System1200 – Using NTRIP via Internet

Products **GPS1200**

From System1200 Onboard Applications Team
Date 25th October 2004

Supplementary Notes to the System1200 Firmware 1.52 Release Notes

With System1200 firmware version 1.52, it is possible with GPS1200 to access the Internet and to use Internet Services such as the Network Transport of RTCM via Internet Protocol (NTRIP) service.

These notes describe the 2 most likely use cases for using a GPS1200 sensor to access the Internet and use NTRIP:

- Using a GX1200 sensor as an RTK rover connected to the Internet using a GPRS device and receiving RTK data from the NTRIP service

- Using a GRX1200 Pro sensor as an RTK reference connected to the Internet using the Ethernet port and sending RTK data to the NTRIP service

There are other use cases, but these are the two most likely use case. Users can read only the appropriate sections of this document for the use case in which they are interested, but it is recommended to read the whole document in order to get a full overview about using System1200 with the Internet and NTRIP.

- Section 1 gives an overview about NTRIP itself. This is relevant for both GX1200 and GRX1200 Pro users

- Section 2 describes how to configure and use a GX1200 sensor as an RTK rover connected to the Internet using a GPRS device and receiving RTK data from the NTRIP service. This is mostly relevant of course for GX1200 users, but also contains interesting information for a GRX1200 Pro user.

- Section 3 describes how to connect a GRX1200 Pro sensor to the Internet and stream RTK corrections to the NTRIP service

Please read the document carefully. It not only gives guidance as to how to configure GPS1200 to access the Internet and use the NTRIP service but also helps to understand the reason for each configuration step.

Note, in order to connect to the Internet with GPS1200 and use the NTRIP Service, it is necessary to have System1200 firmware v1.52 or higher loaded on the GPS instrument and also to have RX1200 firmware v1.42 or higher loaded on the RX Controller. Press the **shift F5(DEFLT)** button in the **CONFIGURE Devices** panel for refreshing the default device settings after the upload of FW 1.52 to the sensor.

1 AN OVERVIEW ABOUT NTRIP

NTRIP is the protocol for streaming GPS RTK data over the Internet.

For detailed information about NTRIP technology, concepts, documents, different BroadCaster addresses and other information, access: http://igs.ifag.de/index_NTRIP.htm. Also available on this site is information about data transmission rate of pseudorange and carrier phase corrections, latency and accuracy of DGPS/RTK data streaming via the Internet.

NTRIP basically consists of three system components:

- **NTRIP Clients**
- **NTRIP Servers** (connected to NTRIP Sources)
- **NTRIP Caster**

The NTRIP Protocol is based on Internet HTTP (Hypertext Transfer Protocol). The NTRIP Caster is acting as the HTTP Server (TCP/IP server), whereas both the NTRIP Client and the NTRIP Server are acting as HTTP Clients (TCP/IP clients).
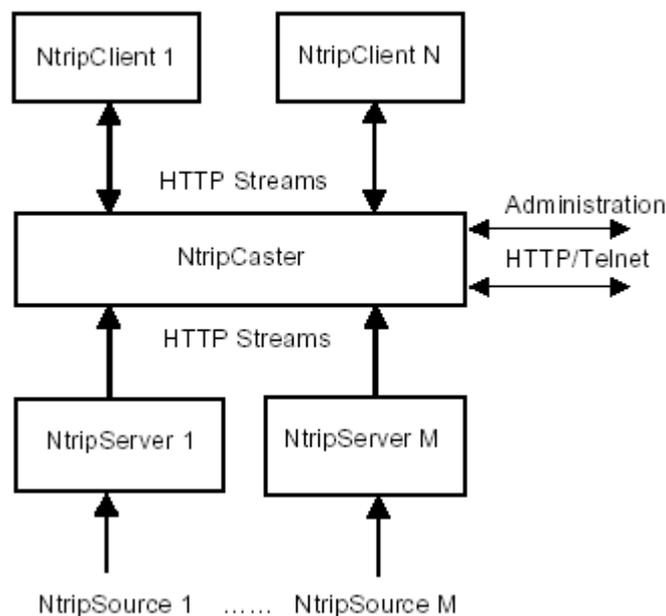
1.1 NTRIP CLIENT

The **NTRIP Client** (for our user cases, this is a GX1200 sensor configured as an RTK rover) receives data streams - in our case, RTK data streams. The NTRIP Client needs to be first accepted by the NTRIP Caster and if authorized, will receive RTK data from the NTRIP Caster.

In order to receive RTK data, the Client needs to send access parameters (user ID and password) to the NTRIP Caster. Additionally the Client has to give the Caster information from which Mountpoint (source) he wants to receive data. If the Client wants to know which Mountpoints are available from the Caster, then the Caster can provide a list of available Mountpoints to the Client in a so-called **Source-Table**.

1.2   NTRIP SERVER (CONNECTED TO NTRIP SOURCES)

The **NTRIP Server** transfers data to the NTRIP Caster (see below) using TCP/IP connection – in our case RTK data. The NTRIP Server needs to be first accepted by the NTRIP Caster and if authorized, can pass RTK data to the NTRIP Caster.

The **NTRIP Source** (in our user cases, this is a GRX1200 Pro sensor configured as an RTK reference station) generates the data streams - in our case, RTK data streams.

Note, the NTRIP server could be the GPS1200 sensor itself. This means the GPS1200 sensor is both the NTRIP source generating the RTK data and also the NTRIP server transferring this data to the NTRIP Caster (the NTRIP Server). This use case is not discussed in these notes. Alternatively the NTRIP Server could be a PC using LEICA GPS Spider software – this approach then allows the RTK reference station to be remotely controlled.

The NTRIP Server also sends the identification name of the NTRIP Source, the so-called **Mountpoint**, and other additional information parameters relating to the Source, which identifies the Source to the NTRIP Caster. Such additional information may include which RTCM format is transferred or if the Client (rover) needs to send NMEA positions in order to receive an individualized RTCM stream from a reference station network.

Before a GPS1200 sensor can stream RTK data to the NTRIP Caster, a registration form must be completed – this is available from the Caster administration centre. See http://igs.ifag.de/index_ntrip.htm.

1.3   NTRIP CASTER

The **NTRIP Caster** is basically an Internet (HTTP) Server, which handles the different data streams to and from the NTRIP Servers.

The Caster checks the received request messages from NTRIP Clients and Servers to see if the Client Server is registered and authorized to receive or provide RTK data stream. Depending on those messages, the NTRIP Caster decides whether there is streaming data to be sent or to be received.

