Interfacing the Coda Octopus F180 with HYPACK® and HYSWEEP®

By John Lindberg

The F180 is Octopus' inertial positioning and attitude system. It can provide positioning, heading and attitude to HYPACK® and HYSWEEP®. While most of our customers have been using their serial interfaces, we have been asked to develop more functionality in our Ethernet based F180 drivers.

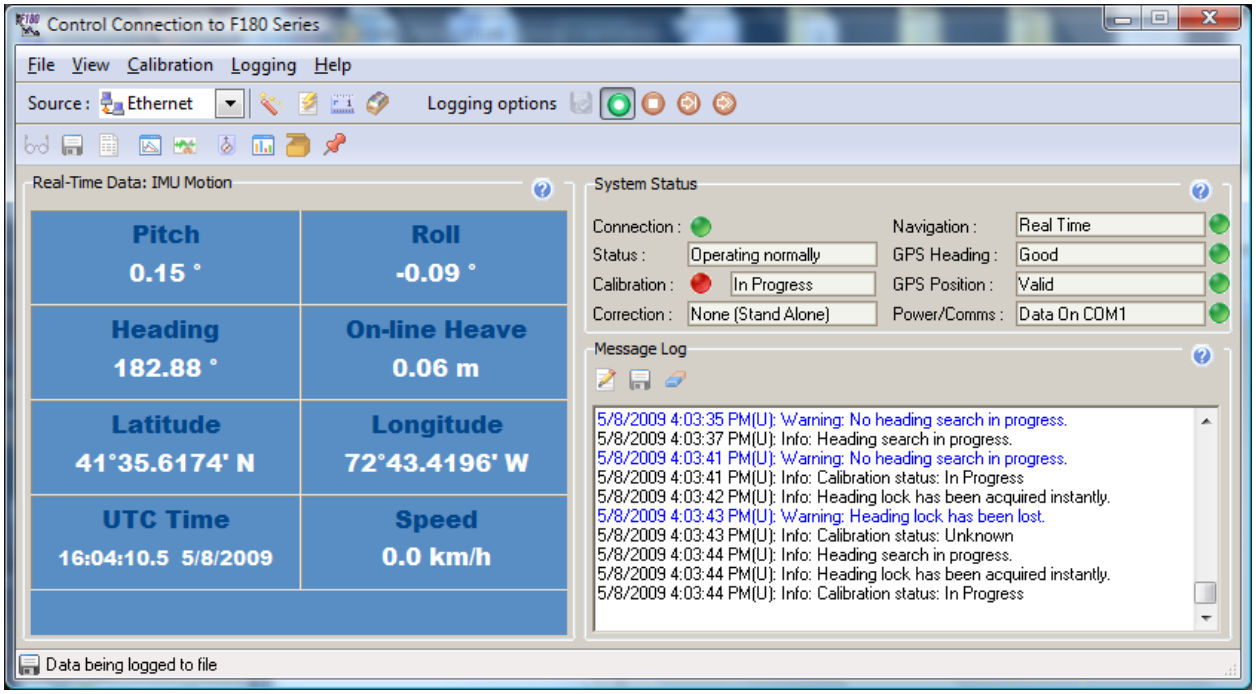
We are just about finished with the update to our HYPACK® Ethernet driver for the F180. This driver can now sync to the PPS signal coming from the F180, in addition to providing RTK water level corrections.

This document is a guide to setting up the F180 Ethernet interface in both HYPACK® and HYSWEEP®.

GETTING YOUR DATA COLLECTION PC READY

Before even thinking of setting HYPACK® up you need to set up the F180 control software and get that communicating with the F180 system.

FIGURE 1. *F180 Control software:*



Be sure to set your network card to the proper configuration for communication with the F180. This is important for both communication with the F180, and for logging their MCOM data real-time. The MCOM data is necessary to generate their “i-heave” file, a post-process heave component which can be imported into the HYPACK® editing programs. This requires setting up the IP similar to the settings seen in Figure 2.

