

## Using the CEESCOPE with NTRIP Network RTK Corrections from HYPACK ® or Hydromagic Acquisition Software

*The CEESCOPE™ echo sounder with built-in NovAtel 628, 729 or Trimble BD970 RTK GNSS may be used with network RTK corrections received through a cell phone or cell modem connected to the acquisition PC. As the corrections are entirely managed through Ethernet TCP/IP communications, the network RTK configuration may be used with no additional cables or hardware. The RTK corrections generated by the simple and effective NTRIP drivers in the HYPACK or Hydromagic software are fed back to the CEESCOPE through the same LAN cable or WiFi link as the survey data.*

In addition to the built-in 403-470MHz UHF radio for RTK corrections, the CEESCOPE™ RTK echo sounder allows accurate positioning with post processed (PPK) and Network RTK. The CEESCOPE will record a 20Hz raw GNSS data file on its internal memory for a PPK solution through RINEX data generated using the appropriate third-party software. For network RTK, the CEESCOPE's Ethernet cable interface (and / or WiFi access point in the case of the CEESCOPE-R) allows users to easily pass NTRIP corrections from the acquisition PC or tablet to the CEESCOPE with no cables, serial ports, or additional connections. The procedure for using network RTK is described below for HYPACK and Hydromagic software.

The hydrographic survey acquisition PC or tablet must be equipped with a cell modem or connected to a cell phone to allow a continuous internet connection; survey data are streamed from the CEESCOPE to the acquisition device on certain UDP ports, and at the same time, corrections are passing back to the CEESCOPE on a dedicated TCP port. A cell phone or cell modem cannot be connected directly to the CEESCOPE. To receive network (or any) RTK corrections, the appropriate RTCM input mode must be selected in the CEESCOPE "RTCM" menu.

The GNSS receiver inside the CEESCOPE has a static IP address of 192.168.2.2. RTK corrections may be sent to the receiver through the network, using default TCP Port 3001. The GNSS IP address is user-configurable and shown on the CEESCOPE "GNSS" menu; it is however not recommended to change this setting.

### **Network Data Management Considerations**

The NTRIP caster driver in HYPACK or Hydromagic transfers the correction data to the CEESCOPE. The NTRIP drivers must be configured as a TCP client.

In order to successfully build the TCP socket between the NTRIP driver and the CEESCOPE's GNSS receiver, the suggested workflow is to first configure the CEESCOPE and survey applications, start the CEESCOPE and when its GNSS receiver has acquired a position, only then should you start NTRIP driver (survey application). This sequence will allow the NTRIP driver to open the TCP socket.

Note that any change to either the GNSS or RTCM settings within the CEESCOPE will result in the CEESCOPE reconfiguring the GNSS which will force close any GNSS TCP sockets. The appropriate corrective action is simply closing the NTRIP driver (survey application) and then re-opening it to force the NTRIP driver to re-open the RTCM TCP socket.

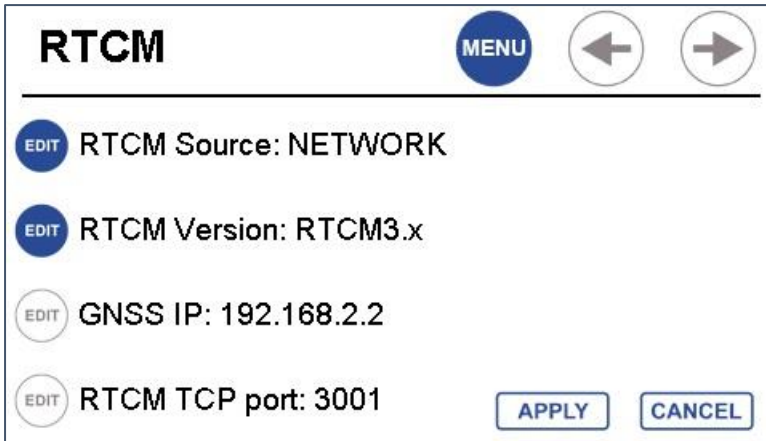
**!! It is important to leave the GNSS options – for example output rate, message types - untouched while running the NTRIP RTK data mode. Changes to any parameter in the CEESCOPE's GNSS menu will cause the GNSS receiver to stop receiving corrections. Ensure your GNSS settings are correct BEFORE starting the network RTK !!**

