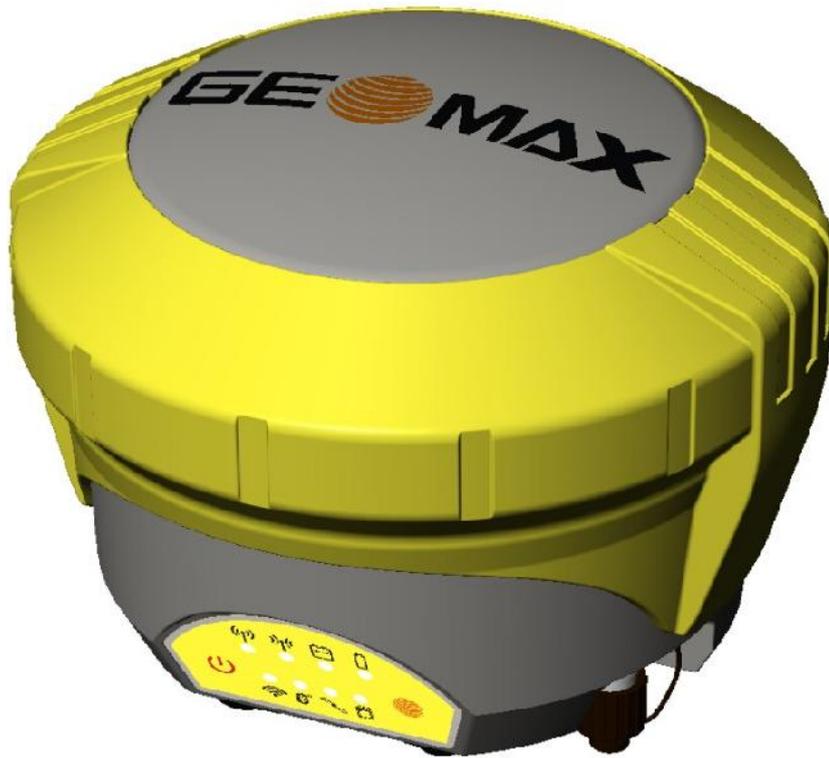


GEOMAX GNSS

Zenith35 Series How To Guide



Version 1.00
English

Table of Contents

1	ANTENNA MANAGEMENT	3
1.1	Introduction	3
1.2	Zenith35 Base, Zenith35 Rover	4
1.3	Zenith35 Base, Zenith25(Pro) Rover	4
1.4	Zenith35 Base, Zenith10/20 Rover	7
2	DYNAMIC DNS	10
2.1	Introduction	10
2.2	Use Cases	11
2.2.1	Remote Access From Everywhere	11
2.2.1.1	Setting up The Base for Remote Access	11
2.2.2	Multiple GSM Rover Connection (+10)	13
2.2.2.1	Setting up The Base for Simultaneous Access (+10)	13
2.2.2.2	Setting up The Rover (+10)	15

1 ANTENNA MANAGEMENT

1.1 INTRODUCTION

The base receiver outputs the position with respect to the ARP (antenna reference point). If the rover does not recognize the antenna on the reference side, then the final positions will be biased by the antenna Phase Center Offset (PCO) values of the base antenna.

By default, the GeoMax Zenith rover antennas recognize all GeoMax Zenith antenna types used as base (i.e. GeoMax Zenith10/20, 25, 25 Pro and 35), in addition to the GPPNULLANTENNA and ADVNULLANTENNA antennas.

However, the current firmware of the Zenith10/20 and Zenith25 doesn't have the new GeoMax Zenith35 PCO values incorporated by default. Therefore, the new Zenith35 PCO values need to be added manually until a new firmware is released for the Zenith10/20 and Zenith25 antennas.

This is important when the GeoMax Zenith35 sensor is used as a base with RTCM network correction messages. This guide will explain how to add the Zenith35 antenna calibration values on the rover side.