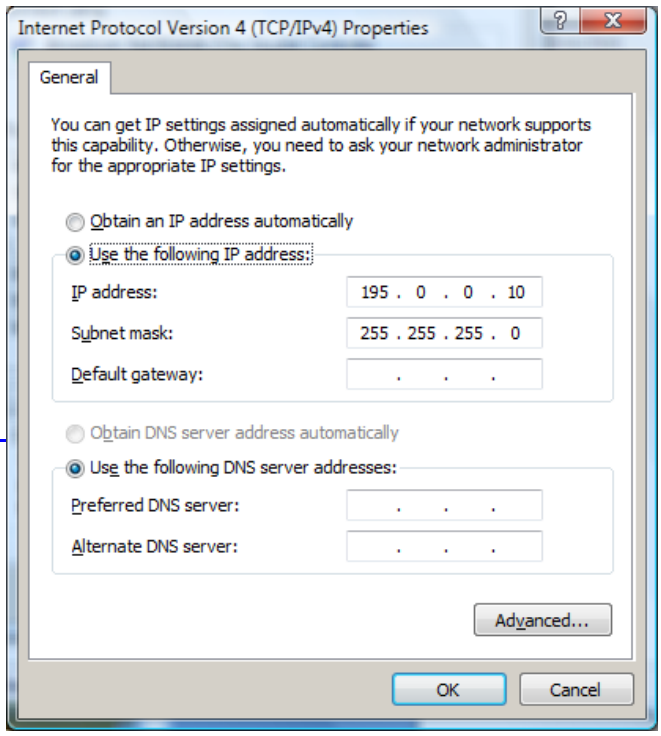


FIGURE 2. *F180 IP Settings*

The F180’s IP address is 195.0.0.180, so you can use any 4th value other than 180. Remember to set the Subnet Mask to 255.255.255.0.

INTERFACING THE F180 WITH HYPACK® SURVEY

Go to HYPACK® HARDWARE and add the F180 device driver.

FIGURE 3. *Adding the F180 Driver*

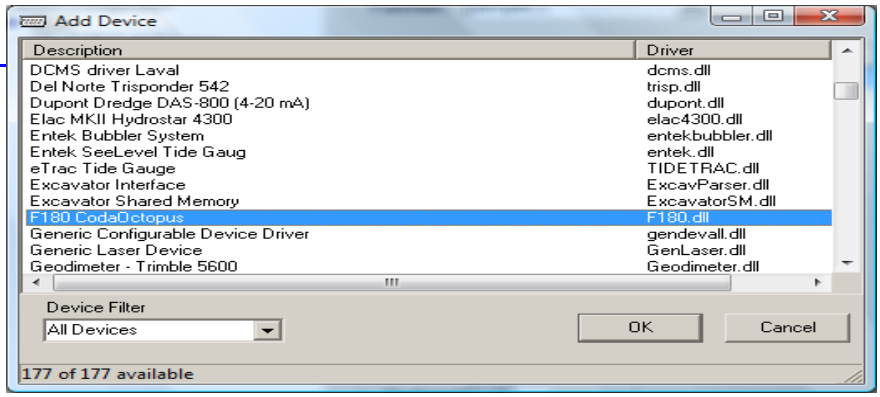
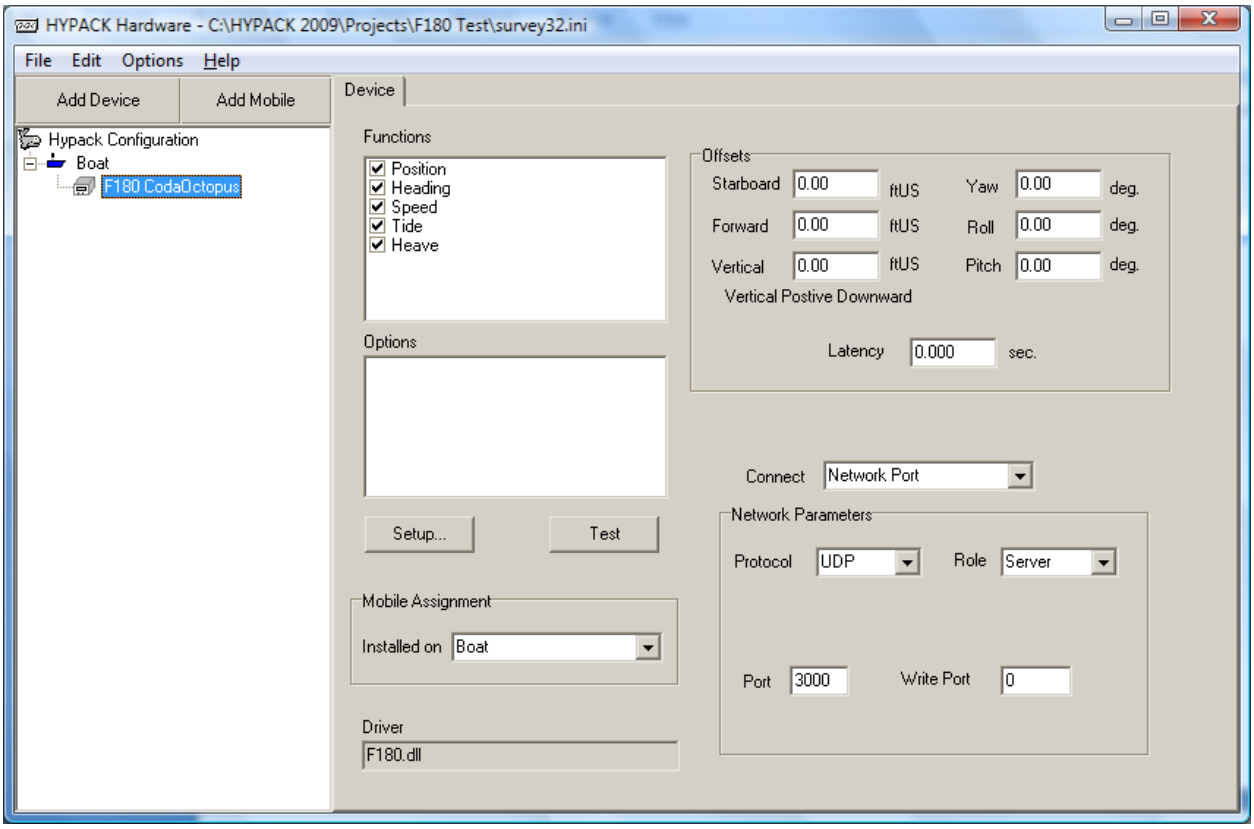


