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## RTK and PPK Options for the New HYPACK LiDAR Payload

by Hannah Marshburn

HYPACK recently released a new product, our LiDAR Payload. It is our goal at HYPACK to provide our customers with an efficient and easy to use the LiDAR surveying kit. This article will provide some background information on our payload and then recommend an RTK and a PPK method.

The HYPACK payload is a LiDAR surveying tool that is designed to be a complete solution. The unit features IP67 rated enclosure with a VLP Puck Lite 16 mounted on the front. The enclosure contains a mini PC and an SBG GNSS/INS system that are mounted on a sliding tray that is accessible through the back panel of the unit. There are two antenna arms that can extend to a set distance of 1 meter and also retract for ease of transport. The back panel of the unit has available Ethernet and USB ports. HYPACK® Max and HYSWEEP® tightly integrate the LiDAR and GNSS data to provide LiDAR data with survey grade accuracy. The unit has four mounting brackets that can fasten the top panel onto an appropriate UAV or drone. A fabricated U-shaped bracket can also be attached to the enclosure so that the payload can be mounted on a flat surface like a boat, truck, etc.

HYPACK will integrate, configure, and calibrate each unit to be fully operational by the time of shipment. However, to achieve survey grade data, or data accurate within a few cm, HYPACK recommends either using RTK corrections or applying PPK data while post-processing. The user will be responsible for securing their own devices to broadcast RTK data or to purchase post-processing software for PPK data. I will describe methods that HYPACK® uses for RTK data and PPK data below.

### ***LOGGING RTK DATA DURING DATA ACQUISITION***

To broadcast RTK data into the unit, you must leverage the USB port on the back of the Payload to establish a Wi-Fi connection. One simple way HYPACK has created a Wi-Fi connection with the unit is by “tethering” a cell phone to the Payload:

First, HYPACK® uses the Ethernet port to create a remote desktop connection with our testing laptop so to initialize the appropriate software programs. Then, we simply plug a cell phone into the available USB port and allow the connection on the cell phone.

Once a Wi-Fi connection is established, you need an NTRIP subscription and broadcasting software. Many state and local governments operate free RTK/NTRIP networks. HYPACK uses NTRIP software called Lefebure.

When Lefebure has established a connection to the server, Lefebure broadcasts RTK data to HYPACK® SURVEY and HYSWEEP® during data acquisition.

**NOTE:** Any air modem or small Wi-Fi enabled device that connects via a USB port can be used in lieu of a cell phone in this method. While this method is very user-friendly,

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the important thing to remember is that HYPACK will not provide a Wi-Fi enabled device or an NTRIP subscription/ software; you must source both autonomously.

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## ***POST-PROCESSING***

HYPACK has chosen the SBG Ellipse2D GNSS unit for our Payload. The SBG post-processing software, Qinerta, can be purchased for GNSS post-processing. HYPACK has developed a software module called Input Echo to log raw GNSS data for post-processing. Input Echo is pre-installed on each Payload unit. If you would like to log raw GNSS data, you need to initialize Input Echo to log data at least five minutes before the start of surveying and after surveying to allow time for the heave filter to initialize. SBET files can be post-processed in Qinertia and applied in MBMAX64 (64-bit HYSWEEP® EDITOR).

We hope our users are as excited as we are about our new product. Feel free to contact [sales@hypack.com](mailto:sales@hypack.com) with questions, comments, and concerns.