



Kongsberg EM2040C Integrated with HYPACK® 2014

By Caryn Zacharias

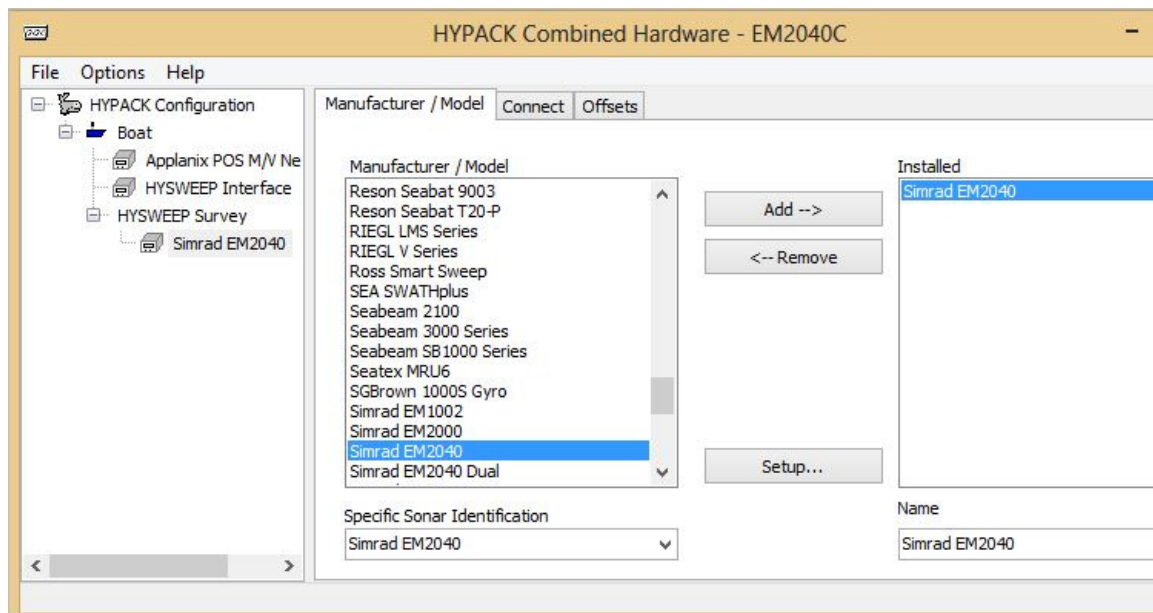
I recently had the opportunity to get on board a vessel with a Kongsberg EM2040C. The 'C' stands for compact and it is a shallow water multibeam echosounder. The receiver and transmitter are integrated in one sonar head that has the same footprint as the EM3002. There have been a few questions as to the proper integration of the system with HYPACK®, so I wanted to get out on a boat with the system to ensure that I could connect in the field and collect data successfully. Well, we collected EM2040C data in both HYPACK® and SIS successfully. The following pages will go through the HYPACK® and SIS setup for collection of both raw and processed datagrams, and how to process both HYPACK® (.HSX) and SIS (.ALL) files in HYPACK®.

HYPACK® AND SIS SETUP

HYPACK® HARDWARE SETUP

1. **Add a GPS device (example – POS MV) and HYSWEEP® Interface under the Boat mobile.**
2. **Under HYSWEEP® SURVEY, add the Simrad EM2040 or EM2040 dual.**

FIGURE 1. EM2040C



- a. **Manufacturer/Model Tab:**
 - i. **Click [Setup].**
 - ii. **Select “Use Seabed Image (53) Datagram for Side scan Display”.**
 - iii. **Choose “Use Raw Data” or “Use Processed Data”.**

FIGURE 2. *Simrad Driver Setup Dialog*

- Select **“Use Raw Data”** to use HYPACK® to calculate the depths.
 - Select **“Use Processed Data”** to accept the depth datagrams from SIS.
- b. **Connect Tab:**
- i. **Enter the Port** (In this example the port is 6001. This is the number that will be entered in Data Distribution on the SIS computer. See SIS Setup)
 - ii. **Enter the Internet Address of 127.0.0.1.** This is the local address for HYPACK®).

