



Web Server



Getting Started Guide



**Configuring the ProFlex 800
Via a TCP/IP Connection**

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In this Getting Started Guide, it is assumed that the reader has all the information needed to perform a remote connection to the ProFlex Web Server (IP address, login and password).

This guide more particularly focuses on how to successfully configure a receiver via the ProFlex Web Server, meaning that the reader is supposed to log in using the administrator profile.

First the Home page and the status bar are described. Then several typical applications of rover and base configurations are presented from which the reader will be able to learn that lots of specific configurations can be implemented by skillfully combining the various and powerful functions offered by the receiver.

If you need more information about how to make the ProFlex Web Server accessible through an IP connection, how to manage administrator and user profiles and what information is available on status pages, please refer to the *Reference Manual*.

For configuring and monitoring a receiver used as a CORS station or with its embedded NTRIP caster (a firmware option), you may also read the short manual entitled *ProFlex CORS Getting Started Guide*.

What is the ProFlex Web Server and what is it for? The ProFlex Web Server is a receiver-embedded, HTML-based firmware application designed to enable users to monitor or control the ProFlex 800 through a TCP/IP connection.

After making a TCP/IP connection physically possible between a computer and the receiver (via its Ethernet port), run a web browser on your computer (e.g. Mozilla FireFox, Microsoft Internet Explorer). Type the IP address (or host name) of the receiver in the address box, then press the Enter key. This launches the Web Server in the receiver, which in turn opens a web page in the web browser of the computer.

Who is allowed to use a receiver's Web Server application?

The answer is anyone who has been given the IP address or host name of the receiver as well as a connection profile, i.e. a login and a password. These are the only parameters required to perform a remote connection through the Internet and run the Web Server.

Who gives remote access to the Web Server application? Only the owner of the receiver can as she/he knows the IP address or host name of the receiver and is allowed to create connection profiles for remote users.

How many types of connection profiles are there? There are two possible types of connection profiles:

- *Administrator Profile:* This profile is allowed to view the status of the receiver and change all the receiver settings. Only one administrator profile can be created in a receiver.
- *User Profile:* This profile is only allowed to view the status of the receiver. There can be as many different user profiles as needed, but only five users can connect simultaneously.

Note that this count of five simultaneous users does not include those users who are connected to the receiver for acquiring data through ports 1x (data streaming).

This section is more particularly intended for the receiver owner, who is also the receiver administrator.

In this section are described several possible cases of TCP/IP connection between the receiver and the computer, depending on the network environment.

Also discussed in this section are the steps to be taken jointly with the local network's IT Manager to make the TCP/IP connection successful, as well as some local settings you, as the receiver administrator, may have to do. This includes the management of the connection profiles for all the users of the ProFlex Web Server. As the receiver administrator, you should provide Web Server users with the following information:

- Receiver IP address or host name,
- Connection profile (login + password).

A TCP/IP connection with the receiver necessarily uses the receiver's Ethernet port. For this reason, you will always have to use the Ethernet adaptor cable provided (P/N 702426).

Typically, there are three possible cases of TCP/IP connection:

- TCP/IP connection within a local network.
- TCP/IP connection through the public Internet.
- "Direct" TCP/IP connection.

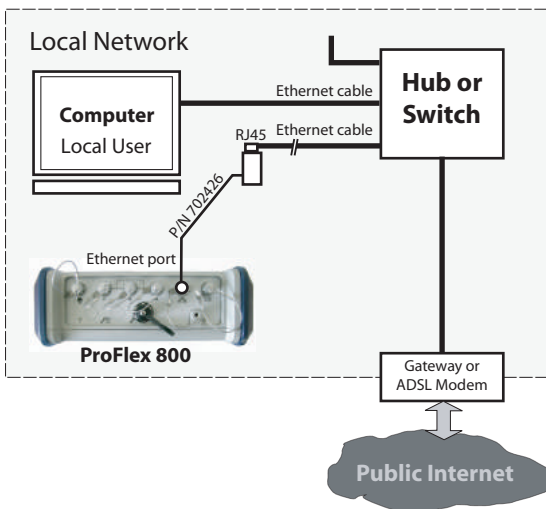
These are detailed below.

NOTE: It is assumed that the reader knows how to send \$PASH commands to the receiver through a serial line or Bluetooth.

TCP/IP Connection Within a Local Network

In this case of use, the receiver and the computer are connected to the same local area network (LAN) and may even be in the same room. Here the communication will NOT take place through the public Internet, but simply within the local network.

The connection diagram typically is the following.



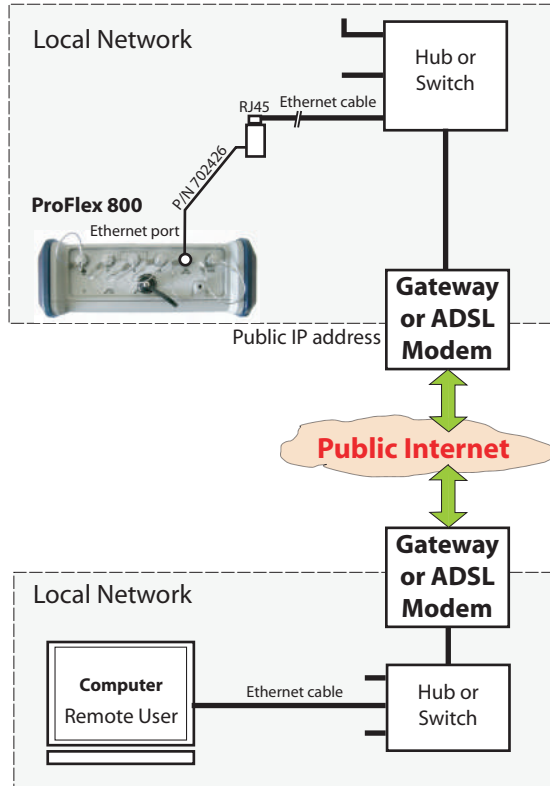
The valid receiver IP address to be sent to the users **is the one read on the receiver display screen**. To read this IP address, from the General Status screen, press the Scroll button twice to access the Receiver Identification screen. The IP address appears in the lower line. Please write it down.

The IT Manager may also create a host name for the receiver. The choice of using or not using the DHCP mode within the local network, and the consequence of this choice on which information to provide to users for the connection are also the decision and responsibility of the IT Manager.

TCP/IP Connection Through the Public Internet

In this case of use, the receiver and the computer are connected to different local networks. Here the communication will necessarily take place through the public Internet.

The connection diagram typically is the following.



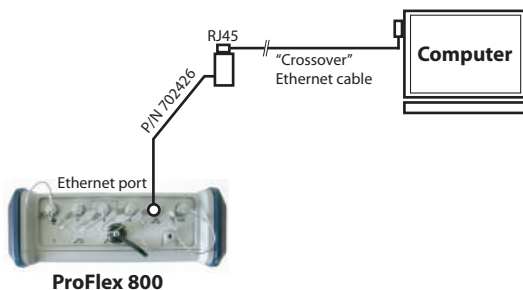
In this configuration, the IT Manager should take all the necessary steps for users to be able to access the ProFlex 800 through the public IP address of the local network. **Obviously, the IP address read on the receiver display screen is NOT the one to be provided to users.**

It will therefore be the responsibility of the IT Manager to provide the receiver administrator with the appropriate connection information (<IP address:port number> or host name).

“Direct” TCP/IP Connection

The term “Direct” used here should not be confused with the “Direct IP” connection mode, which is a special case of Internet connection to a static IP address. Here the term “Direct” is used to describe a TCP/IP connection between a receiver and a local computer through a special Ethernet connection, using a crossover cable connected directly between the receiver and the computer.

In a crossover cable, the pinout is inverted at one end of the cable. The crossover cable is not provided but is widely available from computer supply stores or online.



This type of connection is required when the receiver is not otherwise using its Ethernet port and there is no network connection available in the operating environment of the receiver (machine control, machine guidance).

In this case, make the following settings BEFORE physically connecting the computer to the receiver through the crossover cable:

- On the receiver, disable the DHCP mode and define an arbitrary static IP address and a subnetwork mask for the receiver.
- On the computer, change the network configuration for an exclusive TCP/IP connection with the receiver.

Before changing the network configuration of the computer, it is advisable to write down all the current settings so that you can easily reverse to the previous network configuration when you are done with communicating with the receiver.

1. Send the following command to the receiver to read the current settings. Write them all down so that later you can easily reverse to these settings.

NOTE: It is assumed that the reader knows how to send \$PASH commands to the receiver through a serial line or

Bluetooth (see *ProFlex 800 Reference Manual, Using Serial Commands* Chapter, for more information)

\$PASHQ,ETH

Example of receiver response:

```
$PASHR,ETH,I,ON,00:09:66:00:10:a0,10.20.2.123,DHP=1,ADD=192.168.0.1,MSK=255.255.255.0,GTW=255.255.255.255,DN1=255.255.255.255,DN2=255.255.255.255*3F
```

Should the Ethernet port be off (2nd parameter in the above response line is “OFF” instead of “ON”), please use the following command to turn it back on:

\$PASHS,ETH,ON

Receiver response should be the following if the set command is successful:

```
$PASHR,ACK*3D
```

2. Send the following command to the receiver to disable the DHCP mode and define an arbitrary IP address for the receiver:

```
$PASHS,ETH,PAR,DHP,0,ADD,10.20.2.10,MSK,255.255.255.0,GTW,10.20.2.1
$PASHR,ACK*3D
```

Where:

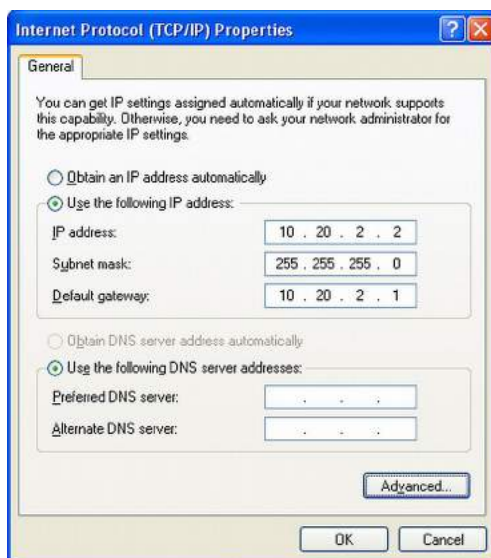
“10.20.2.10” is the arbitrary IP address assigned to the receiver.

“255.255.255.0” is the arbitrary, but also mandatory, subnetwork mask.

“10.20.2.1” is the arbitrary address for the gateway that will be assigned to the computer.

3. On the computer (running Windows XP), from the task bar, select **Start>Control Panel**.
4. Double-click **Network Configuration**.
5. Right click on **Local Area Connection** (or **Ethernet Board** if there is no local network) and select **Properties**.
6. On the **General** tab of the **Local Area Connection** properties, write down all the currently activated services so that later you can easily revert to these settings.
7. Still in this dialog box, clear all the services, except for the **Internet Protocol (TCP/IP)** service, which must stay active.
8. Still in that box, select the **Internet Protocol (TCP/IP)** option and click on the **Properties** button located nearby to open the Internet Protocol Properties window.
9. In that window, disable the DHCP mode by selecting the **Use the following IP address** option.

10. Enter a different IP address for the computer (e.g. 10.20.2.2). Enter the same subnet mask and gateway as those entered above in the receiver through the \$PASHS,ETH,PAR command.



11. Click **OK** twice to close the windows.
12. Connect the crossover cable between the receiver and the computer.
13. Check that the new IP address displayed on the receiver screen is the expected one.
14. Open the web browser on the computer.
15. Type the receiver IP address in the address box. This launches the Web Server in the receiver.