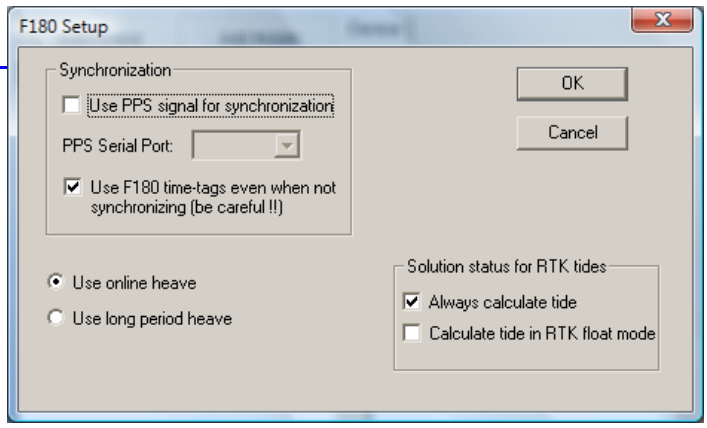
FIGURE 4. *Configuring the F180 in HYPACK® HARDWARE*



- The driver's **functions** are Position, Speed, Heading, Tide and Heave.
  - For single beam surveys, leave all of those checked.
  - For multibeam surveys, you can uncheck Heading and Heave if you want, as these will also be received by HYSWEEP® SURVEY. It does no damage to leave these checked for HYSWEEP®. It just makes the *.RAW files bigger (the F180 output rate is 100Hz!!).
- Enter your **offsets** relative to the vessel's reference point as entered in the F180 software configuration. If using RTK for water levels make sure you measure the F180 reference point relative to the water level in order to calculate the proper levels in real- time in HYPACK® SURVEY.
- Set **connections** as follows:
  - CONNECT: Network Port,
  - PROTOCOL: UDP
  - ROLE: Server
  - PORT: 3000.

Once all this is done click on the SETUP button.

FIGURE 5. *F180 Driver Setup Dialog*

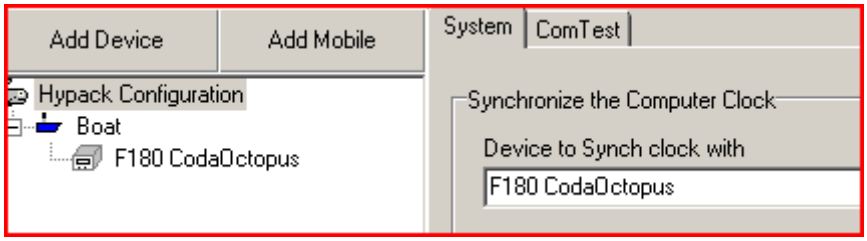


In the F180 Driver Setup dialog you have the synchronization options.