2   HOW TO CONFIGURE AND USE A GX1200 SENSOR AS AN RTK ROVER CONNECTED TO THE INTERNET USING A GPRS DEVICE RECEIVING RTK DATA FROM THE NTRIP SERVICE

This section is divided into the 3 main steps which are necessary to configure and use a GX1200 sensor as an RTK rover which is to be connected to the Internet using a GPRS device in order to receive RTK data from the NTRIP service. These steps are

- How to access the Internet with a GX1200 sensor – see section 2.1

- How to configure the Net ports of a GX1200 sensor and how to connect to a TCP/IP server – see section 2.2

- How to receive RTK corrections from the NTRIP service with a GX1200 sensor configured as an RTK rover – see section 2.3

As with all other configuration settings, these settings are then stored in the configuration set and do not need to be configured each time the sensor is used. Once correctly configured, the sensor will always automatically try to get online to the Internet after turning on and it is only necessary to press **shift F3(CONEC)** to start the streaming of RTK data to the sensor.

However, it is quite likely that a user will want to receive RTK corrections using a variety of RTK data links. For example, one day a user may want to receive RTK corrections from a stand-alone RTK reference station using a radio modem, the next day, it may be needed to use a GSM modem to connect to an RTK reference station and then the next day it may be needed to use connect to the Internet and use NTRIP services.

For each of these different ways of working, it is recommended to create and use individual configuration sets – this means only the appropriate configuration set needs to be selected to use the required RTK data link.

2.1   ACCESSING THE INTERNET WITH A GX1200 SENSOR

This section describes the use of GPRS devices with GX1200 sensors, how to configure a GX1200 sensor to access the Internet and how to view Internet related status information.

Note, when using a GPRS device to connect a GX1200 sensor to the Internet, then the sensor will always be used as an Internet TCP/IP **Client** – this is one of the "features" of using a GPRS device to connect to the Internet. Operating the sensor as an Internet Client means that the sensor connects to another "Computer" in the Internet in order to receive RTK corrections. This is the normal case for GX1200 sensors when operating as an RTK rover connected to the Internet using NTRIP services.

Section 3 describes how to connect a GRX1200 Pro sensor to the Internet as an NTRIP Server. This means the GRX1200 Pro sensor is permanently connected to the Internet using the inbuilt Ethernet interface connects to the NTRIP Caster and provides RTK data .

2.1.1   Support of GPRS Devices

To obtain access to the Internet with a GX1200 sensor, GPRS (General Packed Radio System) devices will normally be used. GPRS is a telecommunication standard for transmitting data packages using the Internet Protocol (IP).

The advantage for the user to use GPRS technology is that charges are made based on the amount of transferred data and not as for normal GSM or CSD (Circuit Switched Data) communication where charges are made for the connection time, regardless of how much data is transferred. The telecom provider should be contacted for information regarding costs of receiving data via GPRS.

System1200 v1.52 firmware allows almost any GPRS capable device to be used which can be configured using AT commands. Either a default GPRS device can be selected to be used, or a new device can be created if necessary.

2.1.1.1   Default GPRS Internet Devices

One default deviceis currently supported which can be selected to be used – the **Siemens MC45**.

When using either of these devices, it is not necessary to create a new device. As described in section 2.1.2.1 simply select the device being used from the **CONFIGURE GPRS Internet Devices** panel.
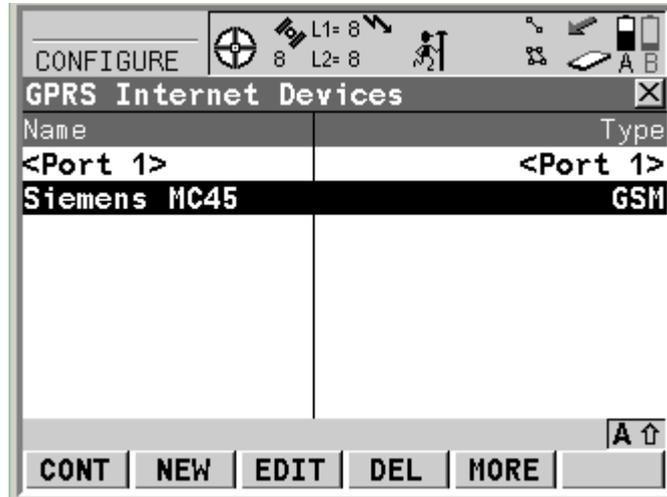
2.1.1.2   Creating a New GPRS Device

If a device other than the default devices is to be used then a new device must be created.

This is possible by moving the focus to the "most appropriate" device (either a GSM or Modem device) in the **CONFIGURE GPRS Internet Devices** panel and press **F2(NEW)** to access the **CONFIGURE New Device** panel.
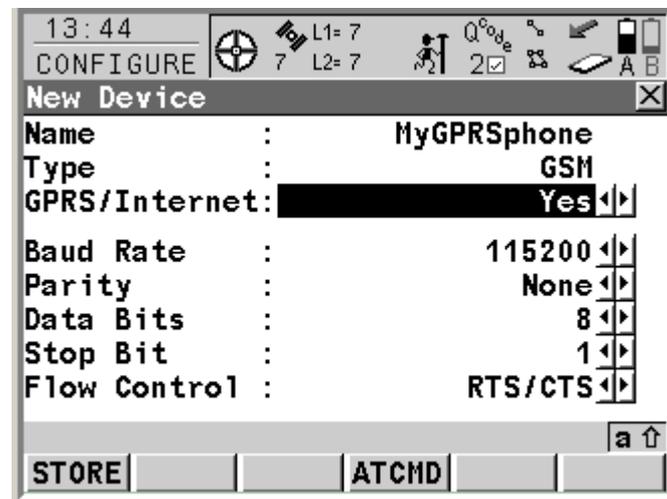
Select **Yes** at the new **GPRS/Internet** prompt. This informs the sensor that this device is GPRS capable and allows AT commands to be entered which will steer the GPRS functionality of the device. The

GPRS related AT commands now can be entered by pressing the **F4(ATCMD)** button to access the **CONFIGURE GSM/Modem AT Commands** panel.
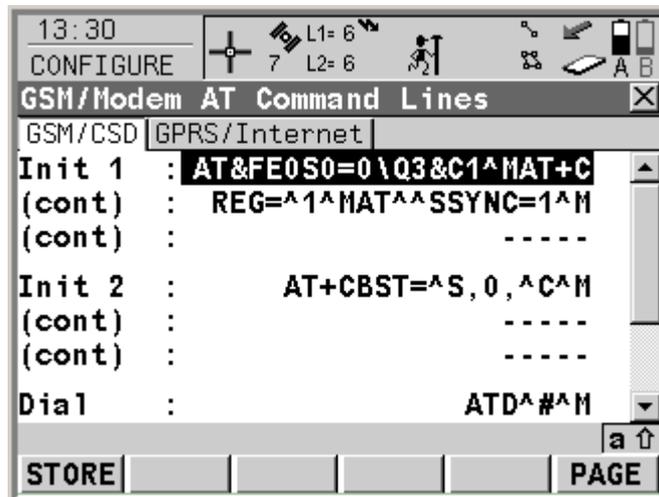
In the **CONFIGURE GSM/Modem AT Commands** panel, two pages are available.