NOTE: With Vista, select successively the following options to change the computer IP address: **Start>Control Panel>Network and Sharing Center**. On the left, click on **Manage Network Connections**. Right-click on **Local Area Connection** and select **Properties**. Select **Internet Protocol Version 4** and click on **Properties**. You can now change the IP address.

Managing the Connection Profiles

Managing connection profiles can be done directly from the ProFlex Web Server after you have logged in as the administrator. In this context, go to the **Configuration** tab and use the **Advanced Setup** menu (**Administrator** and **Users** submenus) to make the required changes.

The default administrator profile is defined as follows:

- Login: admin
- Password: changeme

Local Settings for the Receiver Administrator & IT Manager

You should inform your IT Manager of the following before he/she can set up the connection:

- The ProFlex 800 is not fitted –and cannot be fitted– with a firewall. If a firewall is needed in your local network, it should be installed on a device other than the ProFlex 800.
- The Ethernet port and the DHCP mode are active by default.
- TCP/IP port #80 is used by default in the receiver.

If however, the default settings have been changed in the receiver, you may have to do the following:

- Turn on the Ethernet port.
Use the command below to power up the Ethernet port:

\$PASHS,ETH,ON

When the port is on and connected, the Ethernet icon appears in the lower-right corner of the receiver screen. By default, the Ethernet port is on.

- Set the DHCP mode or assign a static IP address.
Use the command below:

\$PASHS,ETH,PAR

The syntax of these two commands is fully described in the *ProFlex 800 Reference Manual, Set Command Library* Chapter.

Preliminary Instructions for Web Server Users

The following information should have been passed on to you:

- Receiver IP address or host name,
- Connection profile (login + password).

To make a connection with the receiver:

1. You should know for certain that the remote ProFlex 800 has properly been connected to the LAN via its Ethernet port. Otherwise no connection will be possible.

2. Make sure your computer is also ready for a TCP/IP connection.
3. Launch the web browser on your computer.
4. In the Address box of the web browser, type the IP address or host name of the receiver:

http://<receiver_address>

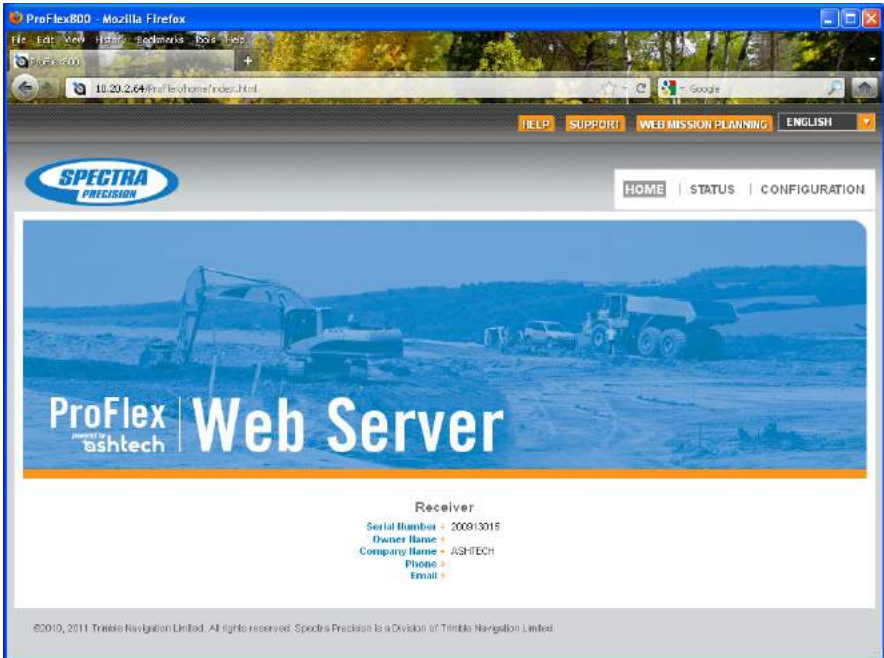
then press the Enter key.

After the connection has successfully been established, the ProFlex Web Server **Home** tab appears in your web browser.

5. Click on the **Status** tab. You are then asked to enter the login and password of your connection profile (user or administrator). After you have successfully entered these two parameters, you can start using the Web Server. If you are the administrator, you are also allowed to access and fully use the **Configuration** tab.

First Steps With the Web Server

Home Tab The Web Server Home tab appears after you have typed the correct IP address in the Address box of your web browser and pressed the Enter key.



In the right-upper corner of the window, you have access to the on-line help (**HELP** link) and to technical support (**SUPPORT** link).

You can also change the language of the Web Server interface. This will simultaneously change the language of the Help files accessible through the **HELP** link.

Still from the right-upper corner of this window, you can run Ashtech's Web Mission Planning, a web-based application allowing you to get information on the GNSS constellations visible from a given point on the Earth surface, and for future or past periods of time.

In its lower part, the Home tab lists the parameters that clearly identify the remote receiver. The table below lists all

these parameters. For your information, the third column indicates the relevant \$PASH commands.

Parameter	Designation	\$PASH
Receiver serial number	Hardware-coded receiver serial number	\$PASHQ,RID
Owner name	Owner name	\$PASHS,WEB,OWN
Company name	Name of the company operating the receiver	\$PASHS,WEB,OWN
Phone	Contact phone number	\$PASHS,WEB,OWN
Email	Contact email	\$PASHS,WEB,OWN

(The last four parameters can be changed from the Administrator menu on the Configuration tab.)

Depending on what you want to do with the receiver, click on one of the other two available tabs. Prior authentication as the “Administrator” or a “User” is required before you are allowed to access one of these tabs:

- **Status:** This tab provides detailed information about the current status of the receiver. This is a read-only function. You first need to log in as a “User” or as the “Administrator” before you are given the right to access this tab. When you click on this tab, the Web Server will remember which page was last opened on this tab, and so will display it by default. You can then choose the one you would like to display by clicking in the menu on the left.
- **Configuration:** This tab allows you to make changes to the current configuration of the receiver. You first need to log in as the “Administrator” before you are given the right to access this tab. When you click on this tab, the Web Server will remember which page was last opened on this tab, and so will display it by default. You can then choose the one you would like to display by clicking in the menu on the left.

Status Bar and Units Used

The status bar is permanently displayed in the upper part of the **Status** or **Configuration** tab, giving the current operating status of the receiver. The content of the status bar is refreshed every one to two seconds.

The screenshot shows a status bar with the following information:

- Mode: Receiver
- Lat: 47°17'55.27100"N
- HDOP: 0.374 m
- GPS: 8/13
- Battery: [Indicator]
- Recording: On
- Seamless: Recording
- Position: S-DGPS Long: 01°30'32.54970"W
- VDOP: 0.480 m
- GLONASS: 6/9
- Modem: Off
- Site Name: 3015
- Site Name: 9999
- Station ID: 124
- Height: 88.634 m
- HDOP: 0.8
- SBAS: 0/2
- Level: [Indicator]
- Memory: 16.1 MB
- Memory: 16.1 MB
- Age: 3
- VDOF: 1.3
- GALILEO: 0/0
- BTWP: Caster Off
- FTP Push: Off
- Alarms (1)
- 2011-11-15 13:06:57

By column from left to right:

Column #1	
Mode	Receiver operating mode ("Base", "Rover", "Rover/Heading" or "Hot Standby RTK")
Position	Type of position solution currently available from the receiver ("No position", "Autonomous", "DGPS", "S-DGPS", "RTK Fixed" or "RTK Float")
Station ID	<p>If a base:</p> <ul style="list-style-type: none"> • 0 to 4095 for a station transmitting ATOM or RTCM3.x corrections • 0 to 1023 for a station transmitting RTCM2.3 corrections • 0 to 31 for a station transmitting CMR/CMR+ corrections <p>If a rover:</p> <ul style="list-style-type: none"> • Shows the ID of the base station received. • In S-DGPS, shows the ID of the SBAS satellite used.
Age	Age of corrections, in seconds (0 to 999 seconds)
Column #2	
Lat	Latitude of position currently computed by the receiver
Long	Longitude of position currently computed by the receiver
Height	Height of position currently computed by the receiver
Heading	Current heading value measured by the receiver if used in Rover/Heading mode
Column #3	
HRMS	Horizontal Root Mean Square
VRMS	Vertical Root Mean Square
HDOP	Horizontal Dilution of Precision (0 to 9.9)
VDOP	Vertical Dilution of Precision (0 to 9.9)
Column #4	
GPS	Number of GPS satellites used vs. number of tracked GPS satellites
GLONASS	Number of GLONASS satellites used vs. number of tracked GLONASS satellites
SBAS	Number of SBAS satellites used vs. number of tracked SBAS satellites
GALILEO	Number of GALILEO satellites used vs. number of tracked GALILEO satellites
Column #5	
Battery	Percentage of remaining charge in the installed battery
Modem	Modem power status ("Off", "On", "Starting", "Ready", "Dialing", "Online" or "None")
Level	Input signal level (0 to 100, or blank when Modem Status= Online)
NTRIP Caster	"off" or, if "On", number of sources available (S:xx) and number of connected clients (.C:xxx)
Column #6	
Recording	Raw data recording status ("On" or "Off")
Site Name	Site name (4 characters) attached to logged data
Memory	Identification of memory used ("M" for internal, "U" for USB key)+ Number of free Megabytes on this memory.
Column #7	
Sessions	Session status ("ON" "OFF", "RECORDING")
Site Name	Site name (4 characters) attached to data logged through sessions
Memory	Identification of memory used ("M" for internal, "U" for USB key)+ Number of free Megabytes on this memory.

FTP Push	Indicates whether the recorded raw data files are uploaded to an external FTP server ("On") or not ("Off").
Column #8	
Date	Current date (YYYY-MM-DD)
Time	Current local or UTC time (hh:mm:ss) according to the setting below.
Alarm report	Blank area if no alarm has been detected. "Alarms" displayed if an alarm has been detected in the receiver, followed by the number of raised alarms, between brackets (x). A click on "Alarms" will open the Status-Alarms web page to list this or these alarms.

To change the units, select your preference from the **Units** pane on the left-hand side of the Web Server window. This pane is visible in both the **Status** and **Configuration** tabs.



Distance Units

- Meters
- US Survey Feet
- International Feet

Angle Units

The possible formats for angles, including latitudes and longitudes, are the following:

- Degrees (Deg.)
- Degrees, minutes (Deg. Min.)
- Degrees, minutes, seconds (Deg. Min. Sec.)

The format of latitude and longitude depends on the chosen angle unit. The corresponding formats are described in the table below.

Angle Unit Used	Latitude Format	Longitude Format
Deg.	DD.DDDDDDDDD° N or DD.DDDDDDDDD° S	DDD.DDDDDDDDD° E or DDD.DDDDDDDDD° W
Deg. Min.	DD°MM.MMMMMM' N or DD°MM.MMMMMM' S	DDD°MM.MMMMMM' E or DDD°MM.MMMMMM' W

Angle Unit Used	Latitude Format	Longitude Format
Deg. Min.	DD°MM' SS.SSSSS" N or	DDD°MM' SS.SSSSS" E or
Sec.	DD°MM' SS.SSSSS" S	DDD°MM' SS.SSSSS" W

Where:

- N for North, S for South; E for East, W for West
- “D..” for degree digits, “M..” for minute digits, “S..” for second digits

When typing in a latitude or longitude, leading and trailing zeroes can be omitted. Degree (°), minute (') and second (") symbols can be omitted as well.

For example, typing 5 6.45 N is a valid entry for 5° 06.450000' N.