If you are using a HYPACK PPS Box, be sure to check “Use PPS signal for synchronization”, and choose the proper COM port to which the PPS Box is connected.

Note: When synchronizing the PC Clock to the F180, be sure to choose the F180 driver as the sync device under “HYPACK® Configuration” in HYPACK® HARDWARE as shown below.

FIGURE 6. *Synchronize the Computer Clock*



You also have the option to take the time tags directly from the F180. This method is prefered for multibeam setups which are already being time tagged directly from the F180.

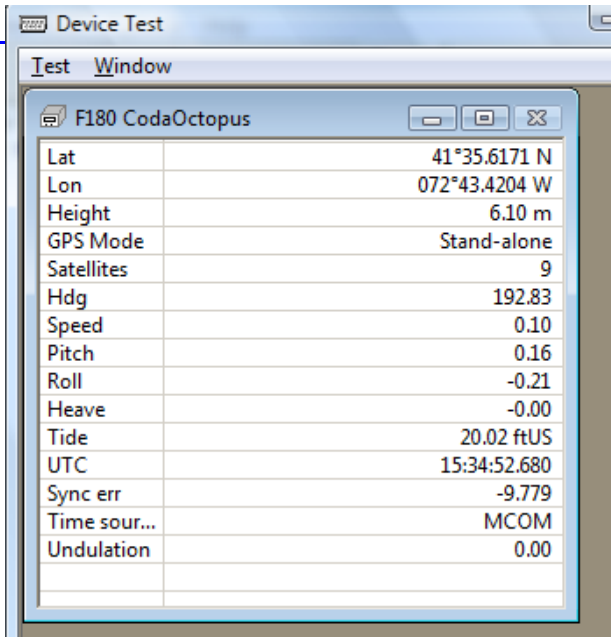
There are also a couple of heave settings: “Use online heave” and “Use long period heave.” “Use online heave” is recommended for real-time heave correction, as most users tend to post-process with “long period heave” or “i-heave.”

The last options pertain to RTK tides. In HYPACK®, tides are normally calculated only in Fixed RTK mode. “Always calculate tide” ensures you always receive water level values in the data files, with the assumption that non-Fixed RTK values will be edited out during post-processing. “Calculate tide in RTK float mode” does just that.

Once you are set up, click OK.

You can now click on TEST. You should see a window like in Figure 7.

FIGURE 7. Testing F180 Communications



Note the “Time Source” shown in Figure 7.

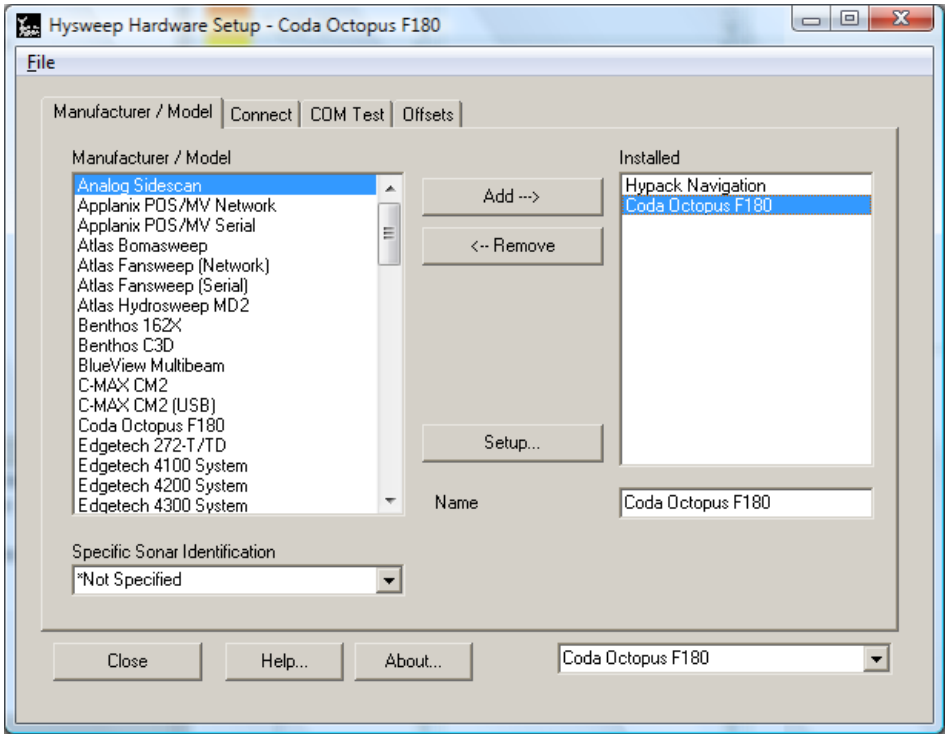
- “**MCOM**” will be displayed with clock sync and “Use F180 time tags” checked in the driver setup.
- “**PPS**” will be displayed with clock sync and “Use PPS signal for synchronization” checked.
- “**Equipment**” will be displayed with no clock sync and “Use F180 time tags” checked in the driver setup.
- “**Computer**” will be displayed with no clock sync and no sync options chosen.