### **Setting up the CEESCOPE for Network RTK**

To receive network RTK corrections from the HYPACK or Hydromagic NTRIP casters, the appropriate RTCM input must be selected in the CEESCOPE "RTCM" menu. The corrections format being received through the NTRIP caster must match the entry in the CEESCOPE.



*GNSS menu indicating receiver IP address*

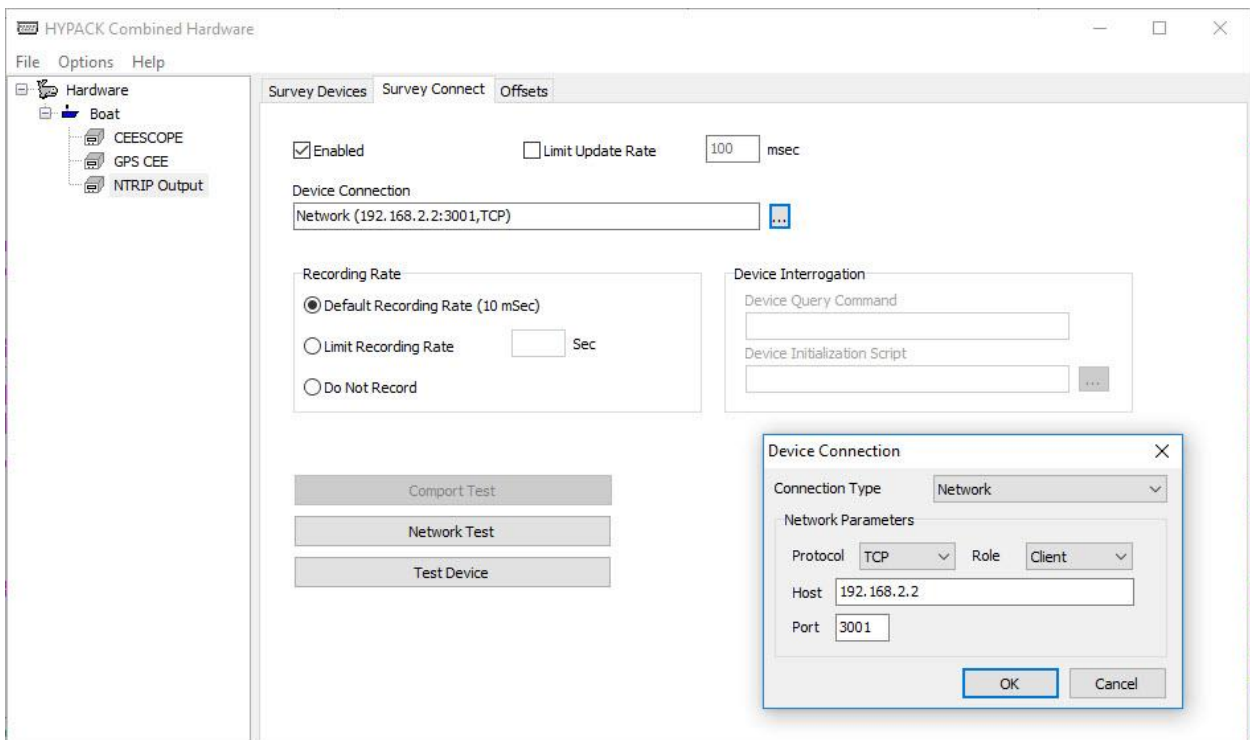


RTCM menu showing RTK corrections type and GNSS IP address

### Configuring the HYPACK NTRIP Caster

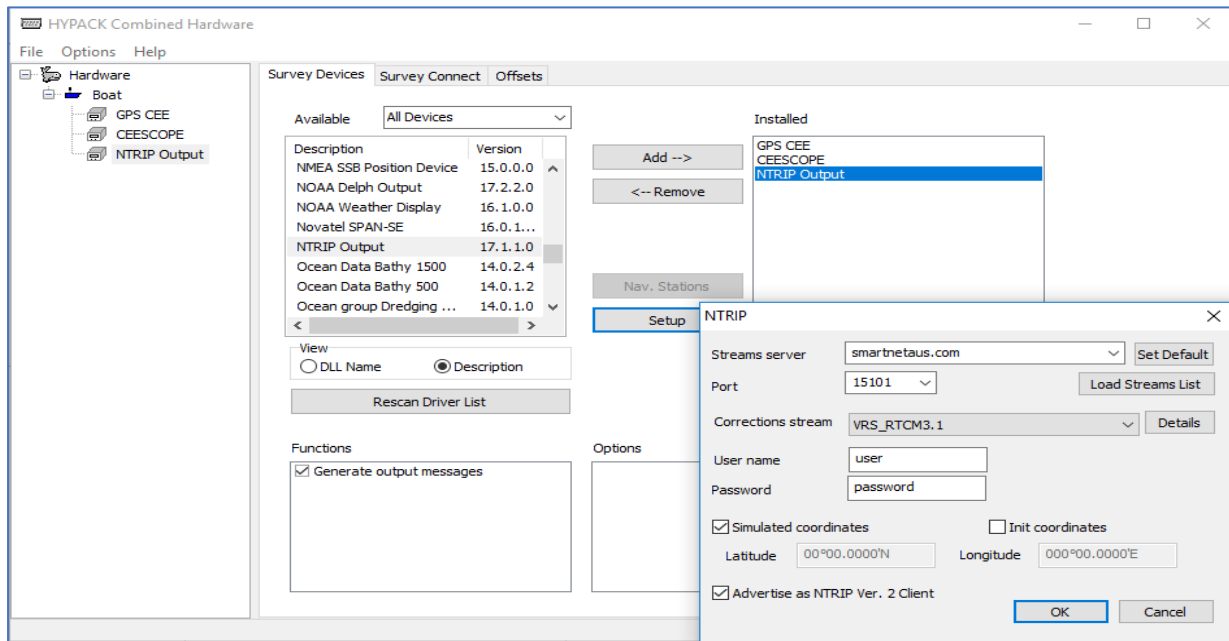
The “NTRIP Output” driver should be selected and enabled. On the “Survey Connect” menu, the device connection should be as follows:

Type: Network Client TCP      IP: 192.168.2.2      Port: 3001



HYPACK Hardware network configuration for NTRIP Output to CEESCOPE™

On the “Setup” menu, the network stream server details / IP address should be entered along with the appropriate port number, user name and password, and then the “corrections stream” drop down will activate. Select the corrections that are desired. Uncheck “simulated coordinates”. An active internet connection is required to complete this setup.



*HYPACK Hardware NTRIP caster streams configuration for NTRIP Output to CEESCOPE™*