If you use the “Deg.” angle unit, you can use signs for directions:

- “-” sign for South (S) or West (W)
- No sign or “+” sign for North (N) or East (E)

Time Units

Time is always expressed in 24-hour format. You can choose between the following two options:

- UTC: UTC time provided by the receiver.
- Local: Local time derived from the UTC time provided by the receiver, taking into account the time zone read from the computer’s regional settings.

Setting a Rover

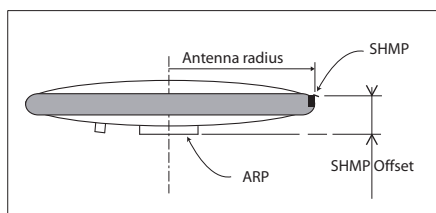
How to Start

- Open the Web Server's **Configuration** tab. The first time you click on this tab, the Web Server will ask you to log in as the administrator. Only the receiver administrator is authorized to access the **Configuration** tab.
You are allowed to change the destination of a receiver (e.g. it is currently a base and you want to change it into a rover). In this case, on opening the **Rover Setup** tab, the Web Server will retain part of the base settings that could be applied to the rover (e.g. antenna type, etc.).
- Whatever the way RTK corrections are delivered to the receiver, you will always have to define a number of general parameters pertaining to the rover function. These parameters are usually defined first. However when the internal modem is used, it is advisable to configure the modem first.
- Programming output messages in a rover is addressed separately (see *Defining Output Messages on page 31*).

General Parameters

- Click on the **Rover Setup** menu.
- Set the receiver parameters:
 - **Ambiguity Fixing:** Set the confidence level (percentage) controlling the ambiguity fixing process. The available choices depend on the firmware options installed: “RTK” ([K]) or/and “RTK2” ([M]) or/and “RTK3” ([L]) installed: Several percentages are available. Choosing a high percentage will result in a highly reliable process but is liable to reduce the availability level of “fixed” RTK positions. The default -and best- value for this parameter is 99.0%.
If none of these options is installed, then only the “0%” choice is available. This choice allows the receiver to operate in Flying RTK mode, which will be effective only if the FLYING RTK option ([R] option) has been installed.
 - **Fast RTK:** Enable this option to get Fast RTK position output. With this option disabled, the receiver will deliver time-tagged RTK positions.
 - **Moving Base:** Enable this option if corrections are received from a moving base. For all other cases where the base is static, keep this option disabled.

- **Dynamic:** Choose the type of motion that best suits the rover (static, quasi-static, walking, ship, automobile, aircraft, unlimited, adaptive or user-defined).
- Set the GNSS antenna parameters:
 - **Reference Position:** Specify the physical point on the rover system for which the receiver will accurately compute RTK positions. The three possible choices are: Antenna L1 phase center, Antenna Reference Point (ARP) or Ground Mark.
 - **Measurement Type:** Specify the method that was used when setting up the rover system to measure the height of the GNSS antenna (Vertical or Slant Height).
 - **Antenna Height:** Value of rover antenna height, expressed in the selected distance unit, as measured according to the specified measurement method.
 - **Receiver Antenna:** Specify the model of GNSS antenna used by the receiver. Select “UNKNOWN” if you don’t know which model is used.
 - **Antenna Radius:** In case of a “Slant Height” measurement, enter the antenna radius (this is a manufacturer specification), taking care to enter this parameter in the selected distance unit. See also the diagram and table below for more information.
 - **SHMP Offset:** In case of a “Slant Height” measurement, enter the SHMP offset (this is a manufacturer specification) taking care to enter this parameter in the selected distance unit. See also the diagram and table below for more information.



Antenna Model	P/N	Antenna Radius (m)	SHMP Offset (m)
ASH-661	802135	0.0953	0.0483
ASH-660	802133		
MAG111406	111406	0.0921	0.0516

NOTE: The **Antenna Radius** and **SHMP Offset** fields are automatically preset to the right values when you select an antenna type in the **Receiver Antenna** field.

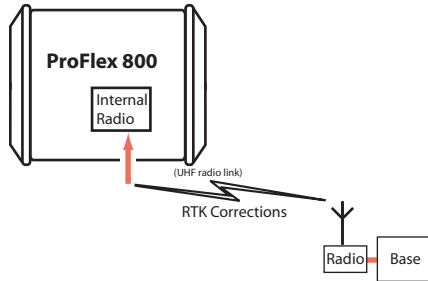
- **Virtual Antenna:** This option is useful when the rover is also used to log raw data. In this case, you can specify a virtual antenna model in this field to emulate a GNSS antenna other than the one really used.

Choosing a virtual antenna different from the one really used affects the raw data as if they had been collected by the virtual antenna, instead of the real one.

When the rover does not have to log raw data, select “Off” in this field as there is no point using a virtual antenna in this case.

- Set the parameters relevant to the GNSS constellations used by the receiver:
 - **Position Elevation Mask:** Choose the elevation angle above the horizon creating the desired reception mask. After setting this angle, any satellite seen from the rover with an elevation angle less than the specified one will be rejected from the list of usable satellites. The default value is 5°.
 - **GLONASS, SBAS:** In addition to the GPS, you can ask the receiver to track the GLONASS and/or SBAS satellites as well. Enable the options corresponding to the additional constellations you want the receiver to use.
- You can now click on the **Configure** button to save all the changes made but remember you have to complete the content of this page depending on how the receiver will get its RTK corrections. Several typical applications are listed below and described one after the other in the next sections:
 - Internal radio
 - Direct IP via modem
 - Direct IP via Ethernet
 - NTRIP client via Ethernet
 - RTK corrections received on port A, B or F
 - Rover operating in Flying RTK mode.
 - Rover operating in Hot Standby RTK.

Internal Radio



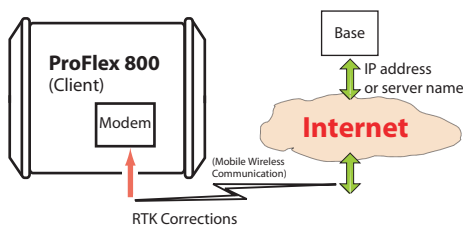
- Unless already done, please follow all the steps described in section *General Parameters on page 17* before proceeding with the steps below.
- Still on the **Rover Setup** page, read the content of the **Internal Radio Port D** pane. Normally, the content of the read-only **Connection** field has been updated when opening the **Rover Setup** page to report the type of internal radio module currently used by the receiver (ADL Foundation). Just check that this field reads the name of the expected type of radio.
- Click on the **Power On** option to ask for radio power-up.
- At the bottom of the page, in the **Differential Port** pane, select the **Automatic** option to let the receiver detect the incoming differential stream automatically.
NOTE: **Automatic** is the recommended choice for the Differential Port setting because in this case, you don't need to define the ports receiving the two possible differential streams.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver. As a result, the radio module is powered up.
Now that the radio is on, proceed with the last settings required on the radio side.
- Click on the **Connections** menu and then on the **Radio** sub-menu.
- In the **Internal Radio** pane, set the following parameters:
 - **Power:** (it is now necessarily “On” as you have turned on the radio in a previous step to make its configuration possible.)
Choose whether the radio should be turned on automatically or manually:

Automatic: The radio will be switched on or off automatically when the rover is respectively turned on or off.

Manual: The radio will be powered up only by going through the **Rover Setup** page, setting the internal radio to “Power On” and clicking on the **Configure** button (or using the \$PASHS,RDP,ON command).

- **Channel:** Select the channel on which you know that the base is transmitting its RTK corrections.
 - **Protocol:** Select the data protocol used in the data transmission:
“Transparent” or “DSNP” for U-Link Rx,
“Transparent”, “Trimtalk”, “Trimtalk450S”, “SATEL”,
“TrimMark II/IIe”, “TT450S”, “TRIMMARK3”,
“Transparent FST” or “DSNP” for Pacific Crest.
This choice should be the same as the one made at the base.
 - **Airlink Speed:** Choose the data transmission speed (should be the same as the one used at the base).
 - (**Type** is just a read-only field recalling the type of radio used.)
 - **Sensitivity** (U-Link and Pacific Crest): Set the radio sensitivity level (“High”, “Medium” or “Low”)
 - **Scrambler** (Pacific Crest): On or Off
 - **FEC** (Pacific Crest): On or Off
 - **Current Power:** (for ADL Foundation) 0.1, 0.5 or 1.0 W.
- Ignore the **External Radio** pane (**Type** should be set to “No radio”).
 - Click on the **Configure** button to let the Web Server load the parameters to the radio via the receiver. You just have now to define the output messages (see *Defining Output Messages on page 31*).

Direct IP Via Modem



The internal modem should be configured first:

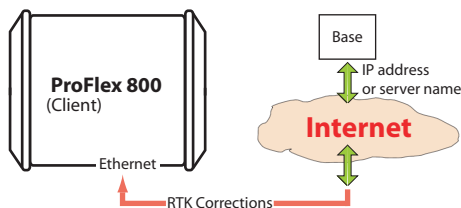
- Click on the **Connections** menu and then on the **Bluetooth/Modem** sub-menu.
- Set the following parameters in the **Internal Modem/Device Settings** pane:
 - **Power:** Select “On”. Then choose whether the modem should be turned on automatically or manually:
 - Automatic:** The modem will be switched on or off automatically when the rover is respectively turned on or off.
 - Manual:** The modem will be powered up only by going through the **Connections > Bluetooth/Modem** page, setting the modem to “Power On” and clicking on the **Configure** button (or using the \$PASHS,MDM,ON command).
 - **Automatic Connection:** Check this option.
 - **Pin:** 4- to 8-character pin code of the SIM card used in the modem for GPRS operation.
 - **2G Only:** Recommended to save power.
- Set the following parameters in the **Internal Modem/GPRS Mode Settings** pane (the mobile communication provider you are using should be able to give you all this information):
 - **Internet Protocol:** Choose the Internet protocol (TCP or UDP) allowing the modem to perform an Internet connection.
 - **Access Point:** Enter the URL of the mobile communication provider.
 - **Access Point Login:** Enter the login of the mobile communication provider.
 - **Password:** Enter the password of the mobile communication provider.
- Click on the **Configure** button.
- Now please follow all the steps described in section *General Parameters on page 17* and then proceed with the steps below.
- Still on the **Rover Setup** page, in the **Network** pane, set the following parameters:
 - **Connection:** Choose “Modem Direct IP - Port E”. As a result, new fields appear in this pane that you should set as instructed below:

- The rover being a client, enter the information (**Connect Now, Address, Port, Login, Password**) allowing it to connect to the base (the server) from which it is supposed to receive corrections. The login and passwords are required only if the server demands authentication (e.g. SpiderNet). In that case, the message "\$GPRID,<login>,<password>" will be generated automatically and sent to the server when clicking on **Configure**.

Enable **Connect Now** to allow the receiver to establish the connection right after you have clicked on **Configure**.

- At the bottom of the page, in the **Differential Port** pane, select the **Automatic** option to let the receiver detect the incoming differential stream automatically.
NOTE: **Automatic** is the recommended choice for the Differential Port setting because in this case, you don't need to define the ports receiving the two possible differential streams.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver. You just have now to define the output messages (see *Defining Output Messages on page 31*).

Direct IP Via Ethernet



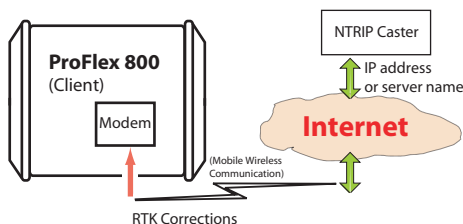
- First, click on the **Connections> Ethernet** submenu.
- Set the following Ethernet parameters to allow the receiver to access the network through its Ethernet port:
 - **DHCP**: Enabling this option means the local network to which the receiver is connected will automatically allocate a dynamic IP address to the receiver. If this option is disabled, you need to define the receiver's static **IP address**, and give information about the local network (**Subnetwork Mask** and **Gateway**). You may need to be assisted by a network expert -or IT Manager- to define these parameters (as well as the three parameters below).

