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Using an SBG Ellipse D with HYPACK® HYSWEEP®

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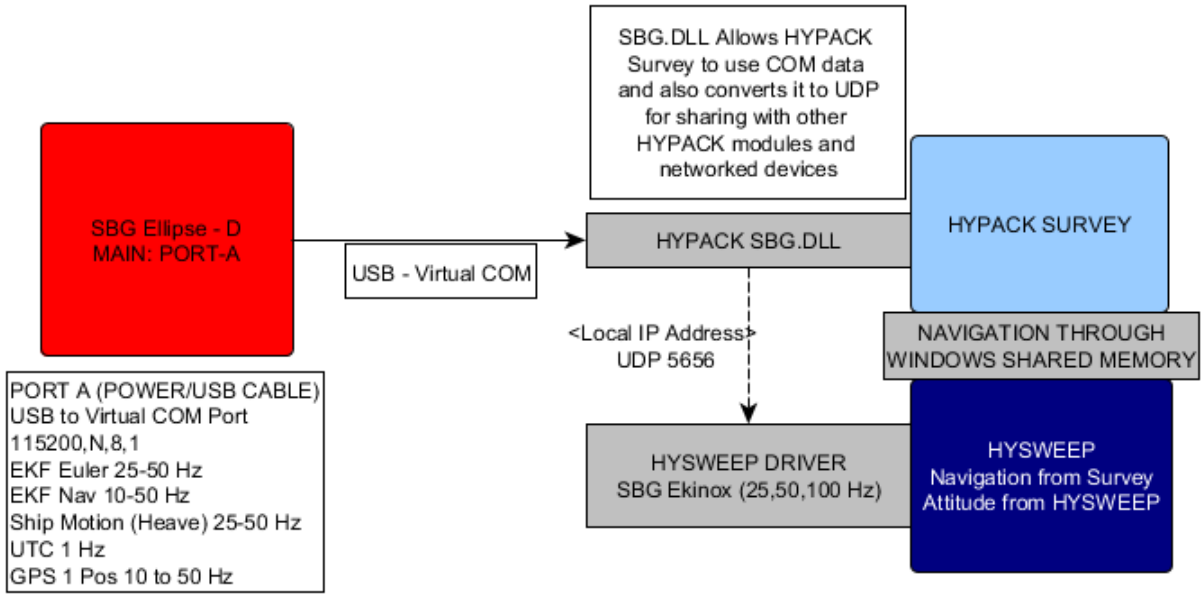
The physical footprint of Inertial Navigation Systems are getting smaller. The reduced size of these devices is opening up opportunities toward other applications such as mobile mapping on board smaller platforms (i.e. unmanned systems). As always, we are looking ahead, searching for ways to extend the capabilities of our users by providing value and our expertise. One such example is the recent modification to our existing SBG Ekinox Driver (sbg.dll). The SBG Ellipse-D is a compact Inertial Navigation System with a dual-antenna GNSS receiver that can provide heading, roll, pitch, heave, and navigation data in a small form factor.

FIGURE 1. *SBG Ellipse D*

One of the initial limitations of integrating the hardware was the lack of an Ethernet output (Figure 1). The device connects to your local computer with a USB cable through a “virtual” COM port. Long time users of HYPACK® will note that while HARDWARE has the ability to ingest data several different ways (e.g. Ethernet, Serial, USB, etc). HYSWEEP® cannot and typically utilizes an Ethernet connection (or serial for legacy devices).

But what if your device does not have an Ethernet output and you would like to use the sensor to georeference your laser scanner (LIDAR) or acoustic data? Here comes the magic….

FIGURE 2. *Overview of the SBG Ellipse D within HYPACK® HYSWEEP®*



In Figure 2, we see a generalized overview of the process. Basically, we convert the incoming datagrams through the virtual COM port and loop it into a UDP output. In layman's terms, we are turning the serial data into an Ethernet connection. This allows both HYPACK® SURVEY and HYSWEEP® to utilize the data from the SBG Ellipse D to provide both the navigation and attitude information to your sensor suite. Figure 3 and Figure 4 show the HYPACK® HARDWARE module depicting the sbg.dll configuration.