INTERFACING THE F180 WITH HYSWEEP® SURVEY

The F180 driver in HYSWEEP® HARDWARE supplies attitude to HYSWEEP Survey. Configuring the F180 in HYSWEEP® HARDWARE is very easy.

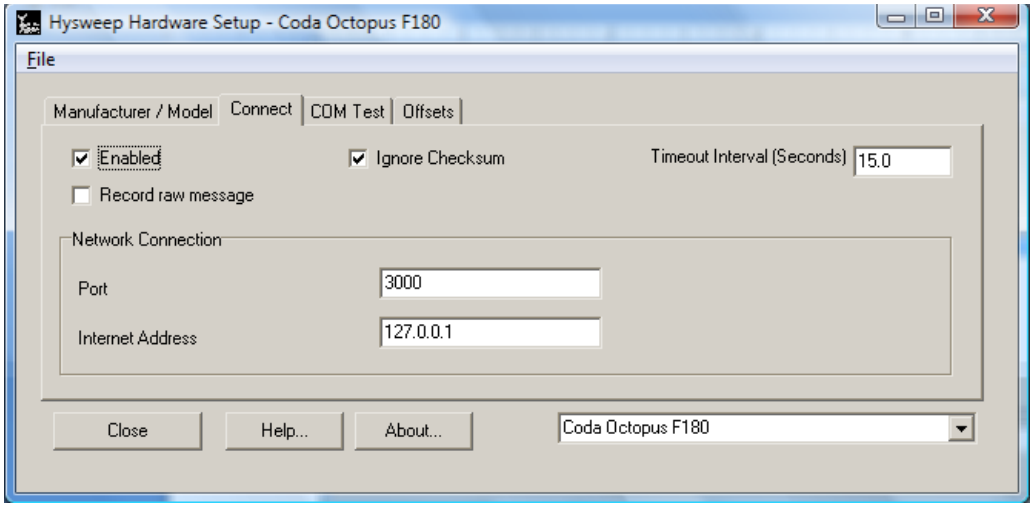
- **Choose the Coda Octopus F180 driver** as shown below:

FIGURE 8. Connecting the F180



- To **connect** to the F180, just set the Port to 3000 and leave the default IP address under the CONNECT tab.

FIGURE 9. *Connecting the F180*



- Enter your **offsets** relative to your vessel origin under the OFFSETS tab. Just remember where your vessel reference is located based on the offsets entered in the F180 software!!
- Lastly go to the **F180 Setup** in HYSWEEP® HARDWARE. You can choose 25, 50 or 100Hz for the logging rate. Usually 25Hz is plenty, but for those who insist on “getting every last drop” you are given the option to log everything! HYSWEEP® can handle it but can your PC?