If you activate the **DHCP** option, then it's a good idea to define a hostname for your receiver and declare it to DynDNS (see **DynDNS** frame at the bottom of the page). DynDNS is a free service that will make sure the dynamic IP address allotted to the receiver by your ISP is always attached to your receiver's hostname. This requires that you open an account on DynDNS. For more information on this service, see *Creating an Account on Dyn.com on page 55*.

- **DNS 1 IP Address:** If DHCP is disabled, enter the IP address of the primary DNS providing the correspondence between the receiver host name and its IP address.
 - **DNS 2 IP Address:** If DHCP is disabled, enter the IP address of the secondary DNS providing the correspondence between the receiver host name and its IP address
 - (**MAC Address** is a read-only field showing the hardware identification of the receiver's Ethernet port.)
- Ignore the **Port I Settings** frame.
 - Click on the **Configure** button to let the Web Server load all your new parameters to the receiver.
 - Unless already done, please follow all the steps described in section *General Parameters on page 17* before proceeding with the steps below.
 - Still on the **Rover Setup** page, in the **Network** pane, set the following parameters:
 - **Connection:** Choose “Ethernet Direct IP - Port P”. As a result, new fields appear in this pane that you should set as instructed below:
 - The rover being a client, enter the information (**Connect Now, Address, Port, Login, Password**) allowing it to connect to the base (the server) from which it is supposed to receive corrections. The login and passwords are required only if the server demands authentication (e.g. SpiderNet). In that case, the message “\$GPUID,<login>,<password> will be generated automatically and sent to the server when clicking on **Configure**
- Enable **Connect Now** to allow the receiver to establish the connection right after you have clicked on **Configure**.

- At the bottom of the page, in the **Differential Port** pane, select the **Automatic** option to let the receiver detect the incoming differential stream automatically.
NOTE: **Automatic** is the recommended choice for the Differential Port setting because in this case, you don't need to define the ports receiving the two possible differential streams.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver. You just have now to define the output messages (see *Defining Output Messages on page 31*).

NTRIP Client Via Modem



The internal modem should be configured first:

- Click on the **Connections** menu and then on the **Bluetooth/Modem** sub-menu.
- Set the following parameters in the **Internal Modem/Device Settings** pane:
 - **Power:** Select “On”. Then choose whether the modem should be turned on automatically or manually:
 - Automatic:** The modem will be switched on or off automatically when the rover is respectively turned on or off.
 - Manual:** The modem will be powered up only by going through the **Connections > Bluetooth/Modem** page and setting the modem to “Power On” (or using the \$PASHS,MDM,ON command).
 - **Automatic Connection:** Check this option.
 - **Pin:** 4- to 8-character pin code of the SIM card used in the modem for GPRS operation.
 - **2G Only:** Recommended to save power.
- Set the following parameters in the **Internal Modem/GPRS Mode Settings** pane (the mobile communication provider you are using should be able to give you all this information):

- **Internet Protocol:** Choose the Internet protocol (TCP or UDP) allowing the modem to perform an Internet connection.
 - **Access Point:** Enter the URL of the mobile communication provider.
 - **Access Point Login:** Enter the login of the mobile communication provider.
 - **Password:** Enter the password of the mobile communication provider.
- Click on the **Configure** button.
 - Now please follow all the steps described in section *General Parameters on page 17* and then proceed with the steps below.
 - Still on the **Rover Setup** page, in the **Network** pane, set the following parameters:
 - **Connection:** Choose “Modem Ntrip Client - Port E”. As a result, new fields appear in this pane that you should set as instructed below:
 - **Connect Now:** Enable this option to allow the receiver to establish the connection right after you have clicked on **Configure**.
 - **Address, Port, Login, Password:** Enter the information allowing the receiver to connect to the NTRIP caster. This information should have been passed on to you earlier by the administrator of this service.
 - **Load Source Table** button: Click on this button after you have entered the information about the NTRIP caster. As a result, the list of available sources from this caster appears just underneath. (See example below.)

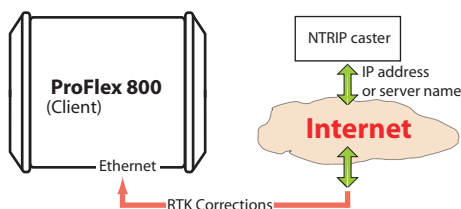
Mount: Serial HMEGA:

Mount Point	Identifier	Format	System	Country	Latitude
ATC1	ATC	RTCM 3.0	GPS+GLO	USA	32.56
CAR1	Carquetou1	RTCM 2.3	GPS	FRA	47.30
CAR2	Carquetou2	RTCM	GPS	FRA	47.30
CAR3	Carquetou	RTCM 3.0	GPS	FRA	47.30
CLT	Cobon	RTCM	GPS	USA	34.04
CSS1	TelAviv	RTCM 2.3	GPS	IL	32.08
DAP	Dapze	RT3	GPS GLO	FR	47.17
MDC1	Moscow1	RTCM 3.0	GPS+SBAS	RUS	55.30
MDC2	Moscow2	RTCM 2.3	GPS	RUS	55.09
NAH1	Nantes1	RTCM 3.0	GPS	FRA	47.30
NAH10	Nantes10	RTCM (RTCM 3 / CMR)	GPS GLO	FRA	47.30
NAH11	Nantes11	RTCM 3.0 (1)	GPS-GLO	FRA	47.30
NAH2	Nantes2	RTCM	GPS GLO+SBAS	FRA	47.30

Select the desired source by simply clicking on the corresponding row. The resulting mount point then appears in the **Mount Point** field located above the **Load Source Table** button.

- **Send NMEA:** Check this button when the rover operates in a VRS network so that it can return its position to the network through an NMEA message. Keep it cleared in all other cases. (This option is automatically enabled when you select a mount point for which the NMEA message is requested.)
- At the bottom of the page, in the **Differential Port** pane, select the **Automatic** option to let the receiver detect the incoming differential stream automatically.
NOTE: **Automatic** is the recommended choice for the Differential Port setting because in this case, you don't need to define the ports receiving the two possible differential streams.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver. You just have now to define the output messages (see *Defining Output Messages on page 31*).

NTRIP Client Via Ethernet



- First, click on the **Connections> Ethernet** submenu.
- Set the following Ethernet parameters to allow the receiver to access the network through its Ethernet port:
 - **DHCP:** Enabling this option means the local network to which the receiver is connected will automatically allocate a dynamic IP address to the receiver. If this option is disabled, you need to define the receiver's static **IP address**, and give information about the local network (**Subnetwork Mask** and **Gateway**). You may need to be assisted by a network expert -or IT Manager- to define these parameters (as well as the three parameters below).

If you activate the **DHCP** option, then it's a good idea to define a hostname for your receiver and declare it to DynDNS (see **DynDNS** frame at the bottom of the page). DynDNS is a free service that will make sure the dynamic IP address allotted to the receiver by your ISP is always attached to your receiver's hostname. This requires that you open an account on DynDNS. For more information on this service, see *Creating an Account on Dyn.com on page 55*.

- **DNS 1 IP Address:** Enter the IP address of the primary DNS providing the correspondence between the receiver server name and its IP address.
 - **DNS 2 IP Address:** Enter the IP address of the secondary DNS providing the correspondence between the receiver server name and its IP address
 - (**MAC Address** is a read-only field showing the hardware identification of the receiver's Ethernet port.)
- Ignore the **Port I settings** frame on the right.
 - Click on the **Configure** button to let the Web Server load all your new parameters to the receiver.
 - Unless already done, please follow all the steps described in section *General Parameters on page 17* before proceeding with the steps below.
 - Still on the **Rover Setup** page, in the **Network** pane, set the following parameters:
 - **Connection:** Choose "Ethernet Ntrip Client - Port P". As a result, new fields appear in this pane that you should set as instructed below:
 - **Connect Now:** Enable this option to allow the receiver to establish the connection right after you have clicked on **Configure**.
 - **Address, Port, Login, Password:** Enter the information allowing the receiver to connect to the NTRIP caster. This information should have been passed on to you earlier by the administrator of this service.
 - **Load Source Table** button: Click on this button after you have entered the information about the NTRIP caster. As a result, the list of available sources from this caster appears just underneath. (See example below.)

Mount: CAR2

Load Source Table

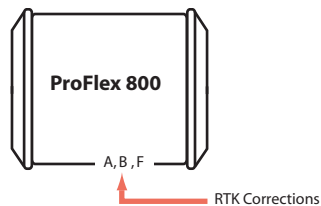
Serial NMEA

Mount Point	Identifier	Format	System	Country	Latitude
ATC1	ATC	RTCM 0	GPS+GLO	USA	32.58
CAR1	Carquetou1	RTCM 2.3	GPS	FRA	47.30
CAR2	Carquetou2	RTCM	GPS	FRA	47.30
CARQ	Carquetou	RTCM.3	GPS	FRA	47.30
CLT	Colson	RTCM	GPS	USA	34.04
CSS1	TelAviv	RTCM 2.3	GPS	IL	32.08
DAP	Dapoz	RT3	GPS GLO	FR	47.17
MDC1	Moscow1	RTCM 3.0	GPS+SBAS	RUS	55.29
MDC2	Moscow2	RTCM 2.3	GPS	RUS	55.29
NAH1	Nantes1	RTCM.3	GPS	FRA	47.30
NAH10	Nantes10	RTCM,RTCM 3 / CMR	GPS GLO	FRA	47.30
NAH11	Nantes 11	RTCM.0 (1)	GPS-GLO	FRA	47.30
NAH2	Nantes2	RTCM3	GPS GLO+SBAS	FRA	47.30

Select the desired source by simply clicking on the corresponding row. The resulting mount point then appears in the **Mount Point** field located above the **Load Source Table** button.

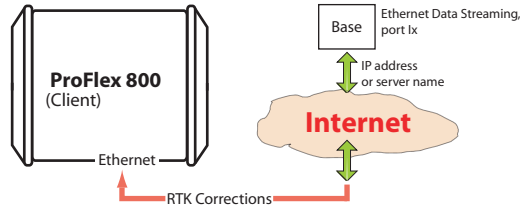
- **Send NMEA:** Check this button when the rover operates in a VRS network so that it can return its position to the network through an NMEA message. Keep it cleared in all other cases. (This option is automatically enabled when you select a mount point for which the NMEA message is requested.)
- At the bottom of the page, in the **Differential Port** pane, select the **Automatic** option to let the receiver detect the incoming differential stream automatically.
NOTE: **Automatic** is the recommended choice for the Differential Port setting because in this case, you don't need to define the ports receiving the two possible differential streams.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver. You just have now to define the output messages (see *Defining Output Messages on page 31*).