FIGURE 3. *HYPACK® HARDWARE Configuration*

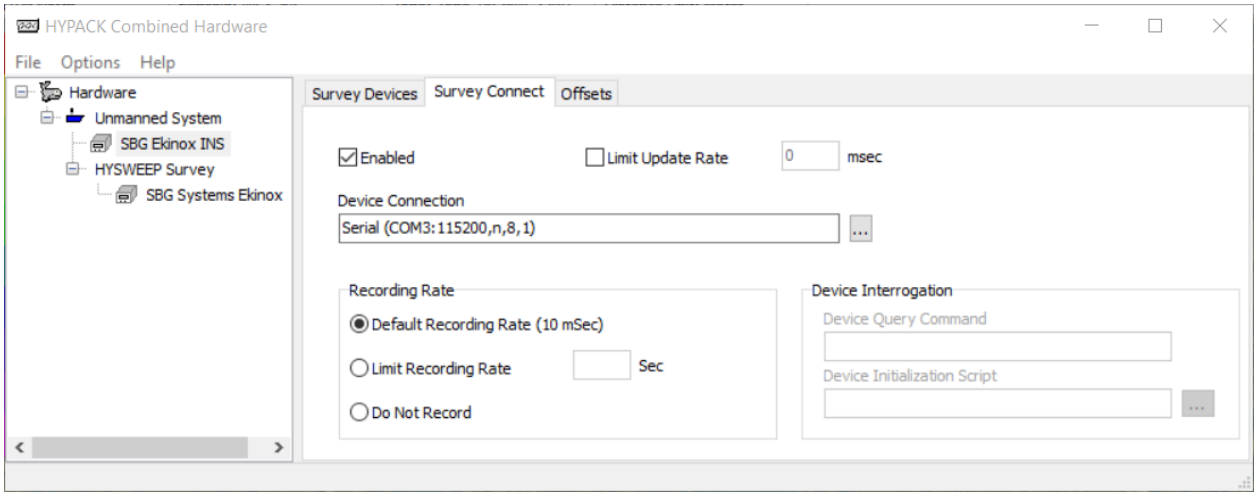
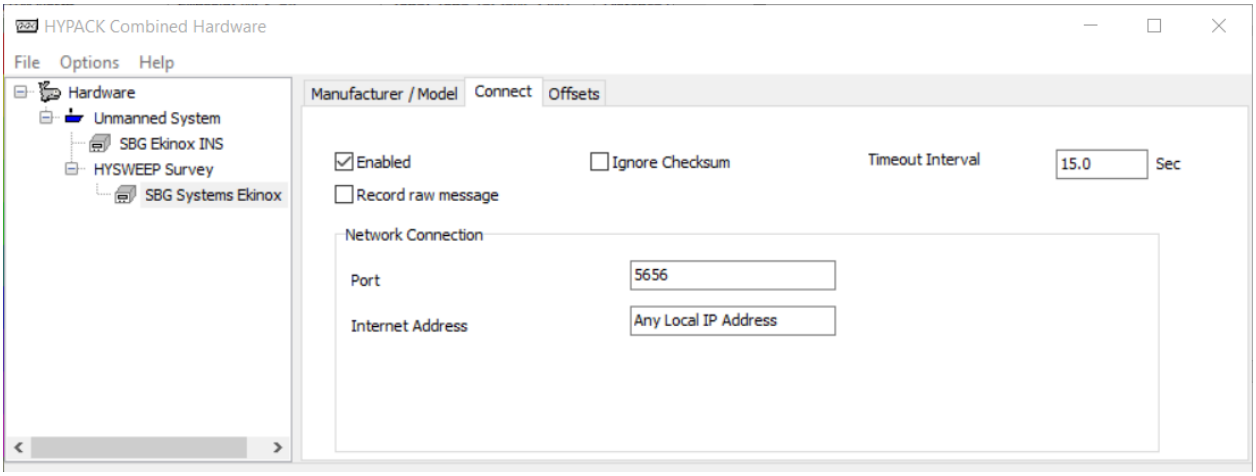
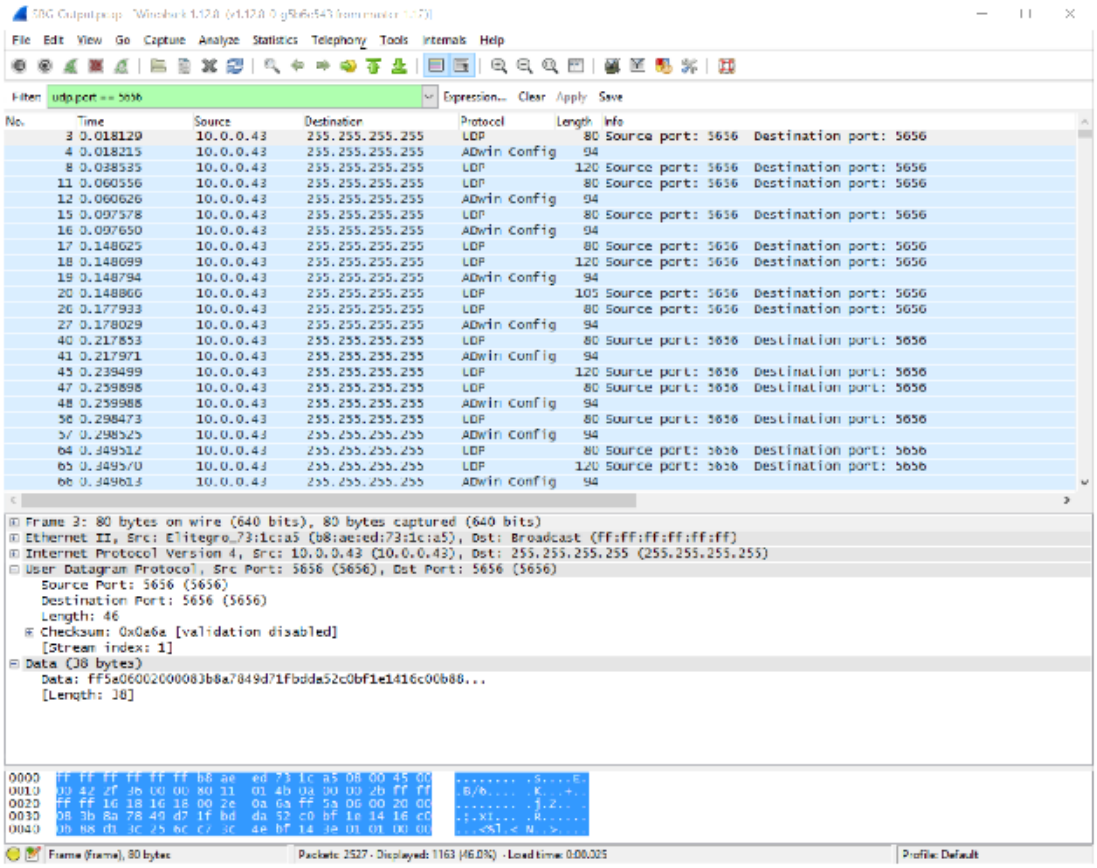


FIGURE 4. *HYSWEEP® Configuration*



Once HYPACK® SURVEY and HYSWEEP® are initialized, you will see an additional Ethernet output via UDP Port 5656 (see Figure 5) confirming that the device is working in HYPACK®. Wireshark was used in the example to depict the UDP broadcast messages.

FIGURE 5. *Wireshark Captured SBG Ellipse D Output to HYPACK® HYSWEEP®*



The implementation of this sensor into vast library of HYPACK® drivers gives our customers the functionality they will need moving forward. As always, we are here to help and look forward to any comments or suggestions.

Just let us know how we can help.