In the **GSM/CSD** page all AT commands can be entered which are need to steer the device for a normal GSM/CSD call.

In the **GPRS/Internet** page all GPRS relevant AT parameters can be entered.

Please refer to your GPRS/GSM/CDMA device user manual or contact the device supplier direct to find out which AT commands needs to be entered.

2.1.2   Configuring A GX1200 To Access The Internet And Viewing Status Information

Before a GX1200 sensor can connect to the NTRIP Caster to receive NTRIP services, it is necessary that the sensor is online to the Internet. This section describes how to configure a GX1200 sensor to access the Internet and how to view Internet related status information.

2.1.2.1   Configuring a GX1200 to access the Internet

To access the Internet using a GX1200, it is first necessary to configure the new Internet Interface.

System1200 – Using NTRIP via Internet
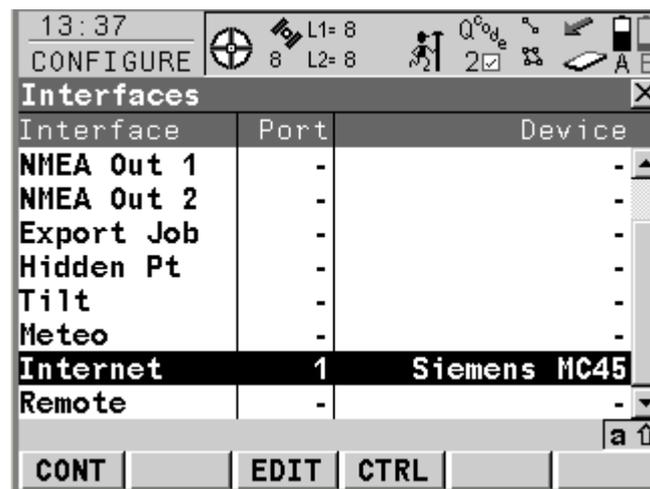
Access the **CONFIGURE Interfaces** panel, place the focus on the Internet Interface and press the **F3(EDIT**) button to access the **CONFIGURE Internet Interface** panel. The Interface specific parameters can now be configured.
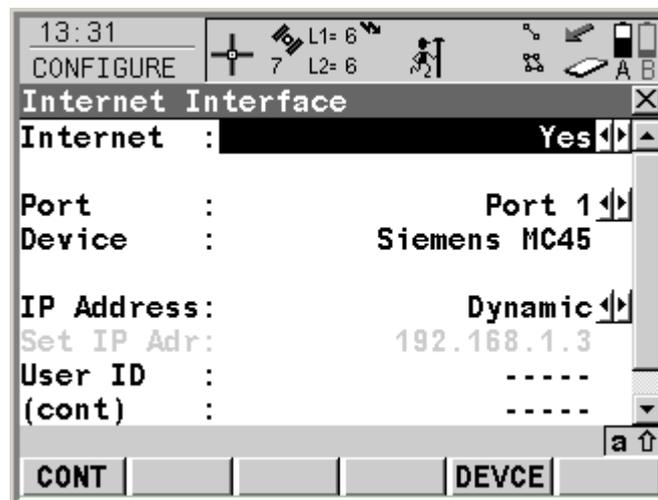
Activate the Internet Interface by switching the **Internet** prompt to **Yes**.

Now select the port to which your GPRS device is attached and select the device being used via the **F5(DEVCE)** list. Note that only the GPRS/Internet capable devices are listed. If the device you wish to use is not listed then it will be necessary to create a new device as described in section 2.1.1.2.

The **IP Address** of the GPS1200 sensor now needs to be configured. As with all IP addresses, this identifies a "Computer" connected to the Internet by a unique 4 number structured value. In this case the "computer" is the GPS1200 sensor

Depending on how the "Computer" is connected to the Internet (in this case, it is connected by GPRS) the IP address can be fixed or dynamic.

System1200 – Using NTRIP via Internet

A dynamic IP address means that each time the "Computer" is available in the Internet, a new IP address is generated by the network provider and assigned to the "Computer". When using GPRS to connect to the Internet then the network provider always dynamically assigns the IP address to the "Computer". Therefore select **Dynamic**.

Note, the **Static** option should only be selected if a static IP address is available for the sensor. This is e.g. possible for GPS1200 sensors when using a GRX1200 Pro sensor which is connected to the Internet using the Ethernet connection on the GRX Pro. See section 3.

Some telecom provider also ask for an **User Id** and **Password** to allow to connect to the Internet via GPRS. Those parameters also can be entered in the available prompts. Contact your telecom provider if a user ID and password needs to be used.

Pressing **F1(CONT**) stores the Internet settings and returns to the **CONFIGURE Interfaces** panel. The sensor will now try to connect to the Internet.