1.2 ZENITH35 BASE, ZENITH35 ROVER

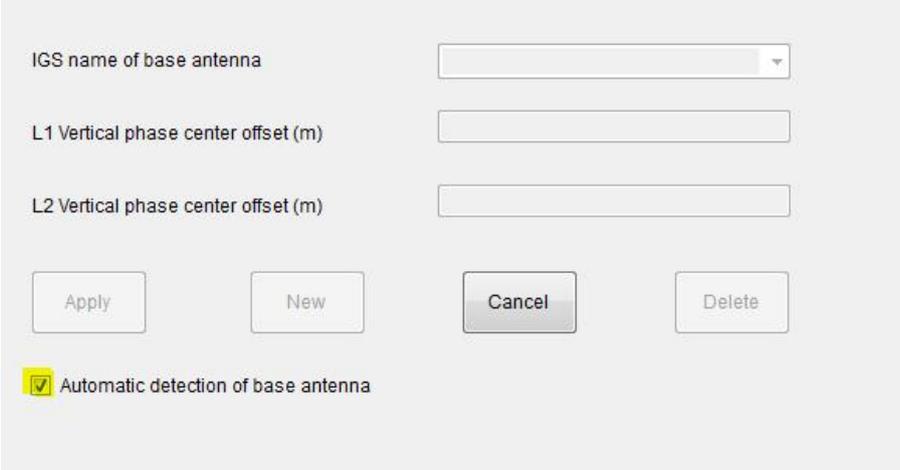
This combination works without an additional antenna calibration file, as the Zenith35 is incorporated in the firmware as a default antenna type together with the PCO values.

1.3 ZENITH35 BASE, ZENITH25(PRO) ROVER

In this combination the Zenith35 PCO values need to be added manually. This can be done via the GeoMax Assistant Zenith25 (Pro).

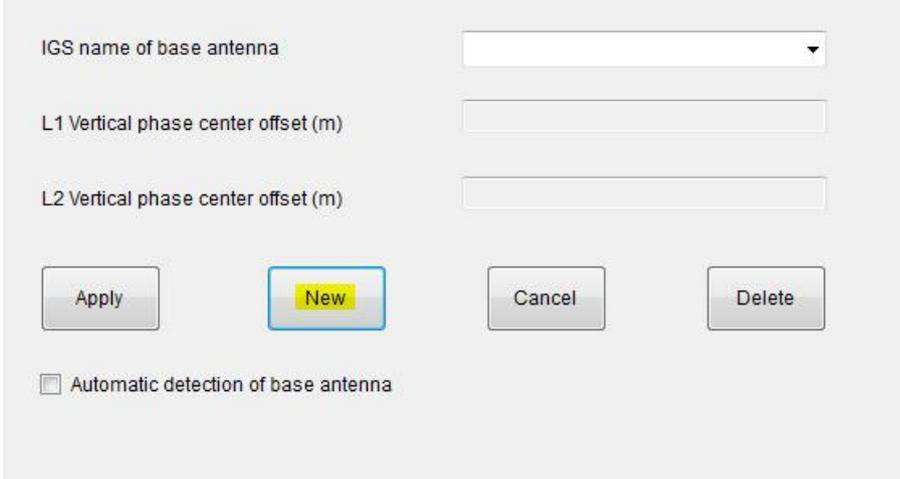
Please follow these steps:

1. Connect the Zenith25(Pro) to your PC and open the GeoMax Assistant Zenith25 (Pro).
2. Press Antenna management from the menu, and
3. un-tick the Automatic detection of base antenna option:



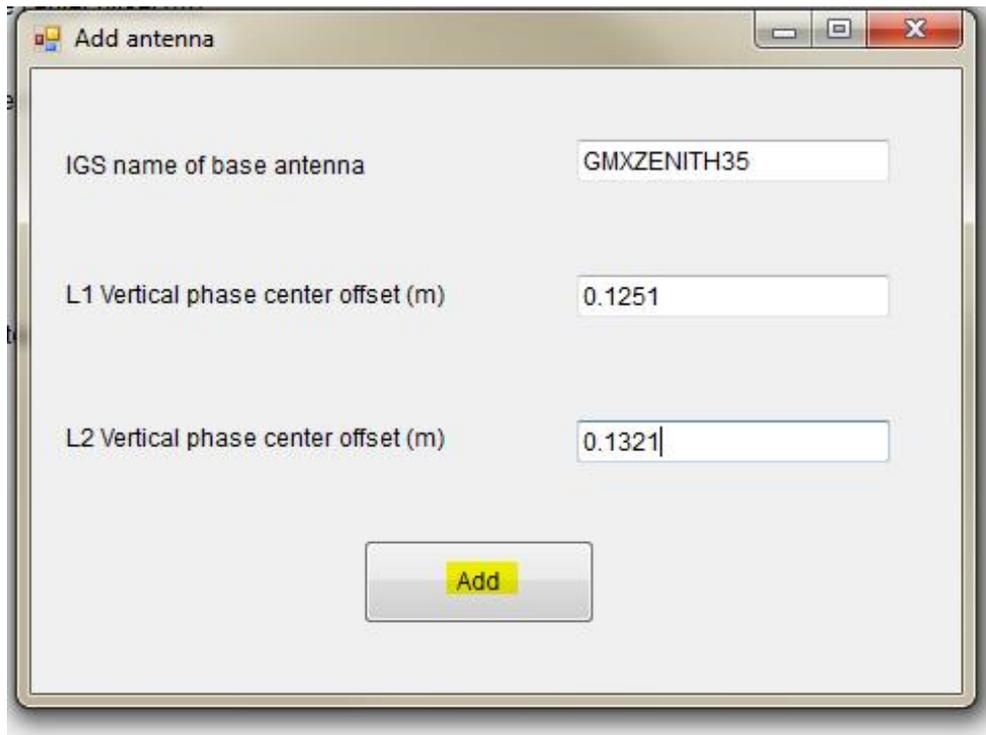
The screenshot shows the 'Antenna Management' window in the GeoMax Assistant Zenith25 (Pro) software. It features a dropdown menu for 'IGS name of base antenna', two text input fields for 'L1 Vertical phase center offset (m)' and 'L2 Vertical phase center offset (m)', and four buttons: 'Apply', 'New', 'Cancel', and 'Delete'. At the bottom, the checkbox 'Automatic detection of base antenna' is checked.

4. A window will open, where a new antenna can be added with the L1 and L2 PCO values by pressing New:



The screenshot shows the same 'Antenna Management' window. The 'New' button is highlighted with a blue border, indicating it is the active option. The 'Automatic detection of base antenna' checkbox is now unchecked.

5. Define the GeoMax Zenith35 antenna by its IGS name: GMXZENITH35. Add the L1 and L2 PCO values in meters, as shown below:



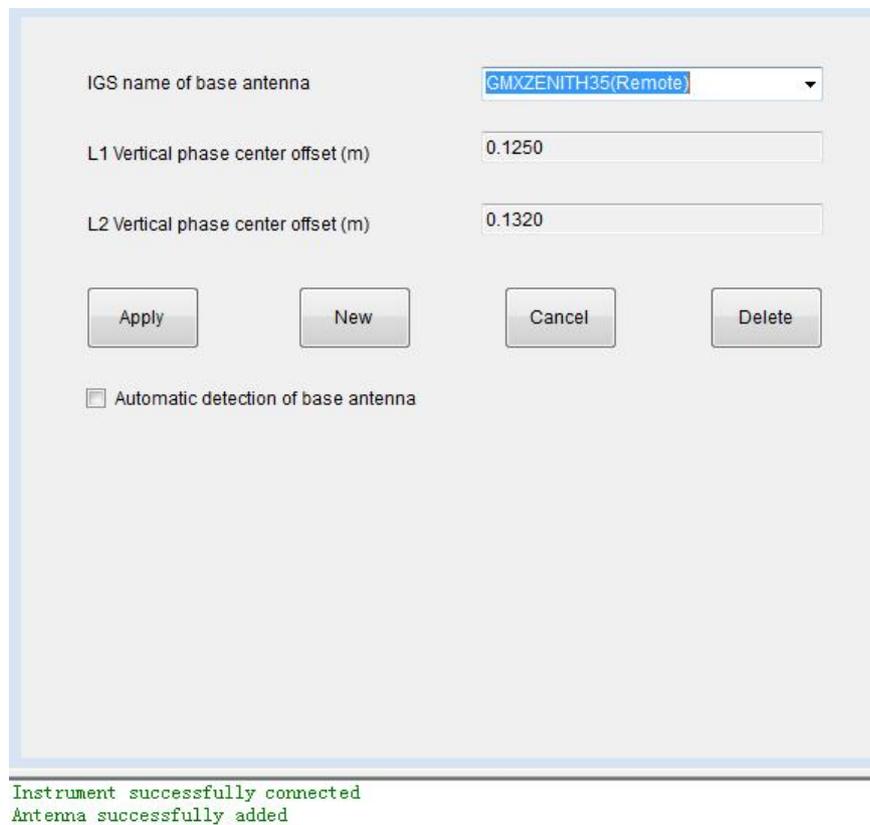
IGS name of base antenna: GMXZENITH35

L1 Vertical phase center offset (m): 0.1251

L2 Vertical phase center offset (m): 0.1321

Add

6. Press Add, the Add antenna window will disappear and the antenna will be available in the IGS name of base antenna list in the previous window.



