Logging in HYSWEEP® with EM2040 Firmware 5 and KMALL

By Ken Aiken

Lately we've been working with Kongsberg to improve our interfacing in HYSWEEP®. This has been very helpful because there are a handful of configurations that can be used. Ideally, you will use one of the first two setups documented here, but for unusual requirements I will describe two other setups as well.

UNIVERSAL STEP ONE

Whether you are using K-Controller or SIS to control the device, this step will be the same. You'll want your Kongsberg Processing Unit (PU) either connected directly to your computer with an ethernet cable, or you can use a switch in between them. You'll need to change your computer's IP address of the ethernet port you are using to an address on the same subnet. For example, if your PU's address is 157.237.20.40, you'll need to go into adapter settings and change your IP address to 157.237.20.XX

SETUP 1: K-CONTROLLER AND HYSWEEP® ON A SINGLE COMPUTER

This is the most basic setup. It allows you to use Kongsberg's K-Controller software with HYPACK® on a single computer. This is ideal if you do not wish to collect and log with any other software and saves you from purchasing a SIS 5 license.

If you want to simultaneously log KMALL datagrams in two programs, we advise you use Setup 3 with HYSWEEP® on a secondary computer. We do not advise logging with a second set of software on the same computer because the large amount of data sent is taxing on the computer, and you might end up with dropped packets.

K-Controller Setup

First thing is to ensure K-Controller is set up correctly. When launching K-Controller, it hides in the task tray on the bottom right of you screen. You may have to open that up to find it. Once K-Controller is open, in the dropdown box select your sounder. Then click on the wrench icon to select Network Setup. For multicast address you can use any address you like where the first number is between 224 and 239. Be sure to note the number you used, since you'll need it when setting up HYPACK®. For Multicast Port the default, 6020, is fine. It'll use this number and the two above it (6020-6022), so be sure to keep these clear. The Processing Unit IP is the address of your Kongsberg PU. You may also want to enable Advanced settings so you can disable water column using the button with a half circle on it. There are other settings elsewhere in K-Controller that you may need to set up, but for HYPACK® that is all. It's helpful to leave the Network Settings page open so you can see which packets are sent through what port in the Datagram Distribution Table on the bottom.
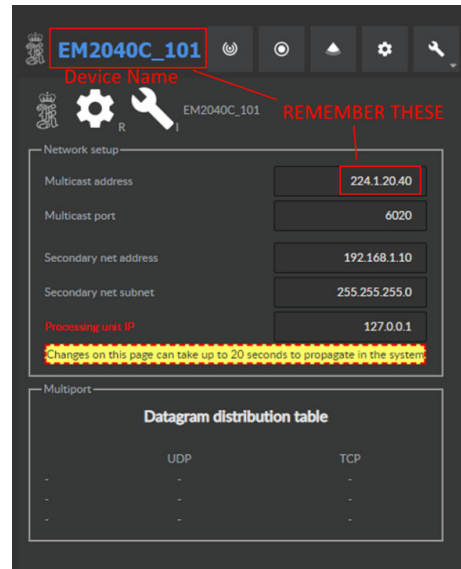
HYPACK® Setup

To set things up in HYPACK® first you'll need to add HYSWEEP® in your hardware setup. Then under HYSWEEP® add the Kongsberg KMALL device. Do not add the Kongsberg Simrad EM2040 as this will only work for older firmware (4 and older). Open the settings dialog and select UDP Multiport. Then in the Device Name box at the bottom enter the name of the device from K-Controller. This is found in the top left of its window. Then enter the IP address of the computer in the box below it. You may also choose to Log Datagrams which will save the raw KMALL packets. You may also use TCP Multiport instead, however that will change the port number you will use in the connect tab to 13130 instead of the multicast port set in the K-Controller window. Finally switch to the Connect tab and set your port and the internet address to the Multicast Port and Address from K-Controller. You can then test to see if everything is working with the network test, however you may need to increase the port number by 2 to see anything due to the multiple ports used.
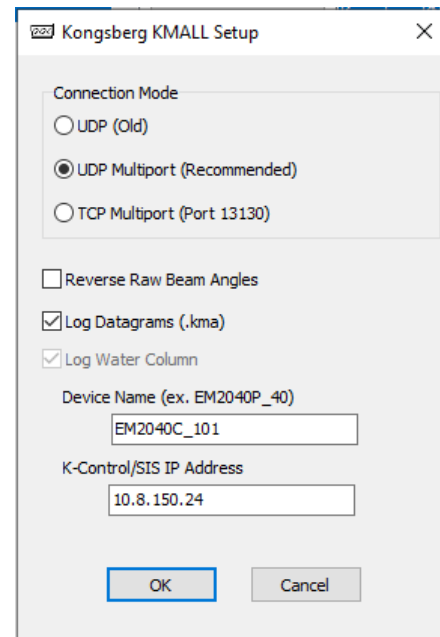
After that you should be all set. You can save your settings, close Hardware, and launch Survey and HYSWEEP®. You should be able to see data coming through.