If a GPRS device is being used then the SIM card and the PIN code must be available and the so-called APN (Access Point Name) must be entered. If these settings are not yet entered then move the focus to the Internet interface in the **CONFIGURE Interfaces** panel and press **F4(CTRL)** to access the **CONFIGURE GPRS/Internet Connection** panel.
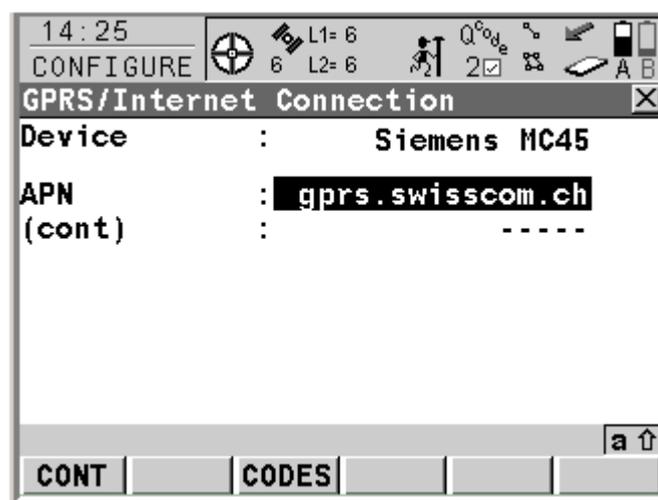
The **APN** can be thought of as the "home page" of the telecom provider using GPRS for accessing the Internet. Contact your telecom provider to get the correct APN name. The following web site gives an overview of the different parameters (APN, User ID, password) for different telecom providers http://www.access-sys-eu.com/GPRS_Settings.95.0.html. Note, the accuracy of this information cannot be guaranteed.

If it is necessary to enter the PIN and/or PUK code then press **F3(CODES)** to access the **CONFIGURE GSM Codes** panel.

Once these parameters are correctly entered, return to the **CONFIGURE Interfaces** panel and the sensor will automatically connect to the Internet. If successful, a message in the message line appears to be online and the Internet icon is shown.
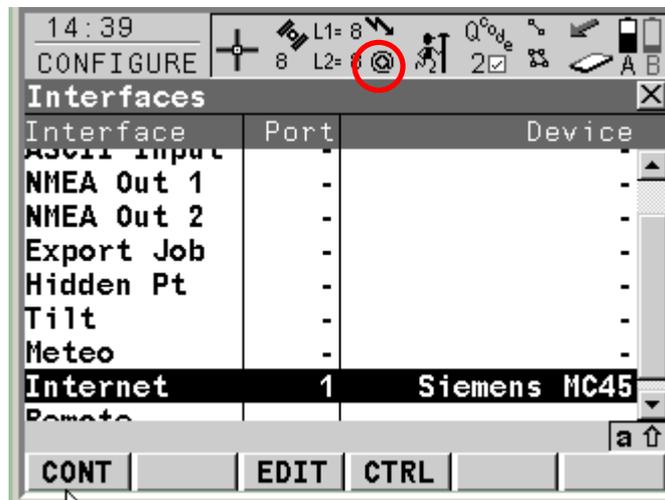
The sensor is now online to the Internet, but because GPRS is being used, no charges are yet made since no data transfer from the Internet has yet taken place.

2.1.3   Internet Status Information

In addition to the new Internet icon, status information about the Internet interface can be viewed. Access the **STATUS Interfaces** panel, highlight the **Internet** interface and press the **F3(IFACE)** button to access the **STATUS Internet Interface** panel.
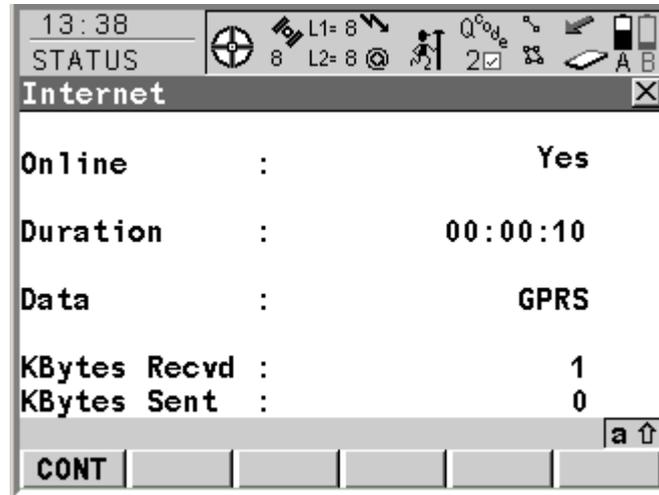
Information if the system is online, the duration of the connection and information about the received and sent data is shown.

2.2 **CONFIGURING AN INTERFACE ON A GX1200 SENSOR TO USE A NET PORT, CONFIGURING NET PORTS, CONNECTING TO A SERVER AND NET PORT STATUS INFORMATION**

So far it has been explained how to configure a GPS1200 sensor to access the Internet. This section now describes how to configure an interface (in this case the Real-Time interface) to use a NET port in order to use Internet connectivity, how to configure a NET port as a TCP/IP client, how to connect to a server and the status information available for a net port.

As already mentioned, when using GPRS to access the Internet it is only possible for the sensor to act as a TCP/IP Client due to the dynamic IP address of the sensor. (Section 3 describes how to use the Ethernet functionality of GRX1200 Pro sensor to act as a TCP/IP Server with a static IP address).

2.2.1 NET Ports on GPS1200

Once the Internet Interface is configured, three additional Internet ports - **NET1**, **NET2** and **NET3 –** are available to be used on the GPS1200 sensor.

These ports can be used with any other interface (such as the Real-Time interface, NMEA interface or ASCII Input interface) - allowing three different Interfaces to be simultaneously connected to the Internet. This means for example, it is possible to both receive RTK data as an RTK rover and send out NMEA messages simultaneously over the Internet.

To configure an interface to use a Net port access the appropriate interface configuration panel and choose either **NET1**, **NET2** or **NET3**. In our case, we need to access the **CONFIGURE Real-Time Mode** panel and set the **R-Time Mode** to **Rover**.
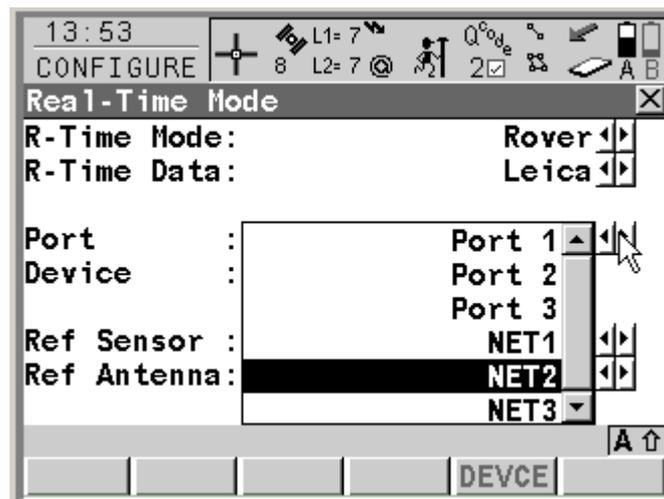
Note, these new ports should be treated in the same way as the "normal physical" ports (Port1, Port2 and Port3) – this means that only one port is allowed to be used with one Interface.