IGS name of base antenna: GMXZENITH35(Remote)

L1 Vertical phase center offset (m): 0.1250

L2 Vertical phase center offset (m): 0.1320

Apply New Cancel Delete

Automatic detection of base antenna

Instrument successfully connected
Antenna successfully added

7. Press Apply or select Automatic detection of base antenna. In both cases the base antenna Zenith35 will be detected.

IGS name of base antenna:

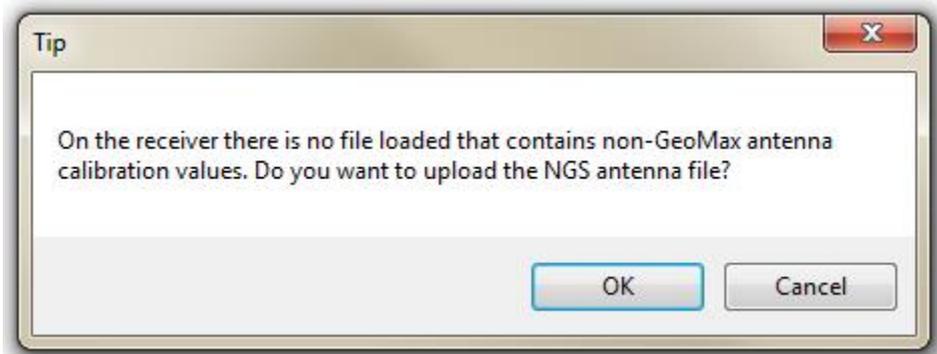
L1 Vertical phase center offset (m):

L2 Vertical phase center offset (m):

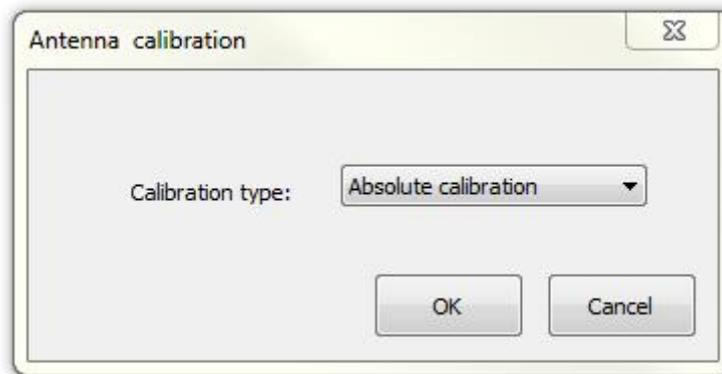
Automatic detection of base antenna

Zenith10/20 utilizes the NGS calibration files, which is based on the National Geodetic Survey Calibration file. To load a calibration file on the unit, please do the following:

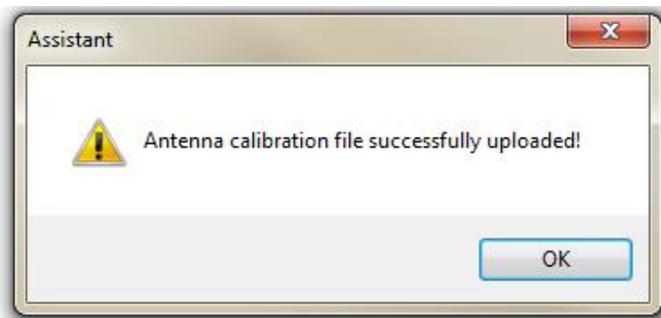
1. Connect the Zenith10/20 sensor to the PC and open the GeoMax Assistant. You will be prompted with the following message:



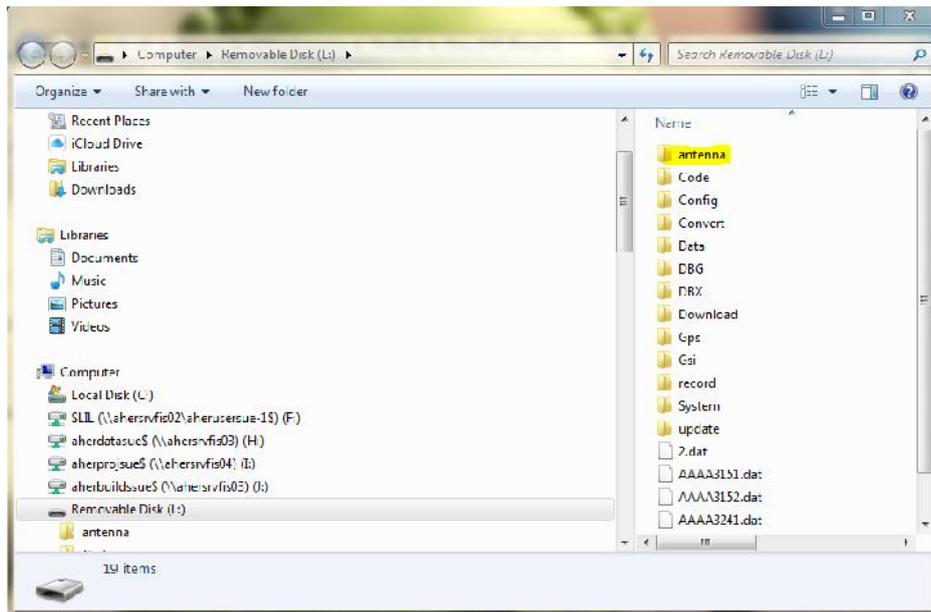
2. Choose the calibration type:



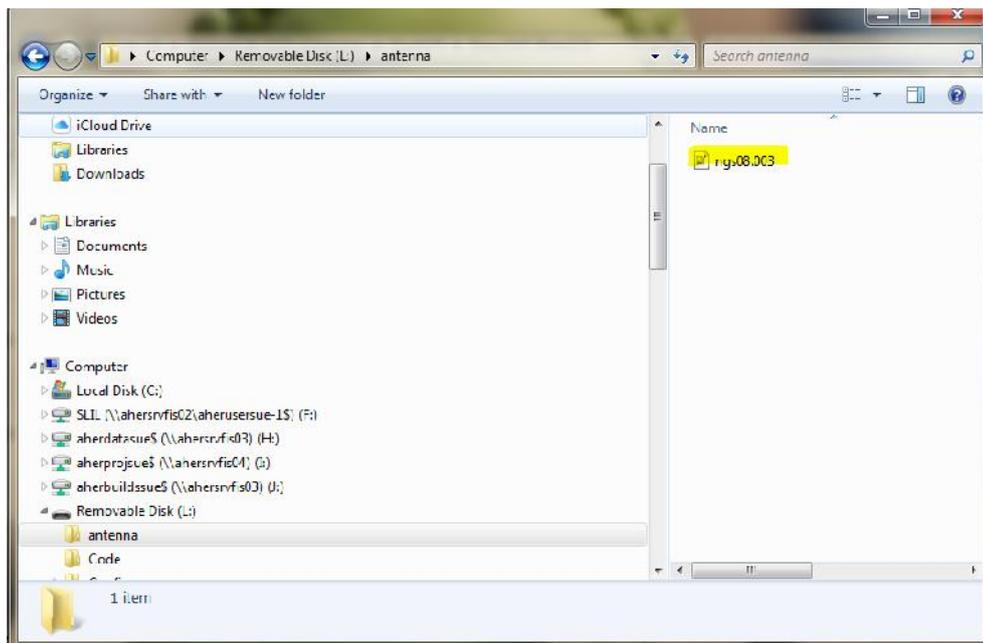
3. Press OK, the following message will appear once the calibration file is successfully uploaded:



4. Find the sensor on your PC and open the "antenna" folder:



5. In the "antenna" folder you will find the absolute calibration file loaded: ngs08.003.



- Due to the Zenith10/20 fw V2.12 not being updated with the GeoMax Zenith35 antenna as default, the following antenna information is missing from the ngs08.003 file.