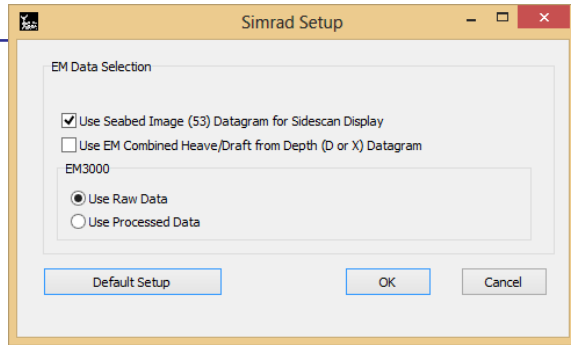
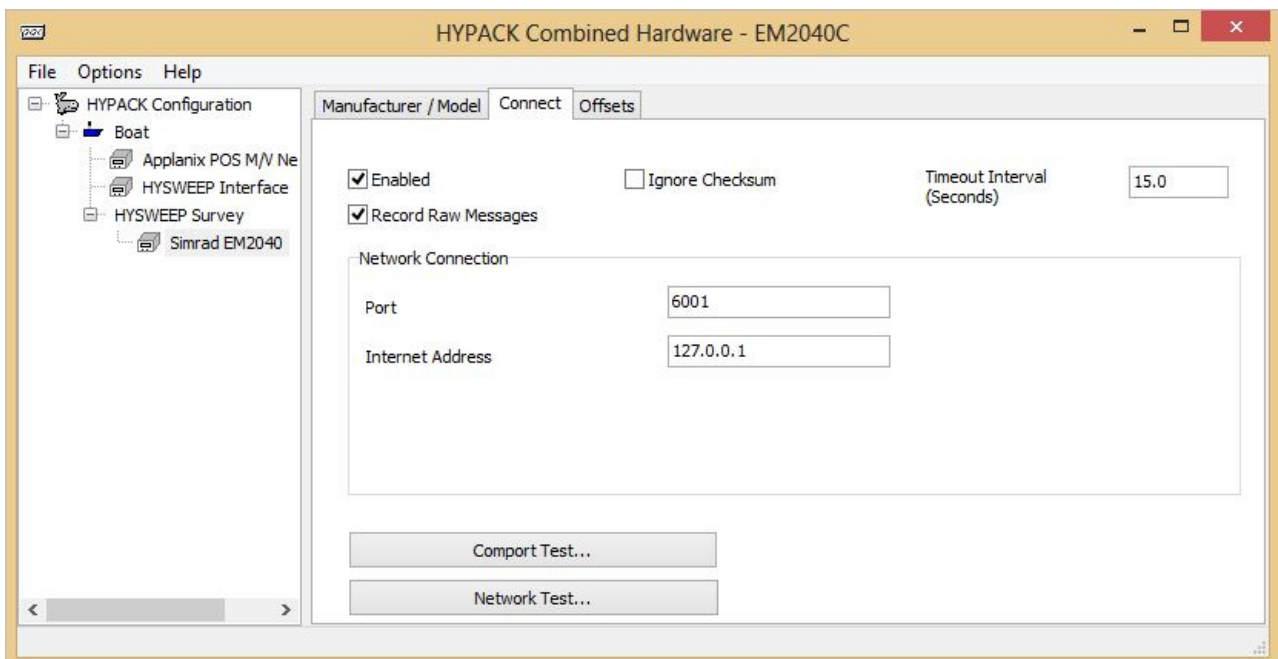
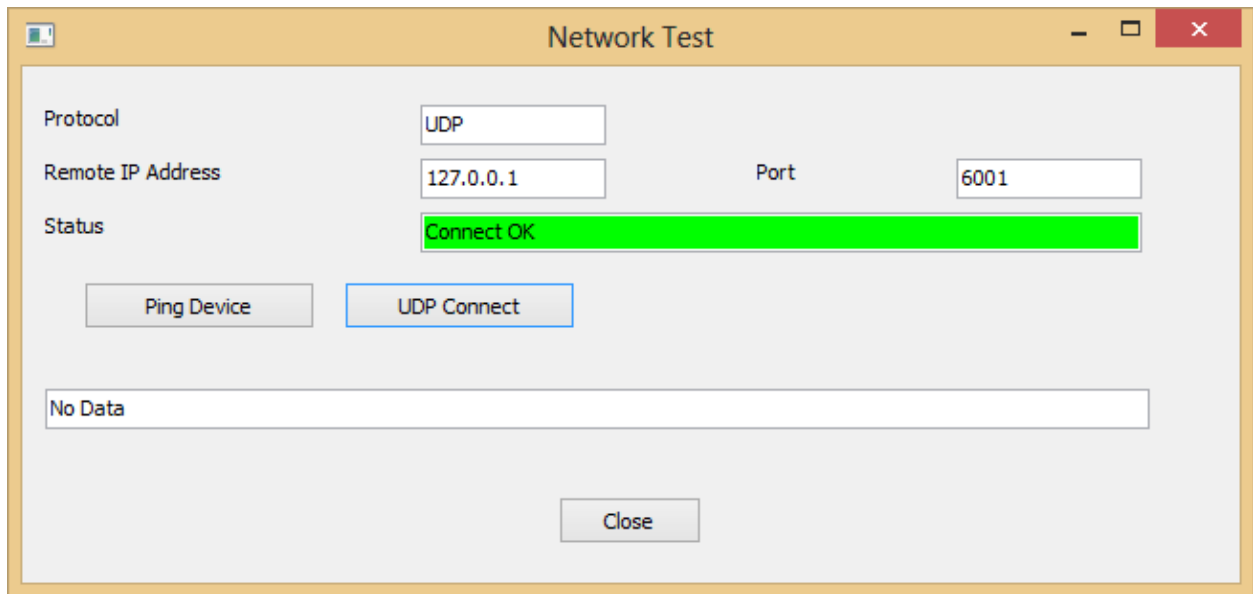