2.2.2 Configuring Net Ports

If an interface is configured to use an Internet port (NET1, NET2 or NET3) then each of these ports can be independently configured.

Move the focus in the **CONFIGURE Interfaces** panel to the interface configured to use a NET (as shown in the **Port** column in the panel below) and press the **F4(CTRL)** button.
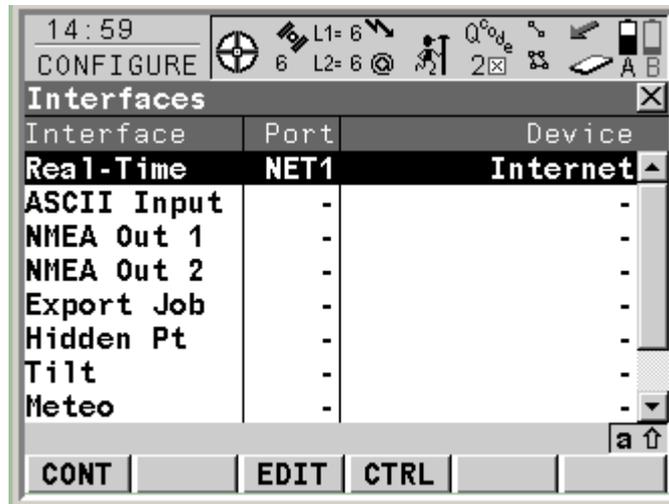
This will open the **CONFIGURE Set NET Port** panel:
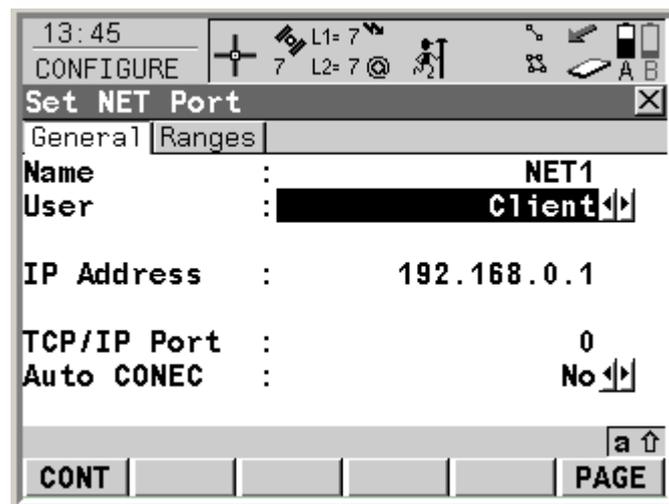
As already mentioned, when using GPRS to access the Internet it is only possible for the sensor to act as a TCP/IP Client due to the dynamic IP address of the sensor. Therefore set the **User** prompt to **Client** and enter the **IP Address** of the Server (Broadcaster) to where the Net port should connect.

Note, in some cases the so-called DNS (Domain Name System) is available to identify the Server. This is simply a name which describes the numeric IP address. DNS names are currently not supported with System1200.

The **TCP/IP Port** of the Server through which the data is provided now needs to be entered. Each Server can have a number of ports and behind each port a different service can be available.

If the sensor is being used as an RTK rover, then the **Auto CONEC** functionality can also be configured in this panel. This functionality behaves similarly to the existing auto connect functionality when using GSM. In the Survey application as soon as **F1(OCUPY)** button is pressed the sensor will connect to the Server and RTK data will be received. **F1(STOP)** then stops the data transmission. This functionality minimizes the amount of data received and therefore costs.

F1(CONT) stores the settings and returns to the **CONFIGURE Interfaces** panel.

2.2.3 Connecting To The Server And Status Information

To connect to the Server (in our case, this will be the NTRIP Broadcaster) press the **shift F4(CONEC)** button in the **CONFIGURE Interfaces** panel (when the interface connected to the Internet has the focus) or the **shift F3(CONEC)** button in Survey or the other application such as Stakeout, Reference Line, Reference Plane etc.

Once the sensor is connected to the Server a message is shown in the message line. Also, if the Real-Time interface is connected, then the Connection icon is shown in the icon bar.
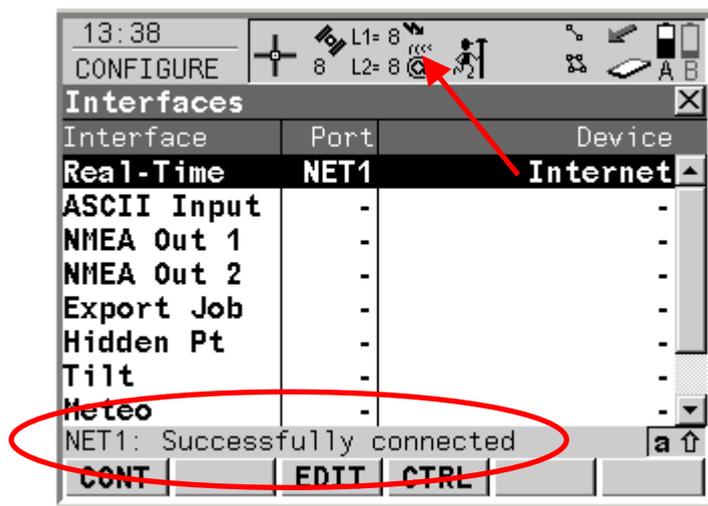
RTK data would now be received from the Server (in our case the NTRIP Caster) and the RTK arrow would flash to indicate RTK data being received. However, since we have not yet selected the Mountpoint from which we want to receive the RTK will not yet flash. How to do this is described in section 2.3.

Pressing the **Shift F4(DISCO)** disconnects from the Server and the data transfer is stopped. As already mentioned, the amount of the transferred data is charged to the user when using GPRS and not the connection time.

2.2.4 Net Port (Internet) Status Information

Additional status information about the Net port being used is available.