FIGURE 10. *F180 Driver Setup Dialog in HYSWEEP® HARDWARE*

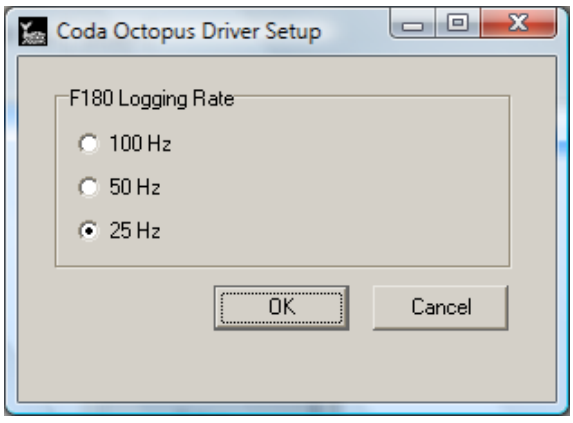
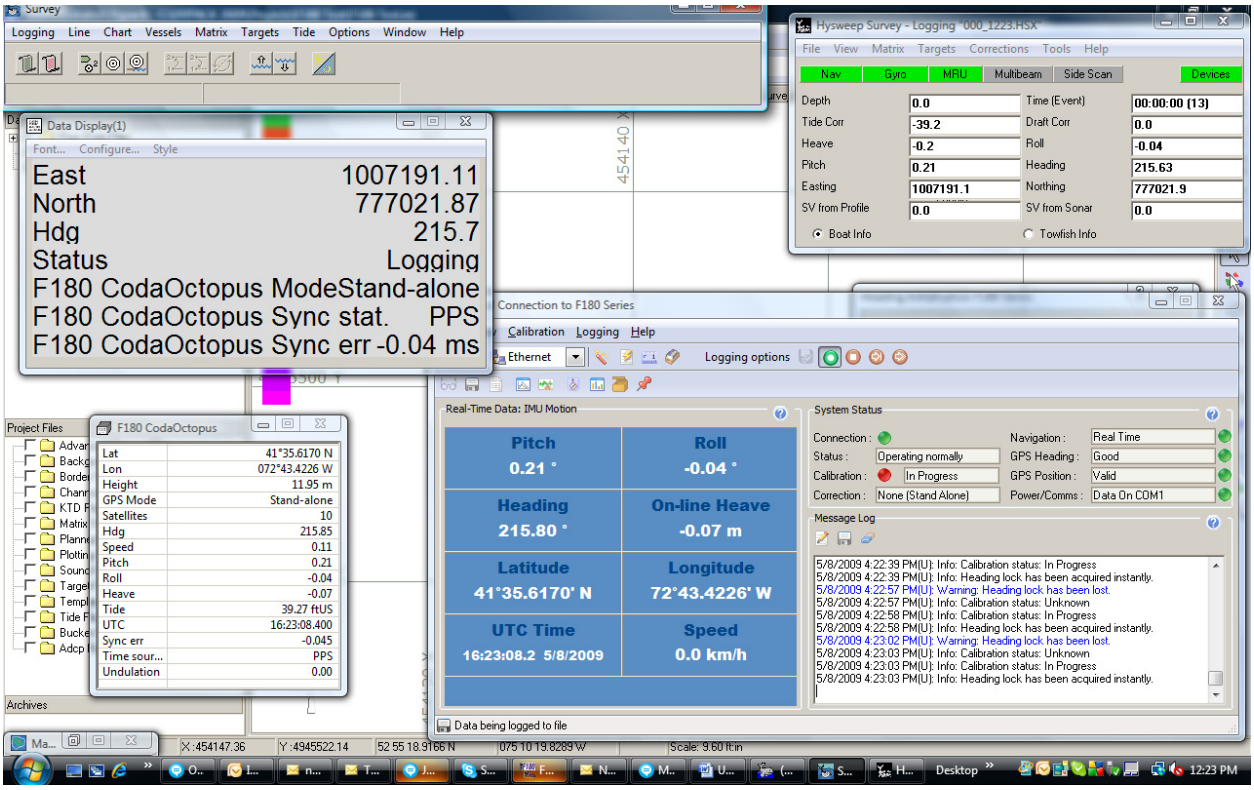


FIGURE 11. *Displaying F180 info as shown in HYPACK® SURVEY, HYSWEEP® SURVEY and the F180 software:*



If you wish to use post-processed heave data, be sure to set the logging options properly in the F180 software. You will need to start logging this data at least 5 minutes before HYPACK®/HYSWEEP® data collection and continue logging at least 5 minutes after HYPACK®/HYSWEEP® data collection.

The info above should be all you need to properly configure the F180 for use in HYPACK® and HYSWEEP®.