RTK Corrections Received on Port A, B or F



- Unless already done, please follow all the steps described in section *General Parameters on page 17* before proceeding with the steps below.
- Still on the **Rover Setup** page, in the **Serial Port x** pane corresponding to the port you want the receiver to use (A, B or F), set the following parameters:
 - **Connection:** Choose the name of the corrections receiver device connected to the port. As a general rule, choose “None/Cable” for any external corrections receiver connected to that port. But if the device used is a license-free radio, type ARF7474B EU or ARF7474A NA, choose specifically this type of radio.
 - Port settings (**Baud Rate, Mode, RTS/CTS**): Set the serial port to match the external device connected to it. Setting these fields will update the corresponding fields on the **Serial Ports** sub-menu page
- At the bottom of the page, in the **Differential Port** pane, select the **Automatic** option to let the receiver detect the incoming differential stream automatically.
NOTE: **Automatic** is the recommended choice for the Differential Port setting because in this case, you don't need to define the ports receiving the two possible differential streams.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver.
- If the external radio used is a standalone, non-identified radio receiver, skip this step. But if an ARF7474x license-free radio is used, click on the **Connections> Radio** submenu and from the **Type** field located in the **External Radio** pane, select the type of license free radio used. Then click on the **Configure** button.
- If port A is used for the connection to the external radio, you just have now to define the output messages (see *Defining Output Messages on page 31*). But if port B or F is used, there is an additional step needed (see below) before you define the output messages.
- If port B or F is used for the connection to the external radio, click on the **Connections> Serial Ports** submenu, enable the **Power ON** option for serial ports B & F (bottom of the page) and click on the **Configure** button. You can switch to the output message definition.

Rover Acquiring Data Stream From a Base



The rover needs to be configured as in Direct IP mode via Ethernet (see *Direct IP Via Ethernet on page 23*).

Rover Operating in Flying RTK Mode

- Follow the steps described in section *General Parameters on page 17*. At the top of the **Rover setup** page, select Ambiguity Fixing=0 in the **Rover** pane.
- Choose the method used to let the rover acquire RTK corrections.

With ProFlex 800, if several rovers in Flying RTK mode are assumed to use the same source of RTK corrections, the internal modem can be used individually in each rover (in GPRS mode). The source of corrections will typically be a ProFlex 800 base using the embedded NTRIP caster.

Another possible solution is to insert the Ashtech RTDS software in the communication path so that the corrections can be distributed to all the rovers.

Rover Operating in Hot Standby RTK

Hot Standby RTK is the process of making available a second RTK position solution in the background. Should the primary RTK solution stop being delivered by the receiver for some reason, then the second RTK solution would be provided instead, until the primary RTK solution is back again and valid.

If you wish to make available this background solution, then enable the **Hot Standby RTK** option at bottom of the page. You are then asked to specify which port will route the differential corrections used to compute that solution (you should use a source of differential corrections different from the one used for the primary solution; make sure this source of corrections will be delivered on the specified port).

Defining Output Messages

Depending on your application, you will have to define different types of data output messages as well as the way they are delivered to outside equipment (typically through a serial port for a rover).

Three categories of output data are possible (NMEA, differential and raw data) but in most rover applications, only the use of NMEA messages makes sense.

However, to allow raw data to be recorded in the rover, you should make sure the appropriate messages are set on the U and M ports.

Follow the instructions below to program the desired messages:

- On the **Configuration** tab, click on the **Data Output** menu.
- Click on the **NMEA Messages** submenu. Use the page that opens as explained below:
 - All possible NMEA message types are listed below.

Message Name	Description
ALM	Almanac data for each of the tracked satellites
ATT	Computed attitude data (not supported)
CRT	Cartesian coordinates of computed position
DCR	Cartesian coordinates of computed baseline
DDS	Differential decoder status
DPO	Delta position (baseline components)
DTM	Datum Reference
GGA	Standard GNSS position message
GLL	Latitude and longitude of computed position
GNS	GNSS fix data
GRS	GNSS range residuals
GSA	GNSS DOP and active satellites
GST	GNSS pseudo-range error statistics
GSV	GNSS satellites in view
HDT	Computed true heading (not supported)
LTN	Latency
POS	Computed position data
PTT	PPS signal time tag
RMC	Recommended minimum specific GNSS data
RRE	Residual error
SAT	Satellites status
SGA	GALILEO satellites status
SGL	GLONASS satellites status
SGP	GPS & SBAS satellites status
TTT	GPS time of external event
VEC	Vector & accuracy data
VTG	Course over ground and ground speed
XDR	Transducer measurements
ZDA	UTC Time & date

- To define the output of an NMEA message on a given port, you just need to select the message type from the **Message** drop-down list, the output port from the **Output** drop-down list, then enter its output rate, in seconds, in the **Rate** field, and finally click on the **Add** button. The new message definition will then appear as a new row in the table on the right. Note that for messages PTT, TTT and XDR, you don't have to define an output rate, due to the very nature of these messages.
 - To change the definition of an existing message (port, rate), select the corresponding row in the table. This populates the three fields on the left with the definition of that message. Edit the port and/or rate and then click on the **Modify** button to save your changes. The table row is updated accordingly. Note that depending on the current selection on this page, the button located underneath the three fields on the left may be either grayed or with a different label (**Add** or **Modify**).
 - Deleting a message definition can be done by simply clicking on the corresponding “trash” sign in the **Clear** column on the far right. This deletes the table row.
 - There is also a **Clear All** button underneath the table that allows you to delete all the message definitions from the table in one click.
 - After all your messages have been defined, don't forget to click on **Configure** to save all the message definitions.
- Click on the **Raw Data Messages** submenu. Use the page that opens to program the type of raw data you would like the receiver to record. Manual raw data will later be initiated either remotely by enabling the **Data Recording** box on the **Recording** web page, or locally using the **Log** button on the receiver front panel. For example, to set the RNX and NAV raw data messages at 1 second, do the following:
 - In the **ATOM Messages** pane, select “RNX” from the **Message** field, select “M” or “U” from the **Output** field and type “1” in the **Rate** field. Click on the **Add** button underneath to validate your entry. The programmed message now appears in the table on the right.
 - In the **ATOM Messages** pane, select “NAV” from the **Message** field, select “M” or “U” from the **Output** field

and type “1” in the **Rate** field. Click on the **Add** button underneath to validate your entry. The programmed message now appears in the table on the right.

- Click on the **Configure** button located at the bottom of the page
- Click on the **Connections** menu, then on the **Serial Ports** submenu.
- Set each of the ports on which data output will take place. If port B or F is used, make sure the Power ON option (bottom of the page) is active.

Setting a Base

How to Start

- Open the Web Server's **Configuration** tab. The first time you click on this tab, the Web Server will ask you to log in as the administrator. Only the receiver administrator is authorized to access the **Configuration** tab.

You are allowed to change the destination of a receiver (e.g. it is currently a rover and you want to change it into a base). In this case, on opening the **Base Setup** tab, the Web Server will retain part of the rover settings that could be applied to the base (e.g. antenna type, etc.).

- Whatever the way RTK corrections are transmitted to users (rovers), you will always have to define a number of general parameters pertaining to the base function. These parameters are usually defined first. However when the internal modem is used, it is advisable to configure the modem first.
- The ProFlex Web Server includes four submenus to configure a base:
 - **Full Setup**
 - **NTRIP Server**
 - **Data Streaming on IP**
 - **Transmitter**

The **Full Setup** submenu is the most comprehensive one as it gives you the ability to implement any of the possible configurations.

The other three are abridged versions of the **Full Setup** submenu, customized for three specific configurations: NTRIP server, data streaming and use of the internal radio transmitter or of an external transmitter. These submenus can advantageously be used instead of the **Full Setup** submenu to speed up the configuration phase.

On all four submenus, the first three frames (Base, Antenna, Satellites) allow you to set the general parameters. But note that only the **Full Setup** submenu allows you to define a moving base.

- **Through network connections**, using the integrated cellular modem or Ethernet port, the ProFlex 800 can deliver two distinct sources of corrections through two different channels, designated as "Network 1" and "Network 2" on the Base Setup-Full Setup page, and "NTRIP Server 1" and "NTRIP Server 2" on the Base Setup - NTRIP server page. **Differential Streams 1 and 2**

should be defined accordingly (port E, P or Q + message type), namely the Differential Stream 1 is necessarily associated with “Network 1” (or “NTRIP Server 1”) and Differential Stream 2 with “Network 2” (or “NTRIP Server 2”).

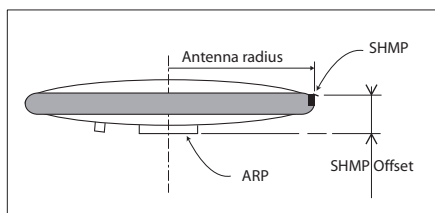
Whereas the modem can only serve the “Network 1” or “NTRIP Server 1” connection, the Ethernet port on the other hand can serve both network connections, namely port P for “Network 1”/“NTRIP Server 1” and port Q for “Network 2”/“NTRIP Server 2”. Ports P and Q can not only route their respective corrections (data streams) to an external NTRIP caster, but also directly to the embedded NTRIP caster, through two distinct mount points managed by the caster.

- Programming the data generated by a base is addressed separately (see *Defining the Data Generated by a Base on page 39* and *Ethernet Data Streaming on page 52*).
- Configuring a permanently operating reference station is addressed in separate manuals (*ProFlex 800 CORS Getting Started Guide* for the short version, and also the *CORS Station* Chapter in the *ProFlex 800 Reference Manual*).

General Parameters

- Click on the **Base Setup** menu.
- Set the receiver parameters:
 - **Dynamic:** Choose the type of motion that best suits the base (static, quasi-static, walking, ship, automobile, aircraft, unlimited, adaptive or user-defined). Typically, a base is static.
 - **Moving Position:** Enable this option if the base may be moving while being operated. For all other cases where the base always stays static, keep this option disabled.
 - **Latitude, Longitude, Ellipsoid Height:** Use these three fields only when the **Moving Position** option is disabled. Use them to enter the reference position of the base (three-dimensional geographical coordinates). The coordinates shown in these fields are irrelevant and not used when the **Moving Position** option is enabled. Clicking on the **Get current position** button assigns the last position computed by the receiver to the base as its reference position. It makes no sense to use this button when the **Moving Position** option is enabled.
- Set the GNSS antenna parameters:

- **Reference Position:** Specify the physical point on the base system for which the receiver will generate corrections. The three possible choices are: Antenna L1 phase center, Antenna Reference Point (ARP) or Ground Mark.
- **Measurement Type:** Specify the method that was used when setting up the base system to measure the height of the GNSS antenna (Vertical or Slant Height).
- **Antenna Height:** Value of base antenna height, expressed in the selected distance unit, as measured according to the specified measurement method.
- **Receiver Antenna:** Specify the model of GNSS antenna used by the receiver. Select “UNKNOWN” if you don’t know which model is used.
- **Antenna Radius:** In case of a “Slant Height” measurement, enter the antenna radius (this is a manufacturer specification), taking care to enter this parameter in the selected distance unit. See also the diagram below for more information.
- **SHMP Offset:** In case of a “Slant Height” measurement, enter the SHMP offset (this is a manufacturer specification) taking care to enter this parameter in the selected distance unit. See also the diagram below for more information.



Antenna Model	P/N	Antenna Radius (m)	SHMP Offset (m)
ASH-661	802135	0.0953	0.0483
ASH-660	802133		
MAG111406	111406	0.0921	0.0516

NOTE: The **Antenna Radius** and **SHMP Offset** fields are automatically preset to the right values when you select an antenna type in the **Receiver Antenna** field.

- **Virtual Antenna:** This option is used to emulate a GNSS antenna other than the one really used.

Choosing a virtual antenna different from the one really used affects the raw and differential data as if they had been collected by the virtual antenna, instead of the real one.

A virtual antenna is needed at a base when rovers from different GNSS manufacturers cannot operate from that base because of the unknown model of GNSS antenna used by the base. In that case, defining a virtual antenna at the base will solve the problem. One of the most frequently used virtual antennas is the universal ADVNULLANTENNA antenna.