Access the **STATUS Interfaces** panel, place the focus on the appropriate Interface where a Net port is being used and press the **F5(DEVCE)** button. The **STATUS Internet** panel is then shown.
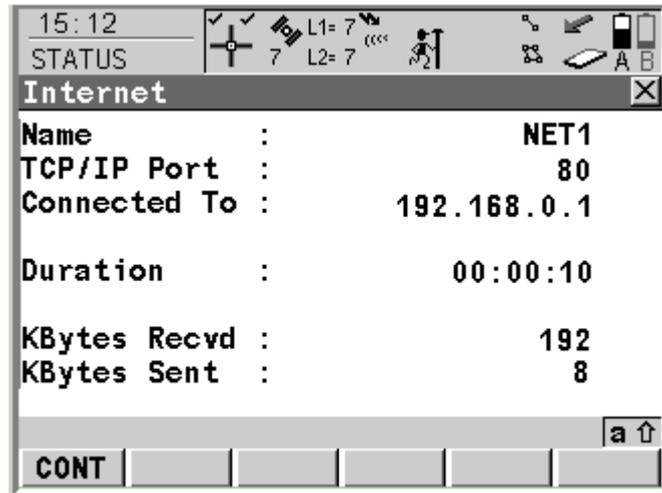
The **STATUS Internet** panel shows the **Duration** of the connection for the individual Net port from the time the connection is established till the moment the Net port is disconnected from the Server. Also shown is how much data is sent or received in that time period.

2.3   USING THE NTRIP SERVICE WITH A GX1200 CONFIGURED AS AN RTK ROVER

So far what has been written describes how to configure the Internet interface and NET port of a GX1200 sensor in order to connect to the Internet - it is now possible to configure the sensor to access and use NTRIP services.

This section describes how to configure a GX1200 sensor to receive RTK corrections via the Internet as an NTRIP Client and how to connect to the NTRIP Caster.

The following steps are only possible if the GX1200 sensor is already Online and connected to the Internet as described in sections 2.1 and 2.2.

2.3.1 Configuring A GX1200 Sensor to be an RTK Rover And NTRIP Client

In order to configure the sensor to be a NTRIP Client, it is necessary to configure the sensor as an RTK rover and select either **NET1, NET2** or **NET3** at the **Port** prompt in order to access NTRIP via the Internet. This was already described in section 2.2.

System1200 – Using NTRIP via Internet
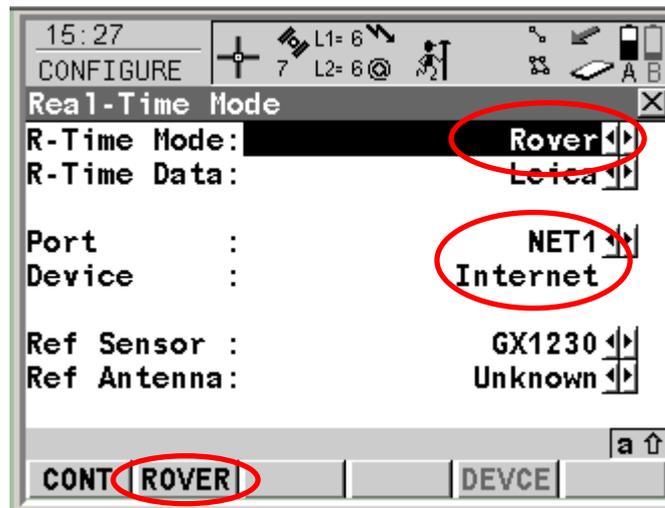
To configure the NTRIP specific parameters press **F2(ROVER)** to access the **CONFIGURE Additional Rover Options** panel.
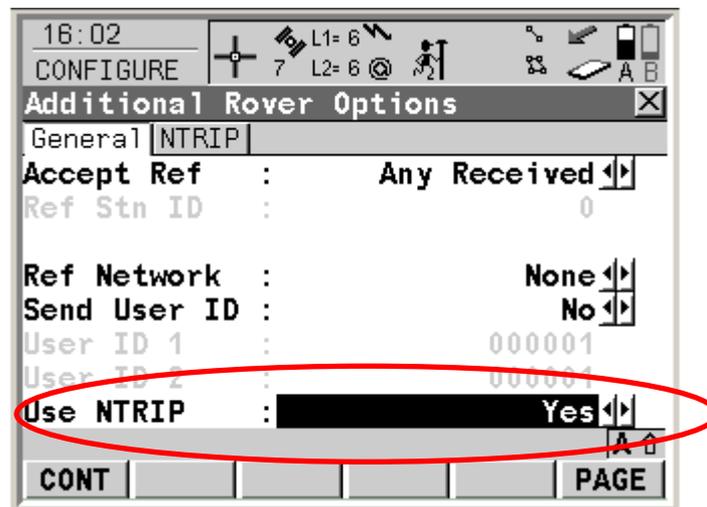
The **Use NTRIP** prompt allows the sensor to be configured to receive RTK data via NTRIP. Set this prompt to **Yes** and press **F6(PAGE)** to toggle to the **NTRIP** page to configure the NTRIP specific parameters.
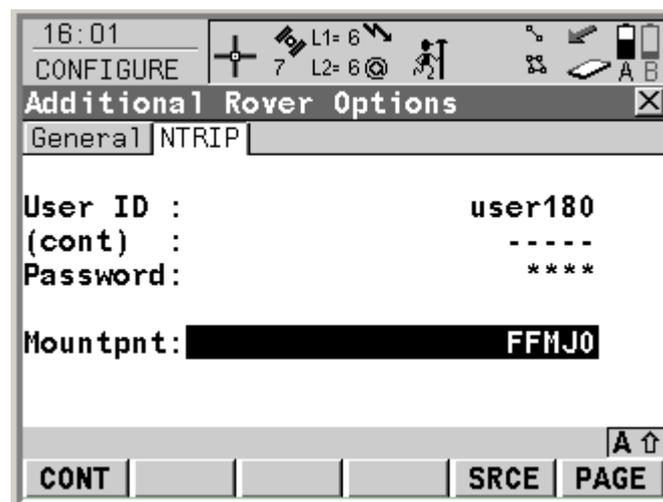
In order to access and receive RTK data from the NTRIP Caster a **User Id** and **Password** needs to be entered. If necessary, contact your NTRIP administrator to obtain a User ID and password.

It is also necessary to tell the NTRIP Caster from which NTRIP Server RTK data is required. This is possible by entering the Mountpoint name at the **Mountpnt** prompt. As already mentioned in section 1, the Mountpoint identifies the NTRIP Source (the RTK reference station) which provides the RTK data to the NTRIP Caster.

If the name of the Mountpoint is not known then the NTRIP Source-Table can be downloaded to the sensor by pressing the **F5(SRCE)** button – the sensor will now connect to the NTRIP Caster and request the NTRIP Source-Table. Note, this assumes the sensor is already configured to connect to the Internet (see section 2.1) and the correct IP address is already entered in the **Set NET port** panel (see section 2.2).