SETUP 2: SIS 5 AND HYSWEEP® ON SEPARATE COMPUTERS WITH MULTICASTING

This is the best option to use if you have a SIS 5 license and wish to log with KMALL files. It'll also make viewing and changing your EM2040 settings easier. Again, you want to be using multiple computers for this if you are logging to KMALL to avoid dropped packets. For this setup you'll want to use a switch to connect the PU, the SIS 5 computer, and the HYPACK® computer so they can all talk to each other. Then set both computers' IP address of the ethernet ports you are using to an address on the same subnet. For example, if your PU's address is 157.237.20.40, you'll need to go into adapter settings and change your IP address to 157.237.20.XX. Be sure to use something different for both computers to avoid conflicts.

SIS 5 SETUP:

To set up SIS 5 for output to HYPACK®, go to its network settings menu item. This will display SIS 5's built in K-Controller. Make sure multicast address is set to an address where the first number is between 224 and 239. Note the number you used - you'll need it when setting up HYPACK®. For Multicast Port the default, 6020, is fine. It'll use this number and the 2 above it (6020-6022), so be sure to keep these clear. You can also see the device's name while in here on the top left, so make sure to note the name as well for HYPACK® setup. You can then close this window.

HYPACK® SETUP:

To set things up in HYPACK®, first add HYSWEEP® in your hardware setup. Then under HYSWEEP®, add the Kongsberg KMALL device. Do not add the Kongsberg Simrad EM2040 as this will only work for older firmware (4 and older). Open the settings dialog and select UDP Multiport. Then in the Device Name box at the bottom enter the name of the device from SIS 5. Then enter the IP address of the computer in the box below it. You may also choose to Log Datagrams which will save the raw KMALL packets. You may also use TCP Multiport instead, however that will change the port number you will use in the connect tab to 13130 instead of the multicast port from SIS 5's Network Settings window. Finally, switch to the Connect tab and set your port and the internet address to the Multicast Port and Address from K-Controller. Test to see if everything is working with the network test, however you may need to increase the port number by 2 to see anything due to the multiple ports used.

After that you should be set. You can save your settings, close Hardware, and launch Survey and HYSWEEP®. You should be able to see data coming through.

SETUP 3: K-CONTROLLER AND HYSWEEP® ON SEPARATE COMPUTERS

As mentioned before, it's not recommended to have two programs logging the KMALL datagrams simultaneously, so if you have something other than SIS 5 doing logging you can set that up on the K-Controller computer and use a secondary computer to log with HYPACK®. There are 2 major differences for this setup. You need to have a switch to connect both computers and the Kongsberg PU, giving them IP addresses on the same sub net as the PU. Also, when choosing the Connection Mode in HYPACK®, you lose the option to choose. You must use whichever connection mode the other program is using. While the other program is connected, you look at the Datagram Distribution Table to see if it's already using TCP or UDP ports. Other than that, the instructions are the same.

SETUP 4: SIS 5 AND HYSWEEP® ON SEPARATE COMPUTERS WITH DATA DISTRIBUTOR

The Data Distributor option is helpful for some older setups that are already using this option and if you don't wish to break the existing setup if not required. For this setup, you'll still have two computers if you wish to log in SIS 5 and HYPACK®. However, you could also do this locally on a single computer. Another advantage of this setup is if you don't have a switch but do have a spare ethernet port on your SIS computer, you can run the HYPACK® computer through the spare ethernet port since the HYPACK® computer and PU do not need to be able to communicate.

SIS 5 SETUP:

In SIS 5's menu, there is a Data Distributor option. This opens a window with a table to configure specific outputs to specific ports. In here, enter the destination address and port for the HYPACK® computer. You'll need to make sure to check these datagrams: IIP, IOP, MRZ, SKM, SPO, SVP and SVT. Then you should be all set.

HYPACK® SETUP:

To set things up in HYPACK®, first you'll need to add HYSWEEP® in your hardware setup. Then under HYSWEEP® add the Kongsberg KMALL device. Do not add the Kongsberg Simrad EM2040 as this will only work for older firmware (4 and older). Open the settings dialog and select UDP (old). Then in the device name box at the bottom enter the name of the device from SIS 5. Then enter the IP address of the computer in the box below it. You may also choose to Log Datagrams which will save the raw KMALL packets. Finally switch to the Connect tab and set your port and the internet address to the Multicast Port and Address from K-Controller. You can then test to see if everything is working with the network test button. If you don't see anything coming through, Data Distributor may be sending packets using TCP instead of UDP. At this time I don't know how to change that so to work around that, use TCP Multiport in the device settings and use the port you specified, not the noted 13130 port.

After that you should be all set. You can save your settings, close Hardware, and launch Survey and HYSWEEP®. You should be able to see data coming through.

POSITIONING

There are several ways you may choose to do positioning with HYPACK® and your Kongsberg device, but this is one option worth noting. The Kongsberg datagram includes the positioning supplied to the PU. In your HYPACK® setup, you can bring in that positioning with the HYSWEEP® Extended interface. We do not recommend you use this as your primary positioning, however, it's good for QC purposes to verify that your positioning is going into and back out of the POS correctly.