GMXZENITH35 NONE Internal geodetic antenna, GPS L1/L2/L2C IGS (5) 15/09/29										
	-0.8		0.2		125.1					
0.0	0.1	0.3	0.5	0.5	0.4	-0.1	-0.6	-1.2	-1.6	
-1.8	-1.6	-1.4	-1.0	-0.5	0.1	1.0	2.3	4.2		
	0.4		-0.4		132.1					
0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.4	0.2	-0.2	
-0.3	-0.3	0.1	0.6	1.0	0.9	0.3	-0.8	-1.6		

- Please download the latest calibration file from the partner area (<http://geomax-positioning.com/downloads.htm?cid=15079>), which contains the Zenith35 calibration values. Replace the loaded calibration file on the Zenith10/20 with the latest version downloaded. Once the Zenith10/20 rover receives RTCM corrections from the Zenith35 base, the calibration values will be automatically applied using the latest antenna calibration file.

2.1 INTRODUCTION

The DynDNS (Dynamic Domain Name System) functionality allows the configuration of a dynamic DNS service to ensure access to the Zenith35 base server's RTK data stream while it is using a dynamic IP address. It allows TCP/IP clients to use an internet domain name (Host name) to address the Zenith35 sensor with a dynamic IP address.

The user needs to register at one of the offered DynDNS service providers to receive a user name and password and create a unique host name to use, which can be used to remotely access the sensor. Currently Zenith35 supports four DynDNS service providers. In order to be able to use these services, please register and create an account at one of the provider's site:

- DynDNS.com (<http://dyn.com/dns/>)
- No-ip.com (<http://www.noip.com/>)
- EasyDNS.com (<https://www.easydns.com/>)
- TwoDNS.de (<https://twodns.de/>)

Please note that for the DynDNS base setup a special SIM card needs to be used, which your cell phone network provider can setup. In order to be able to use your SIM card for DynDNS, your provider needs to enable a service, which provides an APN (Access Point Number) together with a range of open ports. Normally a SIM card with fixed IP address supports this kind of setup. If you are not sure, please contact your provider and ask for the current status of your SIM card.

2.2 USE CASES

2.2.1 REMOTE ACCESS FROM ANYWHERE

A typical use case for this DynDNS functionality is a Zenith35 receiver set up in base mode with an internet connection via GSM/GPRS. In this setup the Zenith35 sensor will have a different IP address every time the internet connection is established or after running for a certain time. The goal is to remotely access your Zenith35 sensor with a known host name instead of a dynamic IP address. A host name could be for example: Myzenith35.net

Once the setup is done, the user can open the Z35WebManager of the base sensor, using only the host name and the port.



2.2.1.1. SETTING UP THE BASE FOR REMOTE ACCESS

In order to be able to access, configure or check the Zenith35 with an internet connection from any web-capable device, the DynDNS functionality has to be activated and be configured accordingly with the GeoMax Z35WebManager.

Steps 1-13 describe how to enable the DynDNS functionality in the Zenith35:

- 1) Connect your Zenith35 to your PC or any web-capable device
- 2) Start the GeoMax Z35WebManager
IP address: <http://192.168.10.1>
Username: admin
Password: password
- 3) Go to Settings → Sensor Settings → Working Mode
- 4) Select RTK Base as Working Mode and GSM/GPRS as RTK Data Source
- 5) As method, please select P2P (Peer to Peer)
- 6) Enter the details for your SIM card provider (APN)
- 7) Enable Dynamic DNS
- 8) Select your Service Provider for DynDNS service
- 9) Enter your Host Name, User Name, Password and Port
- 10) Enter Number of simultaneous users (not relevant for this use case)

11) Click Save Settings

Method: P2P
APN: your.provider.net
APN User:
APN Password:
Dynamic DNS: Enable Disable
Service Provider: dyndns.com
Host Name: MyZenith35.net
User Name: testuser
Password: test
Port: 1234
Number of simultaneous users: 10
Save Settings

12) Go to Status Info → Position/Link Info

13) Click Start to start your base

Now the Zenith35 base is setup and ready to be accessed remotely with an internet connection. In order to do so, simply enter the specific host name in the web browser, such as the Myzenith35.net in the example below.