- Set the parameters relevant to the GNSS constellations used by the receiver:
 - **Recording and Output Elevation Mask:** Choose the elevation angle above the horizon creating the desired mask. After setting this angle, any satellite seen from the base with an elevation angle less than the specified one will be rejected from the list of tracked satellites. The recording elevation mask affects the measurements recorded in G-files and the differential messages generated by the receiver. The default value is 5°.
 - **GLONASS, SBAS:** In addition to the GPS, you can ask the receiver to track the GLONASS and/or SBAS satellites as well. Enable the options corresponding to the additional constellations you want the receiver to use.
- In the Internal Radio Port D, if the internal radio (ADL Foundation) is present and used, enable the **On** check box to power this radio on.
- You may now click on the **Configure** button to save all the changes made but remember you will have to complete the content of this page to tell the receiver how to make the generated data available to users.

But before that, you need to define which data the receiver has to generate, which output rate and which port to use for each of the data messages. See *Defining the Data Generated by a Base on page 39*.

Then use one of the typical applications described below to make the data available to users:

- Radio transmitter
- Direct IP via modem
- Direct IP via Ethernet
- NTRIP server via modem

- NTRIP server via Ethernet
- RTK corrections delivered on port A, B or F
- Ethernet data streaming.

Defining the Data Generated by a Base

Depending on your application, you will have to define different types of data messages as well as the ports through which they will be delivered.

Three categories of output data are possible (NMEA, differential and raw data) but only the use of differential and raw data messages makes sense in a base.

To define differential data messages, click on **Data Output**, then on the **Differential Messages** submenu. Use the page that opens as explained below:

- All the message types pertaining to a given data format are listed vertically. These are the following:

Format	Message types
ATOM RNX	- Standard (4), Static Base - Compact (100), Static Base - Super-compact (101), Static Base - Standard (204), Moving Base - Compact (300), Moving Base
RTCM2.3	Message types: 1, 3, 9, 16, 18/19, 20/21, 22, 23, 24, 31, 32, 34, 36
RTCM 3.0 & 3.1	Message types: 1001-1013, 1019, 1020, 1029, 1033
CMR	Message types: 0, 1, 2, 3
DBEN	Ashtech legacy message

- To enable the output of a differential message, you just need to enter the desired refresh rate (in seconds) for this message in the corresponding field.
- Leaving a field blank means you don't want the message type to be output.
- For ATOM message types, you need to choose between the different formats available ("Standard", "Compact" or "Super Compact"). Basically, the difference between the three formats lies in the length (size) of the ATOM messages generated.

Compared to the "Standard" format, "Compact" and "Super Compact" will produce shorter messages for the same message content. "Super Compact" will deliver even shorter messages than "Compact".

Basically, data compacting is achieved by lowering the level of redundancy across messages. Through this

process, some message data are sampled, which means that instead of being present in every single message generated by the base, they will in fact be provided every x occurrences of the message.

Reconstructing full messages on rover side will however not tolerate data loss in the transmission. The successful use of the “Compact” or “Super Compact” formats therefore demands a very robust data link. In that respect, a conventional serial line using a cable is more likely to meet this requirement rather than a radio used in difficult reception conditions. But on the other hand, using a compact format seems more especially appropriate to radio links, owing to their potentially limited data throughput. So there is some sort of compromise to find here.

So What Should I Choose? In practice, Ashtech recommends that you follow these rules:

1. As long as you are not facing any data throughput issue in your application, using the “Standard” format will always be the best choice, whatever the data link media used.
2. Data throughput issues may occur in applications requiring high output rates (e.g. 10 Hz in heading or relative positioning applications). In this case, provided a robust data link is used, you can select “Compact”, or even “Super Compact” depending on the data throughput requirement.

Choosing one of these formats when a radio link is used implies that you have full confidence in the performance of the radio (good reception conditions, data loss very unlikely).

3. Using the “Super Compact” format should always be ruled out for a moving base.
4. Using “Compact” or “Super Compact” to solve the throughput issues of a radio used in difficult reception conditions or at range limits, is clearly a bad idea as it is likely to result in a global malfunctioning of your application. Ashtech recommends you reconsider the implementation of the data link.

There is however a safe operating margin using radio links since there won't be any throughput issue working in “Standard” ATOM format with a radio operated at 7600 bps.

The table below gives **average data throughput figures (in bytes/sec)** for different GNSS signals and three message types (RTCM-3 given as reference).

Protocol/ Scenario	GPS+GLONASS L1/L2	GPS+GLONASS L1 (L1CA only)	GPS L1/L2
ATOM RNX (SCN,4)	317	205	193
ATOM RNX (SCN,100)	159*	140*	98*
ATOM RNX (SCN,101)	86*	75*	70*

RTCM-3	338 (MT 1004,1012)	214 (MT 1002,1010)	202 (MT 1004)
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* Worst-case estimates. Real throughputs are often shorter by 4 to 8 bytes.

NOTE: For more information on the size of ATOM messages, please refer to the *ATOM Reference Manual*.

- The ports used to make the differential messages available to users are defined on the **Base Setup** page.

To define raw data messages, click on **Data Output** and then on the **Raw Data** submenu. Use the page that opens as explained below:

- All the raw data message types pertaining to a given data format are listed below:

Format	Message types
ATOM	NAV, ATR, PVT, DAT, EVT, RNX
Ashtech legacy	SNV, SNG, SNW, SAL, SAG, SAW, ION, SBD, MPC, PBN, DPC

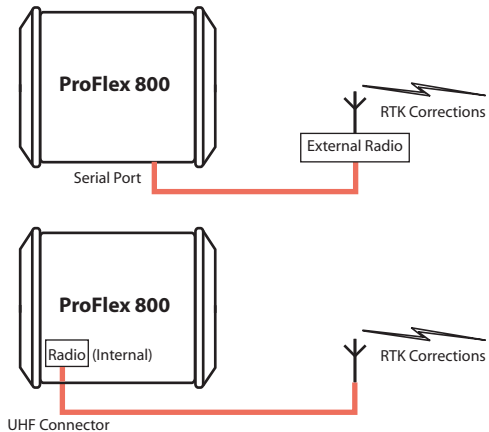
- Follow the instructions below to define the output of messages, whether in ATOM or Ashtech Legacy format:
 - Select the message type from the **Message** drop-down list, the output port from the **Output** drop-down list, then enter its output rate, in seconds, in the **Rate** field, and finally click on the **Add** button. The new message definition will then appear as a new row in the table on the right.
 - To change the definition of an existing message (port, rate), select the corresponding row in the table. This populates the three fields on the left with the definition of that message. Edit the port and/or rate

and then click on the **Modify** button to save your changes. The table row is updated accordingly.

Note that depending on the current selection on this page, the button located underneath the three fields on the left may be either grayed or with a different label (**Add** or **Modify**).

- Deleting a message definition can be done by simply clicking on the corresponding “trash” sign in the **Clear** column on the far right. This deletes the table row.
- There is also a **Clear All** button under the table that allows you to delete all message definitions from the table in one click.
- Click on the **Configure** button to save all the changes made and then go back to the **Base Setup** menu
- Use one of the typical applications described below to make the generated data available to users:
 - Radio transmitter
 - Direct IP via modem
 - Direct IP via Ethernet
 - NTRIP server via modem
 - NTRIP server via Ethernet
 - RTK corrections delivered on port A, B or F
 - Ethernet data streaming.

Radio Transmitter



- Click on **Base Setup > Transmitter** and define the general parameters of the base, as explained in section *General*

Parameters on page 36. Then proceed with the steps below.

- Scroll down the page to display the Transmitter frame. In the **Message** field, select the type of differential data the base will generate and the radio will transmit (ATOM, RTCM, CMR, CMR+ or DBEN). Following your selection, you will see the detail of the selected data on the right of this field, as defined in **Data Output > Differential Messages**.
- In the **Device** field, select the type of the radio transmitter the base is using (the internal or an external one). Depending on the type of radio used, you will have to provide the following parameters to complete the configuration of the radio.

	U-Link TRx	Magellan UHF	PDL HPB/LPB	ARF7474B EU	ARF7474A NA	ADL Vantage	ADL Foundation
Port	A, B, F	A	A, B, F	A, B, F	A, B, F	A, B, F	D
Baud Rate	1200, 2400, 4800, 9600, 19200, 38400	1200, 2400, 4800, 9600, 19200, 38400	1200, 2400, 4800, 9600, 19200, 38400	1200, 2400, 4800, 9600, 19200, 38400	1200, 2400, 4800, 9600, 19200, 38400	1200, 2400, 4800, 9600, 19200, 38400	NA
Mode	RS232, RS422	RS232, RS422	RS232, RS422	RS232, RS422	RS232, RS422	RS232, RS422	NA
Protocol	Transparent, DSNP	NA	Transparent, Trimtalk	NA	NA	Transparent, Trimtalk 450S, SATEL, Trim-MarkII/Ile, TT450S, TRIMMARK3, Transparent FST	Transparent, Trimtalk 450S, SATEL, Trim-MarkII/Ile, TT450S, TRIMMARK3, Transparent FST
Channel	0-15	0-15	0-15	0-2	NA	1-32	1-32
Air Link Speed	4800, 7600, 9600	NA	4800, 9600, 19200	NA	NA	4800, 8000, 9600, 16000, 19200	4800, 8000, 9600, 16000, 19200
RTS/CTS	NA	NA	On/Off	On/Off	On/Off	On/Off	-
Scrambler	NA	NA	On/Off	NA	NA	On/Off	On/Off
FEC	NA	NA	On/Off	NA	NA	On/Off	On/Off
Current Power (W)	NA	NA	NA	NA	NA	0.1, 0.5, 1, 2, 4	0.1, 0.5, 1
Load Transmitter Settings button	Yes	Yes	Yes	Yes	No	Yes	No

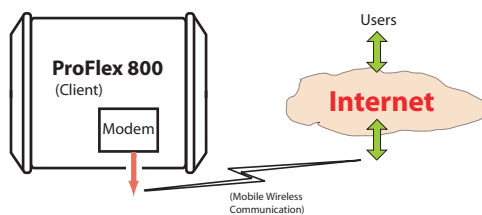
Note that the **Load Transmitter Settings** button is used to read the current setting of the radio. The changes you

make to these settings will be effective in the radio only after running the last step below.

By defining now the settings of the serial port used (A, B or F), you will save time as you won't need to go through the **Connections>Serial Ports** submenu to make these settings.

- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver and the radio. You have now reached the end of the configuration phase.

Direct IP Via Modem



The internal modem should be configured first:

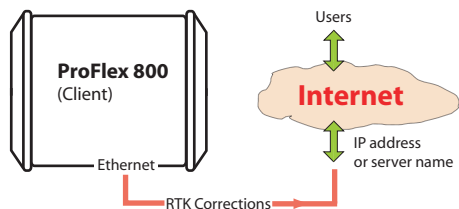
- Click on the **Connections** menu and then on the **Bluetooth/Modem** sub-menu.
- Set the following parameters in the **Internal Modem/Device Settings** pane:
 - **Power:** Select “On”. Then choose whether the modem should be turned on automatically or manually:
 - Automatic:** The modem will be switched on or off automatically when the base is respectively turned on or off.
 - Manual:** The modem will be powered up only by going through the **Connections > Bluetooth/Modem** page and setting the modem to “Power On” (or using the \$PASHS,MDM,ON command).
 - **Automatic Connection:** Check this option.
 - **2G Only:** Enabling this check box will limit the use of the modem only if a 2G mobile communication network is available in the working area. When it is cleared, the modem will be allowed to operate either in a 2G or 3G network, whichever is available.
 - **Pin:** 4- to 8-character pin code of the SIM card used in the modem for GPRS operation.
- Set the following parameters in the **Internal Modem/GPRS Mode Settings** pane (the mobile communication provider

you are using should be able to give you all this information):

- **Internet Protocol:** Choose the Internet protocol (TCP or UDP) allowing the modem to perform an Internet connection.
 - **Access Point:** Enter the URL of the mobile communication provider.
 - **Access Point Login:** Enter the login of the mobile communication provider.
 - **Password:** Enter the password of the mobile communication provider.
- Click on the **Configure** button.
 - Now please follow all the steps described in section *General Parameters on page 36* and then proceed with the steps below.
 - Still on the **Base Setup** page, make sure the **Connection** fields in the **Serial Port x** panes are all set to “None/Cable”
 - In the **Network 1** pane, choose “Modem Direct IP - Port E” in the **Connection** field.
 - The base being necessarily a client, enter the information (**Connect Now**, **Address**, **Port**) allowing it to connect to the rover (the server) to which it is supposed to deliver corrections. No **Login** or **Password** is needed in this case. Enable **Connect Now** to allow the receiver to establish the connection right after you have clicked on **Configure**.
 - In the **Differential Stream 1** pane, choose **Port**= “E - Modem” as the output port delivering the generated differential data. In the **Message** field, choose the type of differential message provided through this port (ATOM, RTCM, CMR, CMR+ or DBEN).