FIGURE 3. *Network Connection for the Simrad2040*



- iii. **Once the 2040C is pinging, select “Network Test...” and click [UDP Connect].**
If you have selected “Use Processed Data”, you should now see binary data scrolling in the “No Data” field shown in Figure 4.
If “Use Raw Data” is selected the field will be blank.

FIGURE 4. Network Test Window



SIS SETUP

1. **Subscribe to the following datagrams** (Under INSTALLATION PARAMETERS – OUTPUT SETUP).
If you are just collecting processed data, you do not need the Raw Range and Beam Angle, Sound Speed Profile or Installation Parameters options selected. These are needed for HYPACK® to calculate the depths of the raw data.
If you have selected “Using Raw Data” in HYPACK®, you must have the 3 options listed above selected or you may not see any data, or the correct data, in HYPACK® SURVEY.

Note: It does not hurt to have all selected even if you are only collecting processed data at this time.

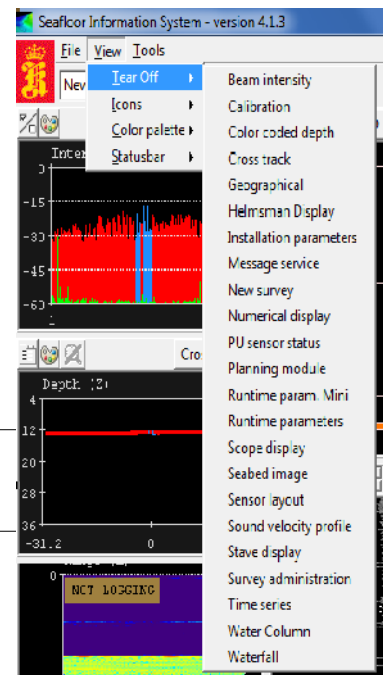
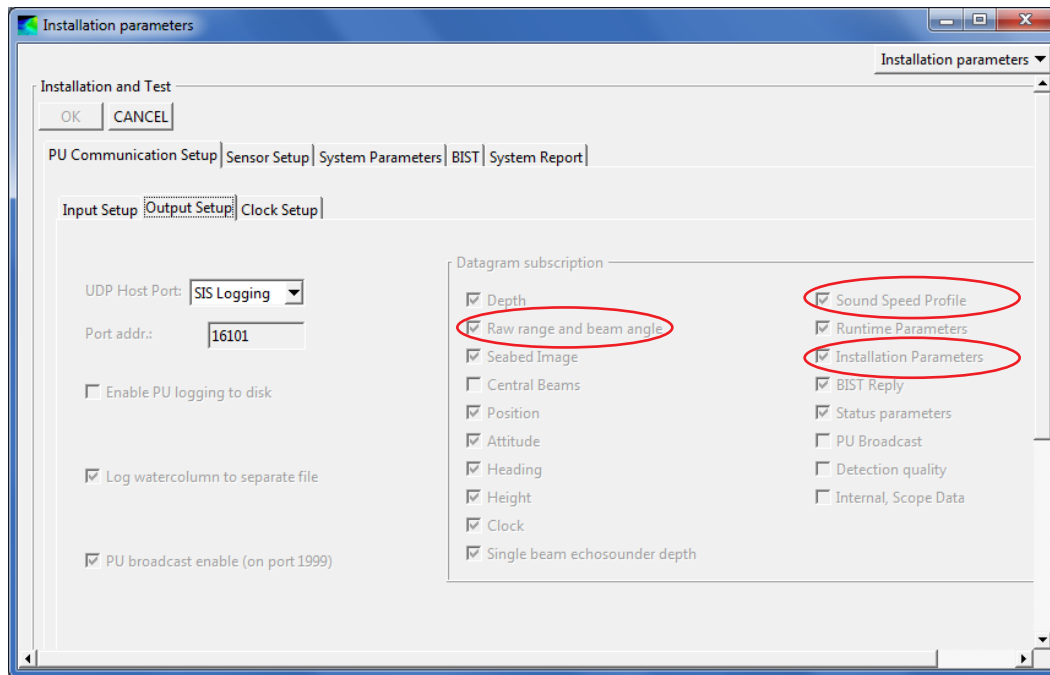


FIGURE 5. SIS Output Setup



2. **Data Distribution:** This program is needed to send datagrams from the local, user-defined Source Port (16103) from SIS to the Destination IP Address and Port. (Figure 6 shows the HYPACK® computer IP Address 192.168.1.101 and Port 6001.)