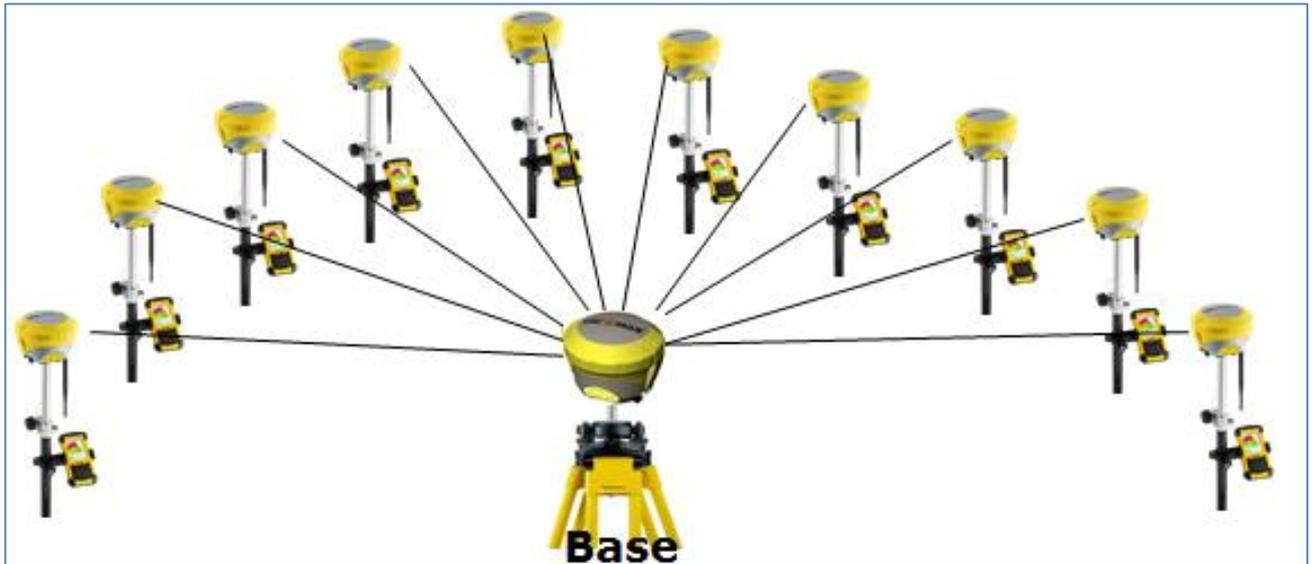
Once the host name is entered in the web browser, an Authentication is required to start the GeoMax Z35WebManager. After the username and password are entered, the user is able to configure, monitor or check the Zenith35 base sensor.



2.2.2 MULTIPLE GSM ROVER CONNECTIONS (+10)

Another important use case is the multiple and simultaneous access of up to 10 rovers to one single Zenith35 base antenna with RTK correction data via a GSM/GPRS connection. In addition, in this setup the DynDNS functionality has to be activated in the base. The Zenith35 base receiver will have a known host name instead of a dynamically changing IP address for example: Myzenith35.net.

After configuring the Zenith35 base receiver correctly, up to 10 rover antennas can connect and receive RTK correction data from this single base antenna by simply using the specific host name (instead of an IP address) and a given port.



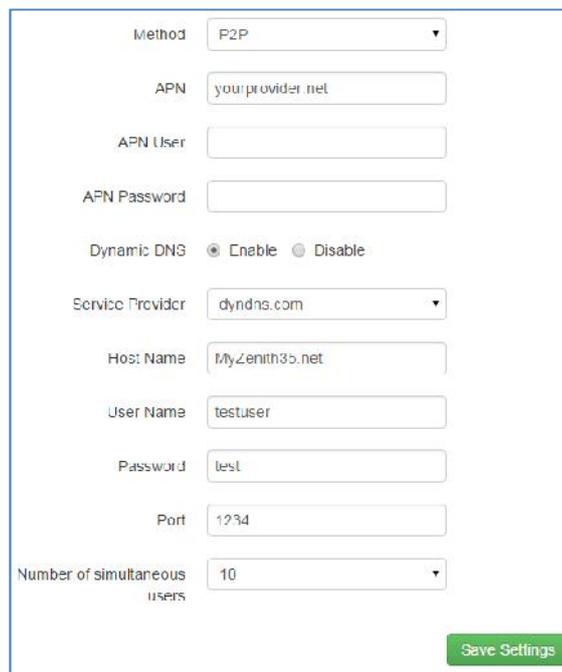
2.2.2.1. SETTING UP THE BASE FOR SIMULTANEOUS ACCESS (+10)

In order to allow simultaneous access of several rovers to one single Zenith35 base sensor, the DynDNS functionality has to be activated and be configured accordingly with the GeoMax Z35WebManager in the base receiver.

