



MULTIBEAM / SIDESCAN ADVANCED DEVICE TESTING IN HARDWARE

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As the technology in the hydrographic surveying industry has advanced, the complexity of interfacing with the latest hardware has as well. With more advanced systems, it is common practice for hardware manufacturers to provide a software interface which will pre-process the raw data from the device before sending it to third-party software. This has its benefits, of course. Instead of getting a raw stream of binary or ASCII data, your software receives a neatly packaged group of the specific data you are requesting. This software interface will also handle connecting to the device and applying user settings.

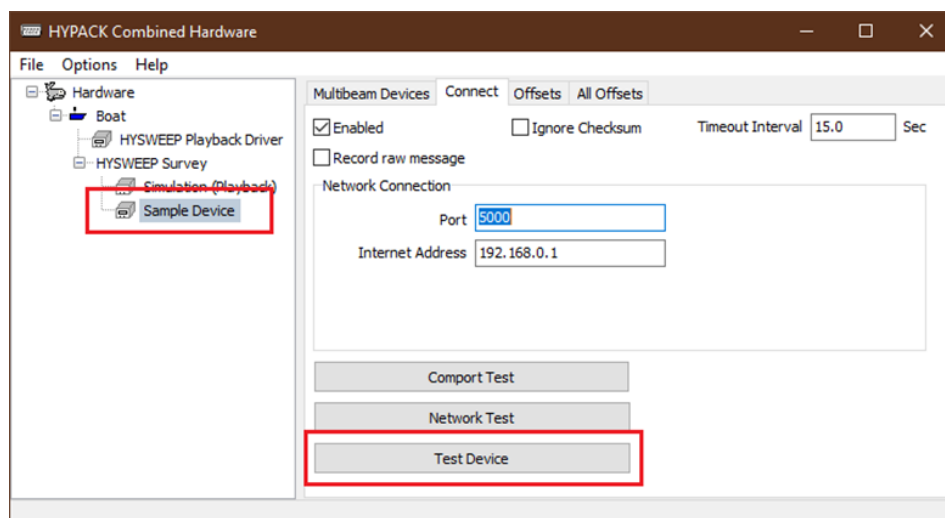
An issue that our users and our tech support team face with these new systems is that it has become increasingly difficult to diagnose issues when these connections fail or are improperly setup. The original approach to diagnose these issues was to modify your Hardware settings, and relaunch the appropriate Survey program (HYSWEEP or Side Scan). The launch of these programs can take quite some time, especially with devices that will continually try to reconnect over a long timeout period. You wait for that timeout period for each device, the devices won't connect, and you have to close the Survey program and repeat this process again with no useful feedback on the appropriate change to make in Hardware. Essentially, it is a lengthy and frustrating guess-and-check system, akin to a terrible game of Battleship with real-world consequences.

Our Network Test is only so good as to prove that a connection can be made with a specific IP address. With the introduction of the software interface from the device manufacturer, it is necessary to instead diagnose whether that interface has connected to the device and is receiving data instead of HYPACK directly. A simple Network Test can't truly connect to the device in these cases, and certainly can't tell the device to supply HYPACK with data without further instruction from the manufacturer's interface.

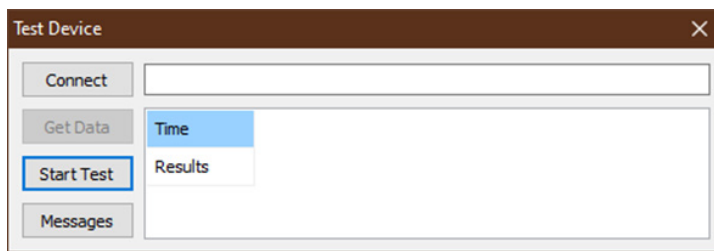
With the latest release of our Hardware program, we have added a Device Test feature for HYSWEEP (multibeam / LiDAR) and Side Scan devices to help mitigate this problem. The feature might seem confusing, but that's why here I will go through how to use the interface and give a behind-the-scenes look at what it is doing.

Note: The new device test will power on your device, so make the proper preparations. If your device needs to be in the water before use, make sure it is in the water before performing this test.

With the device that is giving you trouble selected in Hardware, verify your connection settings, and then click the Test Device button.



