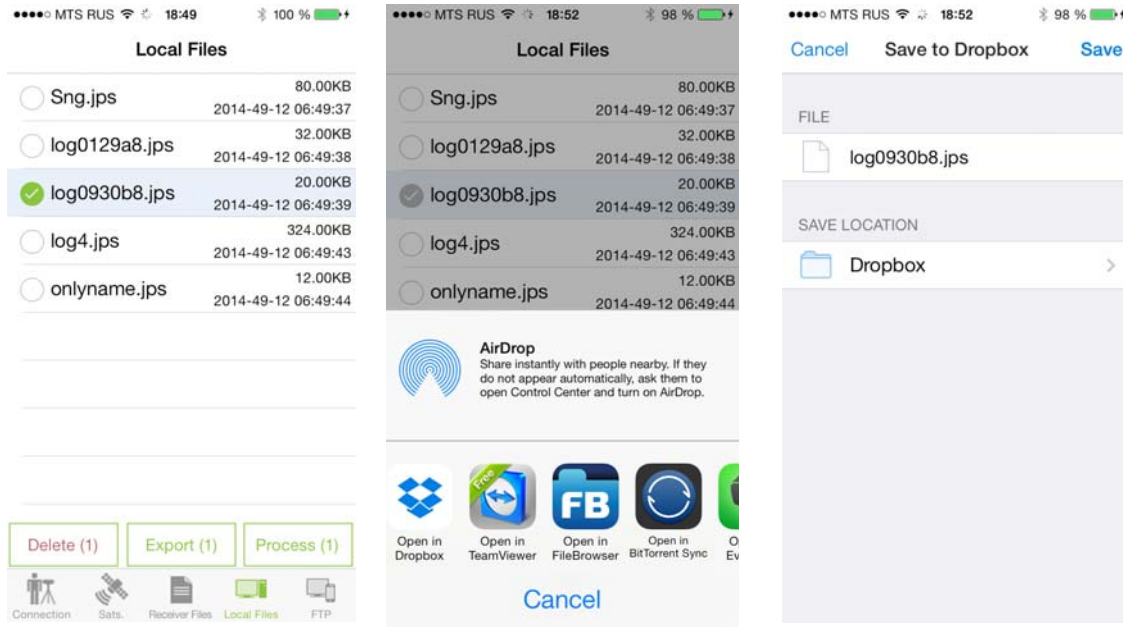


Figure 13. Sending files to a server

## FTP Connection

To get data from you iPhone/iPad use the embedded FTP server. You can switch to *FTP* tab to see current device IP address and configure the access. On your desktop you can use any FTP client application (e.g. your browser). Just type the IP address in format: e.g. `ftp://172.22.0.27` and select anonymous as name.

You will have full access to all raw files in your device and in *Settings* folder you can access to application settings. Also you can use the access to put your ups field into the application to process them on OPUS.