Steps 1-13 describe how to enable and configure the DynDNS functionality in the Zenith35:

- 1) Connect your sensor to your PC or any web-capable device
- 2) Start the GeoMax Z35WebManager
IP address: <http://192.168.10.1>
Username: admin
Password: password
- 3) Go to Settings → Sensor Settings → Working Mode
- 4) Select RTK Base as Working Mode and GSM/GPRS as RTK Data Source
- 5) As method, please select P2P (Peer to Peer)
- 6) Enter the details for your SIM card provider (APN)
- 7) Enable Dynamic DNS
- 8) Select your Service Provider for DynDNS service

- 9) Enter your Host Name, User Name, Password (or API token) and Port
- 10) Enter Number of simultaneous users
- 11) Click Save Settings



The screenshot displays a configuration form for the Zenith35 device. The fields are as follows:

- Method: P2P (dropdown menu)
- APN: you.provider.net (text input)
- APN User: (empty text input)
- APN Password: (empty text input)
- Dynamic DNS: Enable Disable (radio buttons)
- Service Provider: dyndns.com (dropdown menu)
- Host Name: MyZenith35.net (text input)
- User Name: testuser (text input)
- Password: test (text input)
- Port: 1234 (text input)
- Number of simultaneous users: 10 (dropdown menu)

A green "Save Settings" button is located at the bottom right of the form.

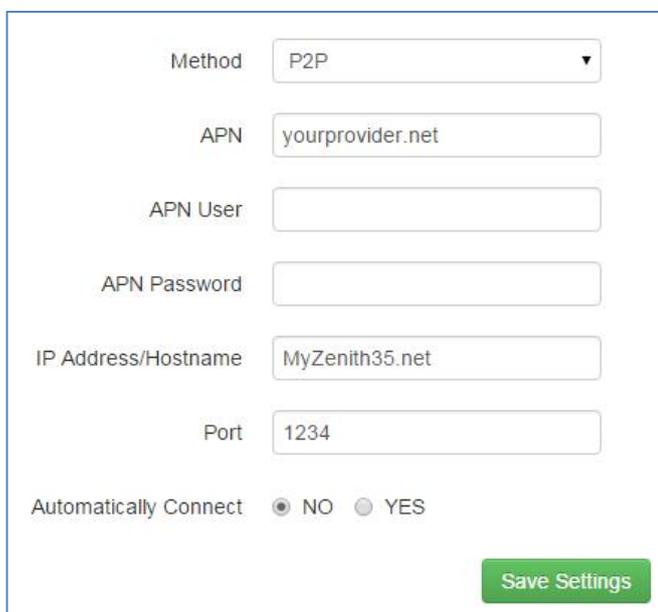
- 12) Go to Status Info → Position/Link Info
- 13) Click Start to start your base

Now your Zenith35 base is setup and ready to be accessed simultaneously by up to 10 (depending on the selected Number of simultaneous users) rovers.

2.2.2.2. SETTING UP THE ROVER (+ 10)

In order to connect the Zenith35 rover to the Zenith35 base receiver with the host name (→ refer to chapter 2.2.2.1), please follow the steps 1-10:

- 1) Connect your sensor to your PC or any web-capable device
- 2) Start the GeoMax Z35WebManager
IP address: <http://192.168.10.1>
Username: admin
Password: password
- 3) Go to Settings → Sensor Settings → Working Mode
- 4) Select RTK Rover as Working Mode and GSM/GPRS as RTK Data Source
- 5) As method, please select P2P (Peer to Peer)
- 6) Enter the details for your SIM card provider (APN)
- 7) Enter your Host Name (/IP address) and Port
- 8) Click Save Settings



The screenshot shows a web-based configuration interface for the Zenith35 rover. It features several input fields and a dropdown menu. The 'Method' dropdown is set to 'P2P'. The 'APN' field contains 'yourprovider.net'. The 'APN User' and 'APN Password' fields are empty. The 'IP Address/Hostname' field contains 'MyZenith35.net'. The 'Port' field contains '1234'. At the bottom, there are radio buttons for 'Automatically Connect', with 'NO' selected. A green 'Save Settings' button is located at the bottom right of the form.

- 9) Go to Status Info → Position/Link Info
- 10) Click Connect to connect your zenith35 rover to the base station

After a successful connection to the Zenith35 base receiver, your rover should receive RTK correction data.