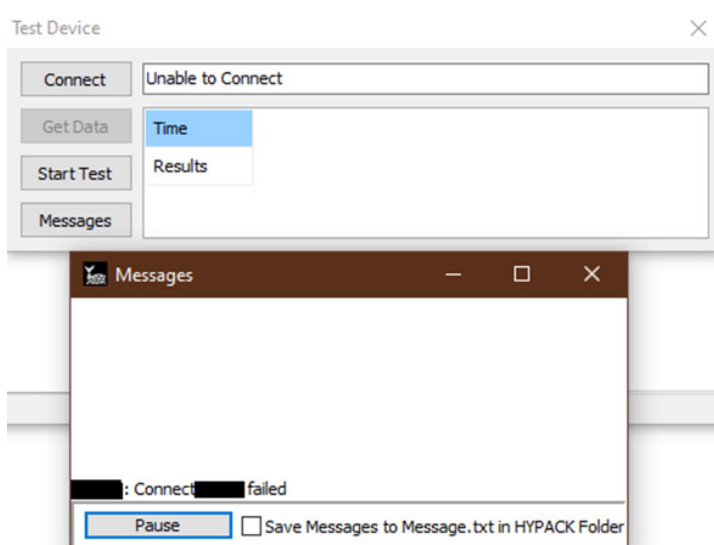
This window should appear on the screen:



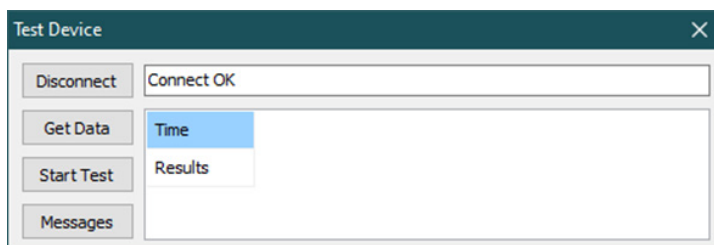
There are two options to using this feature: Perform an automatic test by clicking Start Test or manually perform the test yourself. First I will go through a manual test. This will help us understand what the automatic test is doing.

First things first, if you want to obtain as much information as possible, your first step should always be to click the Messages button, regardless of automatic or manual testing. The display that appears is the same as the one in HYSWEEP or Side Scan Survey, but will be able to provide us information during the connection process instead of just during a Survey. The messages in this window can help you, tech support, or HYPACK software developers diagnose issues with your device connection. Many drivers will not provide any feedback at all in the Messages window since they were written before this feature existed. If there are no messages and the tests are failing, contact us and we will write the necessary messages in to the driver to be able to properly diagnose the issue.

Now that the Messages window is open we can attempt to connect to the device. Hit the Connect button. In the case of a failed connection, you will see something like this.



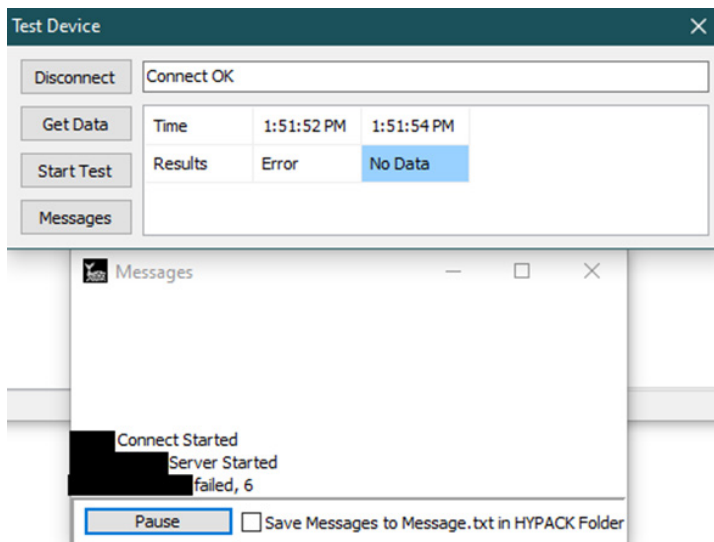
In the case of a successful connection, you will see this:



Now let's talk about what this really means. Connect in this case does not necessarily mean a connection to the device was made. All this can tell you is that HYPACK has successfully connected to the driver we wrote for your device. Do not assume that a Connect OK message means that your device is properly connected.