2.3.2   The NTRIP Source-Table

The NTRIP Source-Table is a list of all available Mountpoints including the properties of all Mountpoints registered on the NTRIP Caster.

After pressing **F5(SRCE)** in the above panel and downloading the Source-Table the **CONFIGURE NTRIP Source-Table** panel is automatically accessed which shows all available Mountpoints.

System1200 – Using NTRIP via Internet
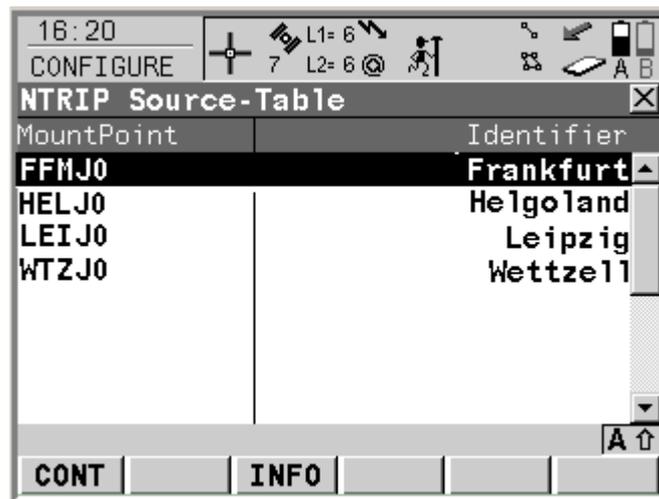
Move the focus to the required Mountpoint and press **F1(CONT)** to copy the Mountpoint name to the **Mountpnt** prompt in the **NTRIP** page of the **CONFIGURE Additional Rover Options** panel.

Note, after selecting the required Mountpoint, it may be necessary to configure other RTK rover related parameters such as the **R-Time Data** format and **Ref Network** settings. To do this, it is necessary to view the properties of the Mountpoint to be used by moving the focus to the desired Mountpoint which and press **F3(INFO)** to access the **CONFIGURE Mountpoint** panel.
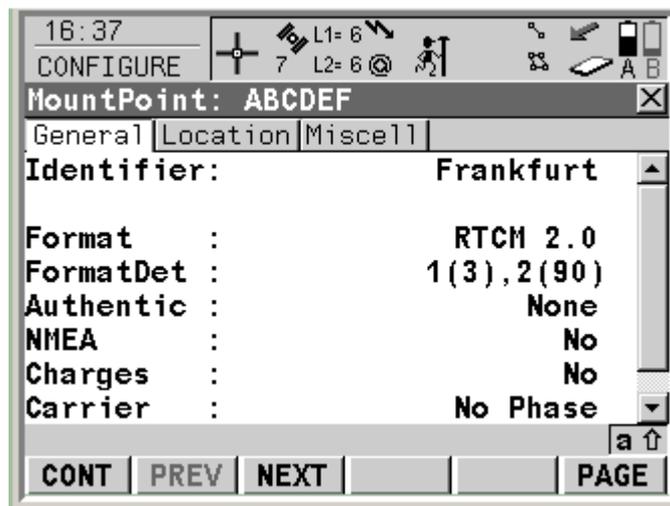
The following information is displayed – some of this information can be used to configure other RTK rover settings:

- The Identifier of the Mountpoint
- Broadcasted RTK data format (for example RTCM) and details of the format (for example, messages 18,19)
- Access protection for the data stream
- If the network requires GGA NMEA data from the rover for computing VRS information

- Information about charges
- Carrier information
- Network information
- Network solution (single base or network)
- Approximate coordinates of the Mountpoint
- Country of the Mountpoint

The **F2(PREV)** and **F3(NEXT)** buttons can be used to view the properties of the previous/next Mountpoint in the source list.

2.3.3 Connecting to The NTRIP Caster

Once the configuration is complete the **shift F3(CONEC)** and **shift F3(DISCO)** button in the Survey application and other applications (Stakeout, Reference Line, Reference Plane etc) allows the sensor to connect and disconnect to the NTRIP Caster Server.

Appropriate messages will be shown if connection is not possible due to a wrong User ID or password or if the sensor is not allowed to access the NTRIP services or if the chosen Mountpoint is not available.

Once the connection to the Caster is established and the user is authorized to receive RTK data, then RTK data will be streamed to the sensor and the RTK icon will flash to indicate data is being received – the same as when receiving RTK data via a radio or GSM modem.

3 CONNECTING A GRX1200 PRO SENSOR TO THE INTERNET AND STREAMING RTK CORRECTIONS TO THE NTRIP SERVICE

GRX1200 Pro sensors can be set up as an RTK reference connected to the Internet using the Ethernet port and sending RTK data to the NTRIP service. For this, a NTRIP server is now built into the System 1200 GRX Pro sensors. Remember, however that even though the sensor is configured to send RTK data to the NTRIP Caster as an NTRIP server, the sensor itself is still a TCP/IP client.

Until now, these NTRIP servers had to be installed separately on a PC, and were forwarding the data from the sensor to the caster. With System1200, this NTRIP server is now part of the sensor firmware and eliminates the need for additional software in between. The next chapters will explain you how to set up such a system.

There are 2 steps in connecting the GRX1200 Pro to the Internet and streaming RTK corrections to NTRIP service – these 2 steps are described below.

In the second step (see section 3.2), Leica GPS Spider software is required to start the sensor and connect the sensor to the caster. Note that this does not mean that GPS Spider is now needed instead of separate NTRIP caster software - GPS Spider is only needed to <u>start</u> the sensor. The reason for that is that GRX sensors cannot be started with the RX. Once the sensor is started with Spider, then Spider can be disconnected and is no longer needed. All functionality needed from GPS Spider to start the GRX sensor does not require a dongle and can be downloaded from the Leica website download area: http://downloads.leica-geosystems.com/downloads/areas/zz/gps/reference_station/software/index.htm.

3.1 STEP 1 – USING THE RX TO CONFIGURE THE GRX1200 PRO TO BE AN NTRIP SERVER

- First, configure the NET parameters of the sensor to match your network settings. Contact your system Administrator or Internet provider for which settings to make.