Note: The DataDistrib.exe is located in the C:\Program Files (x86)\Kongsberg Maritime\SIS\bin. It is best to make a shortcut to this program on your desktop for easy access, as you need to start this every time for HYPACK®.

FIGURE 6. Data Distribution Program

Data Distribution - MDM 400							
Source Port	Source File	Packets	Destination : Port	Destination : Port	Destination : Port	Destination : Port	Destination File
16103		1064215	192.168.1.101:6001				
0		-1					

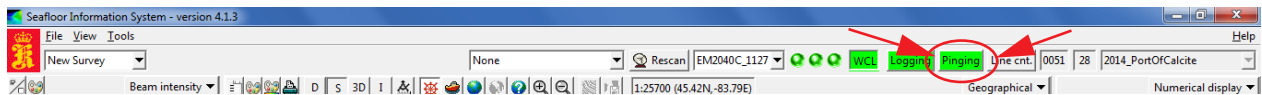
Important:

- **Network Setup:** Kongsberg equipment have their own IP addresses (157.237....) that are proprietary to Kongsberg and for internal use ONLY. *Do not set other computers or equipment to this network* or you might experience network issues.
- **HYSWEEP.exe:** You must have version 14.0.10.0 or later along with the HYSWEEP® updates from 23 May 2014.

HYPACK/HYSWEEP® SURVEY

To get data flowing in HYPACK®/HYSWEEP® you must have the datagrams listed above selected, run the DataDistrib.exe, start HYPACK/HYSWEEP® SURVEY and then start pinging in SIS. If you close HYPACK®/HYSWEEP® SURVEY after you start pinging, just stop pinging, restart SURVEY and starting pinging again.

FIGURE 7. Seafloor Information System Interface



PROCESSING HYPACK® HSX AND KONGSBERG ALL FILES IN HYPACK®

Both file types can be processed using HYPACK® MBMAX64 (64-bit HYSWEEP® EDITOR).