NOTE: The receiver has been designed to offer two separate and independent differential data outputs. Each one can output a specific type of differential message. If only one output is used, select **Port**=“None” for the other output.
 - Click on the **Configure** button to let the Web Server load all your new parameters to the receiver. You have now reached the end of the configuration phase.

Direct IP Via Ethernet



- First, click on the **Connections > Ethernet** submenu.
- Set the following Ethernet parameters to allow the receiver to access the network through its Ethernet port:
 - **DHCP:** Enabling this option means the local network to which the receiver is connected will automatically allocate a dynamic IP address to the receiver. If this option is disabled, you need to define the receiver's static **IP address**, and give information about the local network (**Subnetwork Mask** and **Gateway**). You may need to be assisted by a network expert -or IT Manager- to define these parameters (as well as the three parameters below).

If you activate the **DHCP** option, then it's a good idea to define a hostname for your receiver and declare it to DynDNS (see **DynDNS** frame at the bottom of the page). DynDNS is a free service that will make sure the dynamic IP address allotted to the receiver by your ISP is always attached to your receiver's hostname. This requires that you open an account on DynDNS. For more information on this service, see *Creating an Account on Dyn.com on page 55*.
 - **DNS 1 IP Address:** Enter the IP address of the primary DNS providing the correspondence between the receiver server name and its IP address.
 - **DNS 2 IP Address:** Enter the IP address of the secondary DNS providing the correspondence between the receiver server name and its IP address
 - (**MAC Address** is a read-only field showing the hardware identification of the receiver's Ethernet port.)
- Ignore the **Port I settings** frame on the right.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver.
- Unless already done, please follow all the steps described in section *General Parameters on page 36* before proceeding with the steps below.

- Still on the **Base Setup** page, make sure the **Connection** fields in the **Serial Port x** panes are all set to “None/Cable”
- In the **Network x** pane, choose “Ethernet Direct IP - Port P” in the **Connection** field.
- Because the base is necessarily a client, enter the information (**Connect Now**, **Address**, **Port**) allowing it to connect to the rover (the server) to which it is supposed to deliver its corrections. No **Login** or **Password** is needed in this case.

Enable **Connect Now** to allow the receiver to establish the connection right after you have clicked on **Configure**.

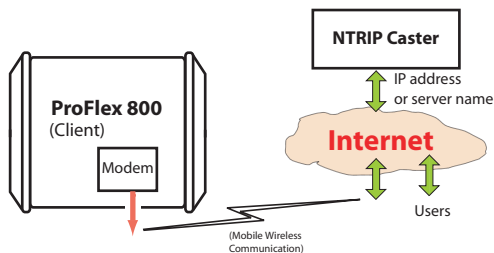
- In the corresponding **Differential Stream x** pane, choose **Port=** “P - Ethernet” as the output port delivering the generated differential data. In the **Message** field, choose the type of differential message provided through this port (ATOM, RTCM, CMR, CMR+ or DBEN).

NOTE: The receiver has been designed to offer two separate and independent differential data outputs. Each one can output a specific type of differential message. If only one output is used, select **Port=**“None” for the other output.

- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver. You have now reached the end of the configuration phase.

NTRIP Server Via Modem

CAREFUL: In the RTCM sense, an “NTRIP server” is a source of corrections feeding an NTRIP caster (see *RTCM paper 200-2004/SC104-ST*). But from the point of view of the network terminology, an “NTRIP server” is a client, not a server.



The internal modem should be configured first:

- Click on the **Connections** menu and then on the **Bluetooth/Modem** sub-menu.

- Set the following parameters in the **Internal Modem/Device Settings** pane:
 - **Power:** Select “On”. Then choose whether the modem should be turned on automatically or manually:
 - Automatic:** The modem will be switched on or off automatically when the rover is respectively turned on or off.
 - Manual:** The modem will be powered up only by going through the **Connections > Bluetooth/Modem** page and setting the modem to “Power On” (or using the \$PASHS,MDM,ON command).
 - **Automatic Connection:** Check this option.
 - **2G Only:** Enabling this check box will limit the use of the modem only if a 2G mobile communication network is available in the working area. When it is cleared, the modem will be allowed to operate either in a 2G or 3G network, whichever is available.
 - **Pin:** 4- to 8-character pin code of the SIM card used in the modem for GPRS operation.
- Set the following parameters in the **Internal Modem/GPRS Mode Settings** pane (the mobile communication provider you are using should be able to give you all this information):
 - **Internet Protocol:** Choose the Internet protocol (TCP or UDP) allowing the modem to perform an Internet connection.
 - **Access Point:** Enter the URL of the mobile communication provider.
 - **Access Point Login:** Enter the login of the mobile communication provider.
 - **Password:** Enter the password of the mobile communication provider.
- Click on the **Configure** button.
- Click on **Base Setup > NTRIP Server** and define the general parameters of the base, as explained in section *General Parameters on page 36*. Then proceed with the steps below.
- Scroll down the page to display the NTRIP Server 1 frame. In the **Connection** field, select “External NTRIP Caster via Modem”.
- Enter the information (**Connect Now, Address, Port, Password, Mount Point**) allowing the base to connect to the

NTRIP caster (the server) to which it is supposed to deliver its corrections.

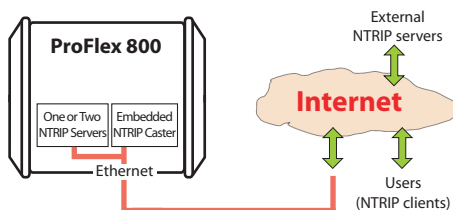
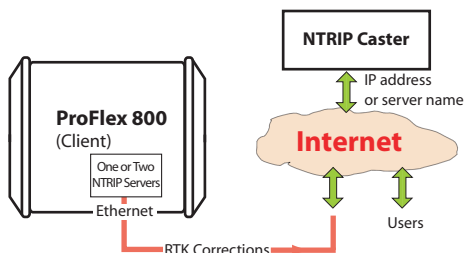
Enable **Connect Now** to allow the receiver to establish the connection right after you have clicked on **Configure**.

- In the **Message** field, select the type of differential data the base will deliver (ATOM, RTCM, CMR, CMR+ or DBEN). Following your selection, through a click on the “I” symbol, you will see the detail of the selected data on the right of this field, as defined in **Data Output > Differential Messages**.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver. You have now reached the end of the configuration phase.

NTRIP Server Via Ethernet

CAREFUL: In the RTCM sense, an “NTRIP server” is a source of corrections feeding an NTRIP caster (see *RTCM paper 200-2004/SC104-ST*). But from the point of view of the network terminology, an “NTRIP server” is a client, not a server.

As explained earlier (see *How to Start on page 35*), in that configuration you can define one or two NTRIP servers sending their data streams either to an external NTRIP caster (see first figure below) or to the embedded NTRIP caster (see second figure below). All combinations are possible. Choose the ones that meet your requirements.



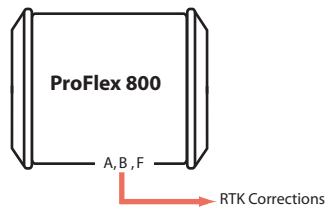
- First, click on the **Connections> Ethernet** submenu.
- Set the following Ethernet parameters to allow the receiver to access the network through its Ethernet port:
 - **DHCP**: Enabling this option means the local network to which the receiver is connected will automatically allocate a dynamic IP address to the receiver. If this option is disabled, you need to define the receiver's static **IP address**, and give information about the local network (**Subnetwork Mask** and **Gateway**). You may need to be assisted by a network expert -or IT Manager- to define these parameters (as well as the three parameters below).
 If you activate the **DHCP** option, then it's a good idea to define a hostname for your receiver and declare it to DynDNS (see **DynDNS** frame at the bottom of the page). DynDNS is a free service that will make sure the dynamic IP address allotted to the receiver by your ISP is always attached to your receiver's hostname. This requires that you open an account on DynDNS. For more information on this service, see *Creating an Account on Dyn.com on page 55*.
 - **DNS 1 IP Address**: Enter the IP address of the primary DNS providing the correspondence between the receiver server name and its IP address.
 - **DNS 2 IP Address**: Enter the IP address of the secondary DNS providing the correspondence between the receiver server name and its IP address
 - (**MAC Address** is a read-only field showing the hardware identification of the receiver's Ethernet port.)
- Ignore the **Port I settings** frame on the right.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver.
- Click on **Base Setup > NTRIP Server** and define the general parameters of the base, as explained in section *General Parameters on page 36*. Then proceed with the steps below.
- Scroll down the page to display the NTRIP Server 1/2 frames. In the **Connection** field, select "External NTRIP Caster via Ethernet" or "Embedded NTRIP Caster".
- Enter the information (**Connect Now, Address, Port, Password, Mount Point**) allowing the base to connect to the NTRIP caster (the server) to which it is supposed to deliver its corrections. If you choose "Embedded NTRIP Caster", the Address is automatically set to "localhost" and you

should choose a mount point from the list of mount points managed by the embedded NTRIP caster.

Enable **Connect Now** to allow the receiver to establish the connection right after you have clicked on **Configure**.

- In the **Message** field, select the type of differential data the base will deliver (ATOM, RTCM, CMR, CMR+ or DBEN). Following your selection, you will see the detail of the selected data on the right of this field, as defined in **Data Output > Differential Messages**.
- Resume the above settings for the second NTRIP server if you need one.
- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver. You have now reached the end of the configuration phase.

RTK Corrections Delivered on Port A, B or F



- Unless already done, please follow all the steps described in section *General Parameters on page 36* before proceeding with the steps below.
- If you intend to use port B or F for the connection to the external radio, click on the **Connections - Serial Ports** submenu, enable the **Power ON** option for serial ports B & F (bottom of the page) and click on the **Configure** button. If port A will be used, skip this step.
- Come back to the **Base Setup** page. In the **Serial Port x** pane corresponding to the port you want the receiver to use (A, B or F), set the following parameters:
 - **Connection:** Choose the name of the corrections transmitter device connected to the port. As a general rule, choose "None/Cable" for any external corrections transmitter connected to that port. But if the device used is a license-free radio, type ARF7474B EU or ARF7474A NA, choose specifically this type of radio.
 - Port settings (**Baud Rate, Mode, RTS/CTS**): Set the serial port to match the external device connected to it. Setting these fields will update the corresponding fields on the **Serial Ports** sub-menu page.

- Make sure the **Connection** fields in the **Network x** panes are all set to “None”.
- In the **Differential Stream x** pane, in the **Port** field, choose the port to which the external device is connected. In the **Message** field, choose the type of differential message provided through this port (ATOM, RTCM, CMR, CMR+ or DBEN).