- Then, configure one NET port as the TCP/IP client to access the NTRIP caster via the Internet (see section 2.2) as shown below. Ensure that the **Auto CONEC** setting is set to **Yes**. This means the sensor will automatically connect to the NTRIP caster once it is started.
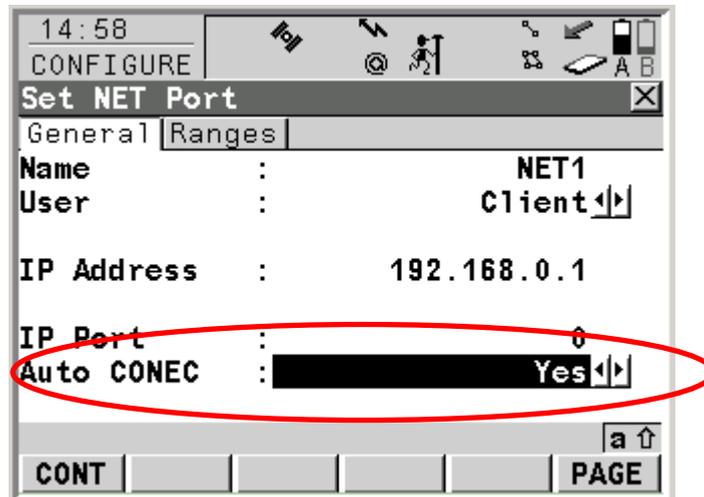
- A second NET port needs to be configured with the **User** prompt set to **Server** (this Net port operates than as a TCP/IP Server)in order for the GPS Spider software to connect to the sensor.
  Please refer to the System 1200 Technical Reference Manual chapter: **Ethernet** for details how to configure the sensor as a TCP/IP Server

  Note, GPS Spider is only needed as a tool for starting the data streaming and can be disconnected once this is done. Alternatively to using a second NET port, any of the serial ports on the GRX1200 Pro can be used.

- Now access the **CONFIGURE Real-Time Mode** panel and set the **R-Time Mode** to be **Reference** as shown below.
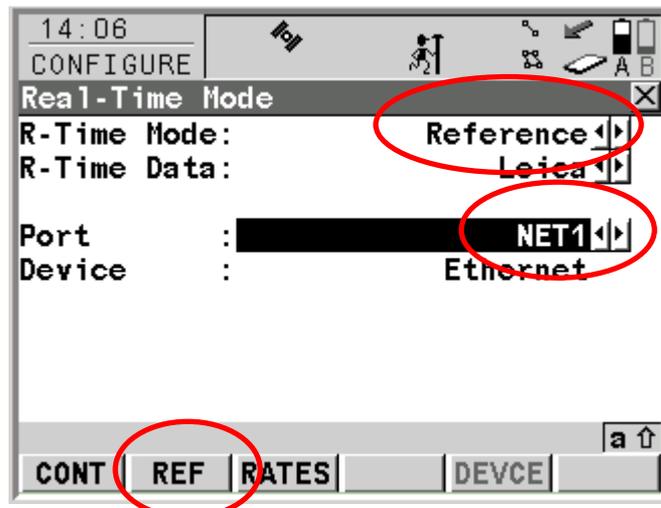
- At the **Port** prompt choose a **NET** port which is configured as the TCP/IP client (in our example shown above, this is **NET1**)

- To configure the NTRIP specific parameters press the **F2(REF)** button to access the **CONFIGURE Additional Reference Options** panel.
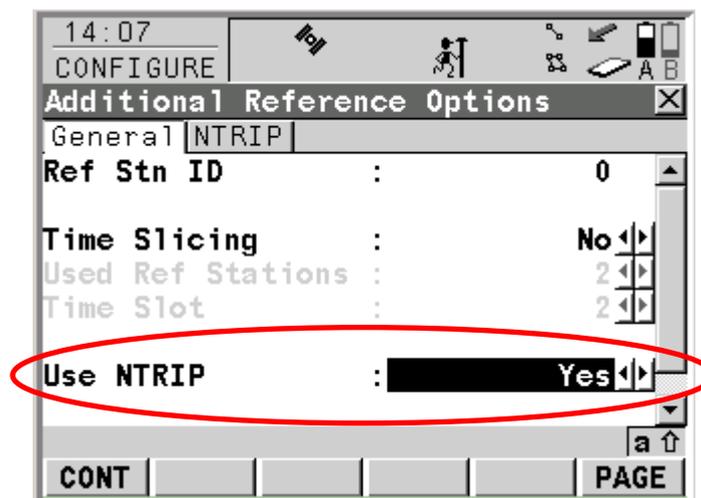
- The **Use NTRIP** prompt allows the NTRIP specific parameters to be configured. Set this to **Yes** and press **F6(PAGE)** to access the **NTRIP** page.

- In order to access the NTRIP Caster a **Password** needs to be entered. Contact your NTRIP administrator to obtain a User ID and password.

- Additionally, for the NTRIP Caster to know from which NTRIP Server the RTK data is being streamed it is necessary to enter the **Mountpoint** name. As already mentioned in section 1, the Mountpoint identifies the NTRIP Source (Reference Station) which provides the RTK data via a NTRIP Server. This can also be obtained from the NTRIP administrator.

- Once the Password and Mountpoint information is entered, press **F1(CONT)** to return to the main menu.

The sensor is now prepared for streaming RTK data to an NTRIP caster.

3.2 STEP 2 – USE GPS SPIDER TO CONNECT THE NTRIP SERVER TO THE CASTER

Leica GPS Spider software is needed to connect the sensor to the caster. Using GPS Spider also allows the RTK parameters, such as message type and data rates, to be easily configured.

You will need a PC connected to the GRX Pro sensor either over a NET port configured as server, or over a serial port. Install the Leica GPS Spider software on this PC. The unprotected version of Spider, which can be downloaded also from the Leica download area, is sufficient.

- Install and start Spider, and create a site (see Spider Online help, Quick tours III and IV).

- Connect to the site and configure the RTK output settings as required.

- Select the NET port which has been previously configured as the client, and for which you entered the NTRIP details with the RX.

- Ensure that the GRX1200 sensor is in the main menu when connecting Spider else uploading the settings or starting the sensor may fail.

- Finally, upload the settings to the sensor and press *Start*. The sensor will now automatically connect to the NTRIP caster. A message on the RX controller will indicate if the connection to the caster is successful and streaming of RTK data will start and continue until you stop the site again.

In case of connection interruptions, which could be caused by power or network outages, the sensor will automatically reconnect to the caster.

Note, the Spider software does not need to stay connected to the sensor. It only has to be connected if it is necessary to start or stop the sensor.