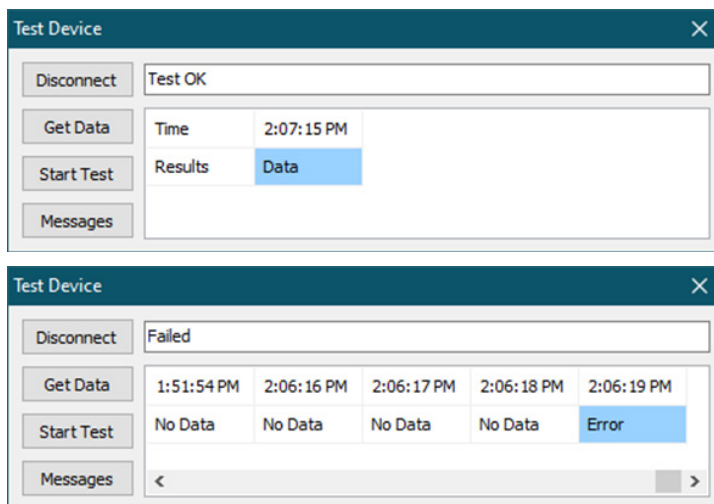
The next step is to attempt to poll the device for data, which is performed by clicking the Get Data button. This is what will assure us that a device is working properly or not. Each time Get Data is pressed, the spreadsheet will be updated with the time that data was requested and the result of that request. The results can be Data, No Data, Error, or Unknown.

If you are seeing Data, HYPACK is receiving data from the device through its driver. If you are seeing No Data, your device was not able to send data to HYPACK. If you see Error, the driver is reporting an error while trying to retrieve data from your device. Unknown means an unknown issue has occurred.

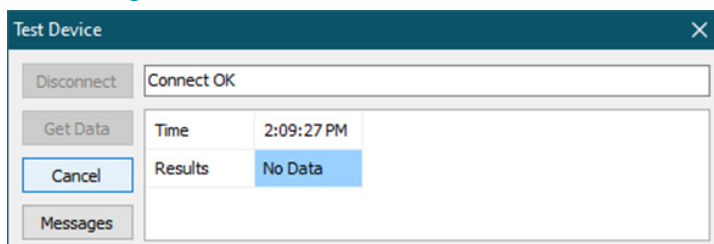


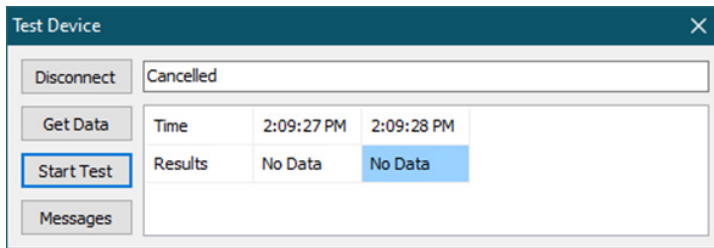
In this case, we can see that HYPACK connected to the driver OK, but Get Data returned an Error and a No Data result. In the Messages window, we can see that a Connection was started, and a Server was started (likely both results of the manufacturer interface). But then we see something failed. This failure most likely resulted in the first result, Error. When I pressed Get Data again, I got No Data. We can assume because of the failure, the device was not be able to provide data. There must be an error with the connection settings.

So now you know how to manually test your devices, but we can save some time by using the automatic test. Simply just press Start Test. This will work to the effect of pressing the Connect button, then pressing Get Data once a second for 10 seconds until Data or Error is received. If Data is received the test succeeded. If an Error is received or we have No Data for 10 seconds, the test failed. Here is what both of those scenarios might look like.



While using the Start Test button, it turns into a Cancel button. You can hit Cancel to immediately end the test.





That about wraps it up. Thanks for sticking through this one with me to the end. I hope this helps minimize the time it takes for you to set up your device connections.

Remember to use the Messages window, and if you can't make sense of what the messages mean or if no messages appear at all, do not hesitate to reach out to HYPACK Support. We can use this information to update our drivers to give better feedback, fix bugs, and help you get connected to your devices quicker.