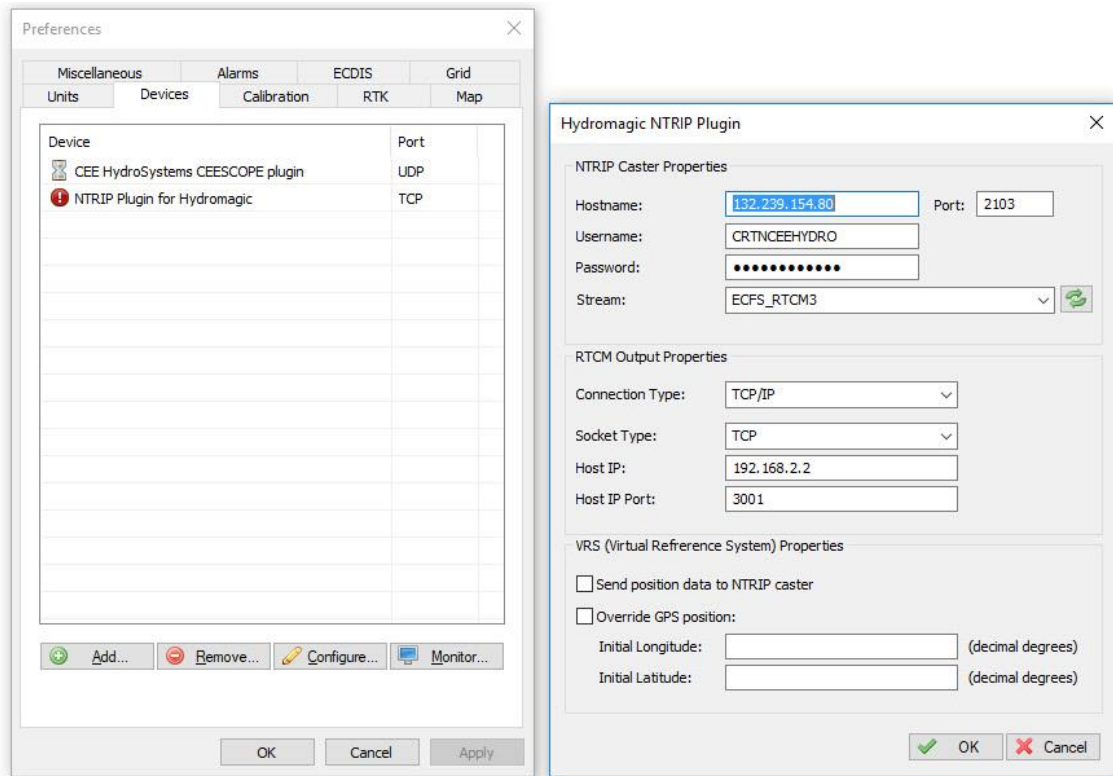
### **Configuring the Hydromagic NTRIP Caster**

The “NTRIP Plugin for Hydromagic” should be added to the devices list. The connection configuration should be as follows:

Type: TCP/IP                      Host IP:        192.168.2.2                      IP Port:        3001

The IP address or server web site must be entered in the “hostname” along with the Port number designated by the network RTK provider. When the user name and password are entered, the refresh icon may be pressed which will populate the corrections streams list. Then the appropriate ground station may be selected.

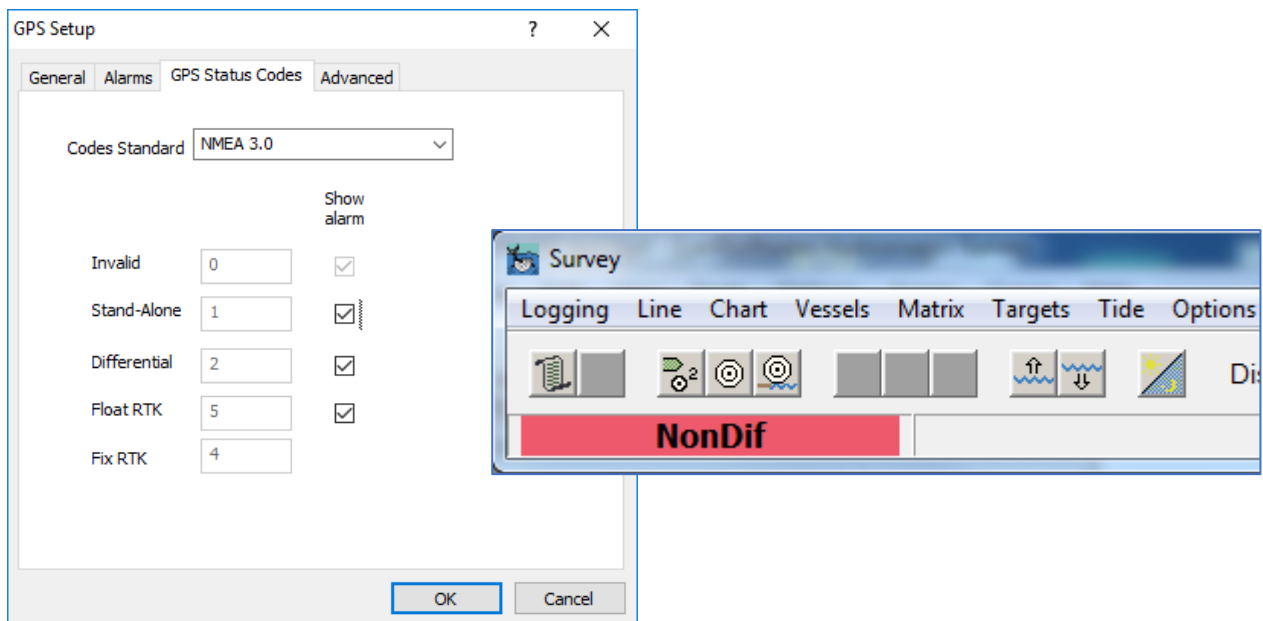
Remember NOT to change any CEESCOPE GNSS settings after initializing the NTRIP plugin.