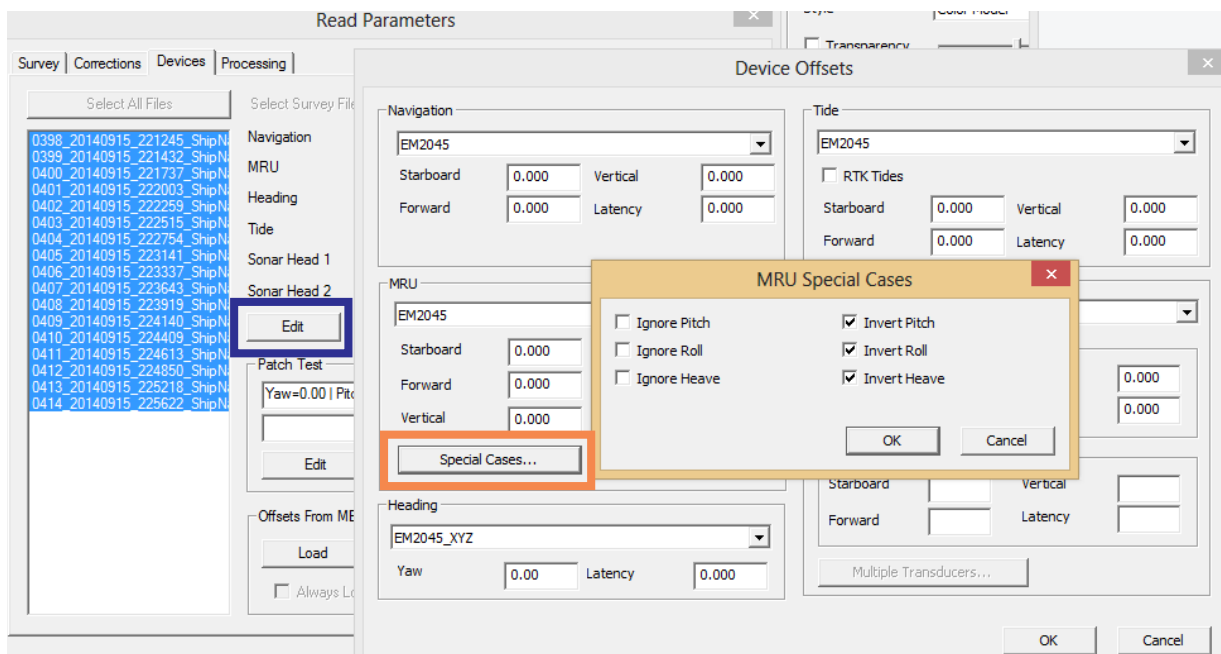
HSX Files: There are no special instructions when processing the HSX files. Just open the data, apply a tide file if necessary, check settings and review the data.

Kongsberg ALL files: You must select a few items in MBMAX 64 to process ALL files properly:

- In the Devices tab of the Read Parameters, **set the MRU to invert heave, pitch and roll.**
 - a. **Click [Edit] under the Device Offsets** (Blue in Figure 8).
 - b. **Click [Special Cases] under MRU** (Orange in Figure 8).
 - c. **In the MRU Special Cases window, select the invert options.**

Continue processing as normal.

FIGURE 8. Settings for Kongsberg ALL File Processing



PERFORMED A BEAM ANGLE TEST

We found a nice flat area and ran a number of lines for a Beam Angle test and collected data in both HYPACK and SIS with the "Use Processed Data" option selected in HYPACK. We processed both file types (HSX and ALL respectively) in HYPACK, then ran the Beam Angle Test with each set of data. The results were consistent (Figure 9).

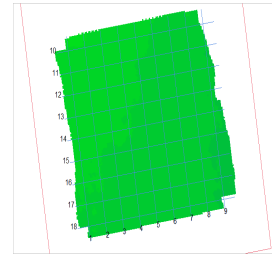


FIGURE 9. HSX Performance Test (left), ALL Files Performance Test with Inverted Heave, Pitch and Roll (right)