NOTE: The receiver has been designed to offer two separate and independent differential data outputs. Each one can output a specific type of differential message. If only one output is used, select **Port**=“None” for the other output.

- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver.
- If the external radio used is a standalone, radio transmitter, skip this step. But if an ARF7474x license-free radio is used, click on the **Connections - Radio** submenu and from the **Type** field located in the **External Radio** pane, select the type of license free radio used. Then click on the **Configure** button. You have now reached the end of the configuration phase.

Ethernet Data Streaming

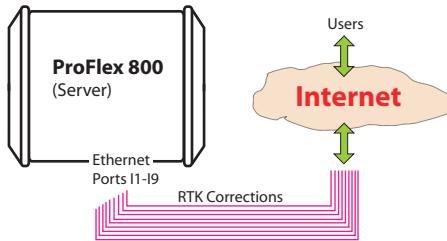
Typically a base can be configured to deliver real-time corrections to whoever asks for them through an IP connection. This is achieved through the receiver’s Ethernet port Ix.

The receiver is fitted with nine independent data outputs, with the possibility for the administrator to define a specific data format for each output.

In addition, for each data output, the administrator can choose whether the base will be the server or the client in the IP connection.

As a server (typical application), it will deliver its data to any client asking for it and authorized to do so. Up to 5 different users can be connected on the same port.

As a client (more specific), the base will start delivering its data after it has been able to establish a communication with the specified IP address.



Follow the instructions below:

- Click on **Base Setup > Data Streaming on IP** and define the general parameters of the base, as explained in section *General Parameters on page 36*. Then proceed with the steps below.
- Scroll down the page to display the Ethernet Streaming frame.
- For each data stream the base should generate, enable the **Port Ix** option corresponding to the port you want to use. Then in the same line, set the following fields:
- **Mode:** Specify the role played by the base in the IP connection (server or client).
- **Protocol:** Select the protocol that will be used in the IP connection (“TCP” or “UDP”). “TCP” should be chosen preferably. In cases where you need to output data at a very high update rate, UDP may be used instead.
- **IP Address:** (A valid field only if the base is used as the client) Enter the IP address of the system (rover) that will acquire the data stream.
- **IP Port:** Specify the IP port of this system.
- **Message Type:** Specify the type of data message the receiver will deliver on this port (ATOM, RTCM, CMR, CMR+ or DBEN). Click on the “I” symbol to the right of this field to read the details of the selected message type.
- After you have defined all the ports used, click on the **Configure** button to let the Web Server load all your new parameters to the receiver. You have now reached the end of the configuration phase.

Creating an Account on Dyn.com

Dyn Standard DNS is an update mechanism, offered by *Dynamic Network Services, Inc.*, through which you can make sure the hostname of your ProFlex 800 will always match the dynamic IP address assigned to it by your Internet provider. This however requires that you create an account and choose the function you want to use.

Do the following to create an account:

- Open a new tab in your web browser.
- Type <http://dyn.com/dns/> and press ENTER.
- Type on the **Sign In** button in the upper-right corner.
- Type on the “Create Account” link.
- Enter your credentials (username, password and email) and other information needed (safety number, registration, policy agreement).
- Click on **Create Account**. You will then receive an email containing a link allowing you to activate your account.
- Click on this link. This will open the DynDNS web site on which you will be logged in after you have re-entered your password. This confirms the creation of your account.
- Click on “Create Free Hostname”.
- Choose a name for your ProFlex 800 (hostname), keep “Host with IP address” selected, and enter the current IP address of your ProFlex 800: This is the public IP address of the ProFlex 800, and not necessarily the one displayed on the ProFlex 800 screen (see your IT manager for more information). If the receiver is connected to a local network (LAN), then a direct link must exist between the declared public IP address and the receiver’s personal IP address within the LAN.
- Choose the services you want to use (typically “VPN”, “remote desktop” and “web server”).
- Click **Add to Cart**.
- Click on “Proceed to checkout”.
- Click on “Activate Services”.

You can now activate the update mechanism through the Web Server. On the Web Server’s Configuration tab, select **Connections** then **Ethernet**. In the **DynDNS** frame, do the following:

- Check on the **Activation** button
- Keep the default address shown in the **System** field

- Enter the **Hostname** of your receiver, as declared when you opened your DynDNS account.
- Enter the credentials (**Username, Password**) you specified when creating your DynDNS account. These will authorize the receiver to access and use the DynDNS service.
- Specify the rate (**Period**), in seconds, at which the receiver should regularly access the DynDNS service to provide its current IP address. Through these regular connections, the receiver will allow the DynDNS service to update the association made between the declared hostname for the receiver and its currently valid IP address.

The **Update Now** button can be used at this stage to force the receiver to send right away its IP address to the DynDNS service.

- Click on the **Configure** button to let the Web Server load all your new parameters to the receiver.

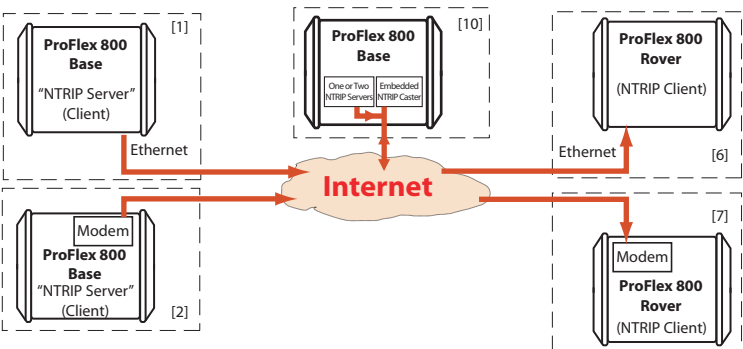
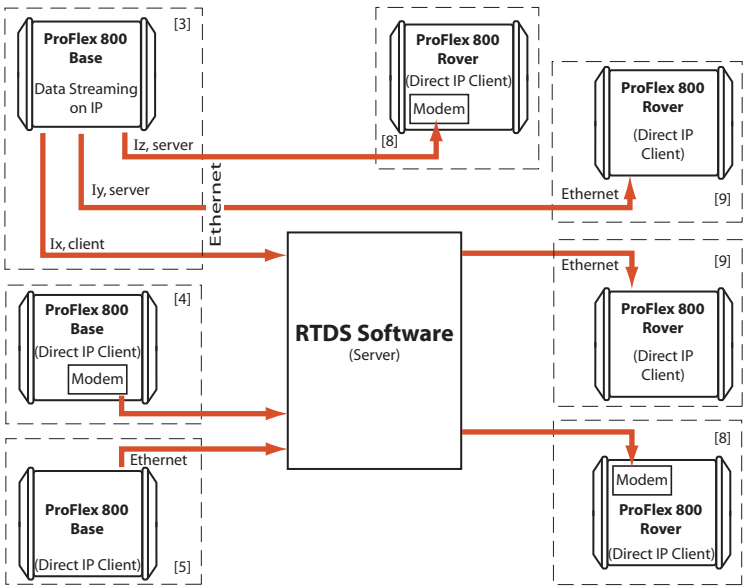
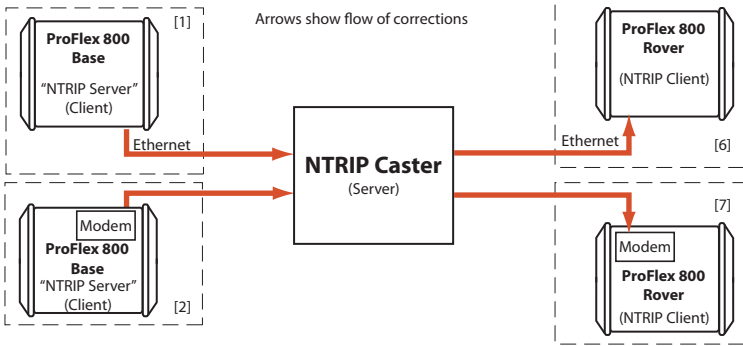
Configuration Memo

Entering the settings of a base/rover system is quite straightforward when a radio is used to transmit corrections from the base to the rover.

When an IP connection is used, understanding the possible base/rover associations is not so clear because in addition, you have to take account of the server-client requirement inherent in any IP connection.

The diagrams below should help you keep in mind which associations are possible when using an IP connection (through GPRS modem or Ethernet port).

- **[1]:** Base, “NTRIP server” via Ethernet
- **[2]:** Base, “NTRIP server” via modem
- **[3]:** Base, Ethernet data streaming
- **[4]:** Base, Direct IP client via modem
- **[5]:** Base, Direct IP client via Ethernet
- **[6]:** Rover, NTRIP client via Ethernet
- **[7]:** Rover, NTRIP client via modem
- **[8]:** Rover, Direct IP client via modem
- **[9]:** Rover, Direct IP client via Ethernet
- **[10]:** Base, 2 NTRIP servers + embedded NTRIP caster



Symbols\$GPUID *23, 24*\$PASH commands *12***A**Access point *22, 26, 45, 48*Adaptor cable *3*Address box *12*Administrator profile *2, 9, 13*ADSL modem *5*ADVNULLANTENNA *38*Age of corrections *14*Airlink speed *21*Ambiguity fixing *17, 31*Angle units *15*Antenna (virtual) *19, 37*Antenna height *18, 37*Antenna measurement type *18, 37*Antenna radius *18, 37*ARF7474 *30, 51, 52*ARP *18*ASH-661 (ASH111661) *18, 37*Associations (base/rover) *57*ATOM *33*ATOM, standard, compact, super-compact
*39*Automatic (detection of port receiving
corrections) *23, 25, 27, 29, 30*Automatic (modem DC power) *22, 25, 44,*
*48*Automatic (radio DC power) *21*Automatic connection (modem) *22, 25, 44***B**Band (modem) *22, 25*Base Setup *35*Base using external radio transmitter *42*Battery *14*Baud rate *30, 44, 51***C**Channel (internal radio) *21*Choosing ATOM format (Standard, Compact,
Super Compact) *40*Clear All button *33, 42*Company name *13*Configuration tab *13*Connect Now *24, 26, 28, 45, 47, 49, 51*Connection profiles *2*CORS station *36*Create DynDNS account *55*Crossover cable *6***D**Date *15*Device field *43*DHCP *4, 6, 9, 23, 27, 46, 50*Differential messages *39*Differential messages, base *43*Differential port *23*Differential Stream x *45, 47, 52*Direct IP via Ethernet, base *46*Direct IP via Ethernet, rover *23*Direct IP via modem, base *44*Direct IP via modem, rover *22*Direct TCP/IP connection *6*Distance units *15*DNSx IP Address *24, 28, 46, 50*DSNP *21*Dynamic *18, 36*DynDNS *24, 28, 46, 50, 55*DynDNS account *55***E**Email (owner email) *13*Embedded NTRIP caster *36, 49*Ethernet data streaming, base *53*Ethernet Direct IP - Port P *24, 47*External corrections provider, rover *30*External corrections transmitter, base *51***F**Fast RTK *17*Flying RTK *17, 31***G**Gateway *4, 5, 7*General parameters (rover) *17*General parameters, base *36*Get Current Position, base *36*GLONASS *19, 38*Ground mark *18***H**HDOP *14*Height *14*Home tab *12*HRMS *14*Hub *4, 5***I**Internal radio receiver (as used in rover) *20*Internet protocol *22, 26, 45, 48*IP address on receiver identification screen
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Getting Started Guide

Contact Information:

Spectra Precision Division
10355 Westmoor Drive,
Suite #100
Westminster, CO 80021, USA
www.spectraprecision.com

Ashtech S.A.S.
Rue Thomas Edison
ZAC de la Fleuriaye, BP 60433
44474 Carquefou Cedex, FRANCE
www.ashtech.com