Hydromagic NTRIP plugin configuration for output to CEESCOPE™

### Correction Data Failure Alarm - HYPACK

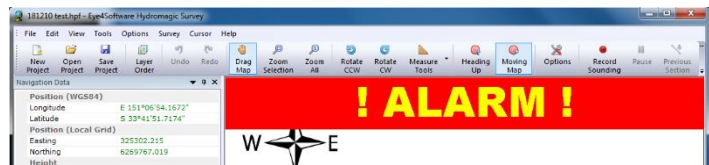
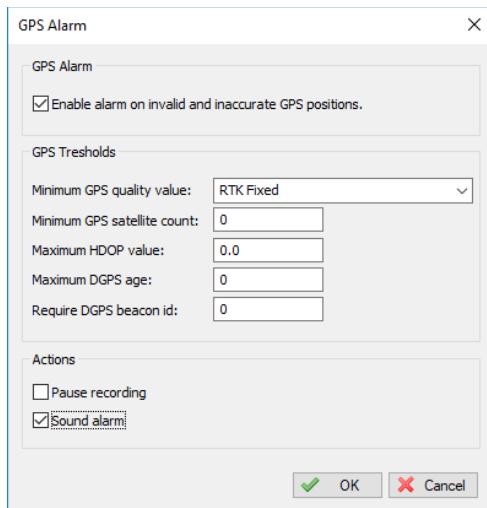
In the GPS device setup window, GPS Status codes may be selected to activate a warning. The survey window will show an alarm (visual and audible) when the position quality drops below RTK. Once RTK is reacquired, the alarm will clear.



HYPACK RTK alarm setup and Survey alarm indication

## Correction Data Failure Alarm - Hydromagic

In the preferences menu, GPS alarms can be selected on the Alarms tab. During an alarm event, “reset alarm” from the tool bar icon will cancel the alarm, or the alarm will clear once RTK position quality has been regained. The alarm will only activate once RTK quality has first been recorded.



*Hydromagic RTK alarm setup and alarm indication*

## Accessing the CEESCOPE GNSS Receiver Through a Web Browser

The CEESCOPE with Trimble BD970 or NovAtel 628 (later generation) and NovAtel 729 (all versions) allows a direct user interface to the GNSS receiver using a web browser, either through the WiFi or LAN cable connection. Type the GNSS IP into the browser (default: 192.168.2.2) and enter the login credentials. The receiver settings and active connections may be viewed using the browser. It is strongly recommended NOT to change any settings in the receiver through the browser interface. The browser should be used for information purposes only.

Note: Trimble BD970 GNSS requires the following login credentials:

User Name: admin      Password: password