



New Features for Analog Side Scan and Sub-bottom in HYPACK®

By Dave Maddock

Over the past few months we have been improving our ability to interface with analog side scans and sub-bottom profilers. Previous versions of HYPACK® had only a basic passive interface for analog side scans. We could not generate a trigger pulse and analog sub-bottom support was non-existent. Later this year we will release an update to HYPACK® 2009 that incorporates these new features. Here's the skinny on how to work with these devices with the new updates.

ANALOG-TO-DIGITAL CONVERSION

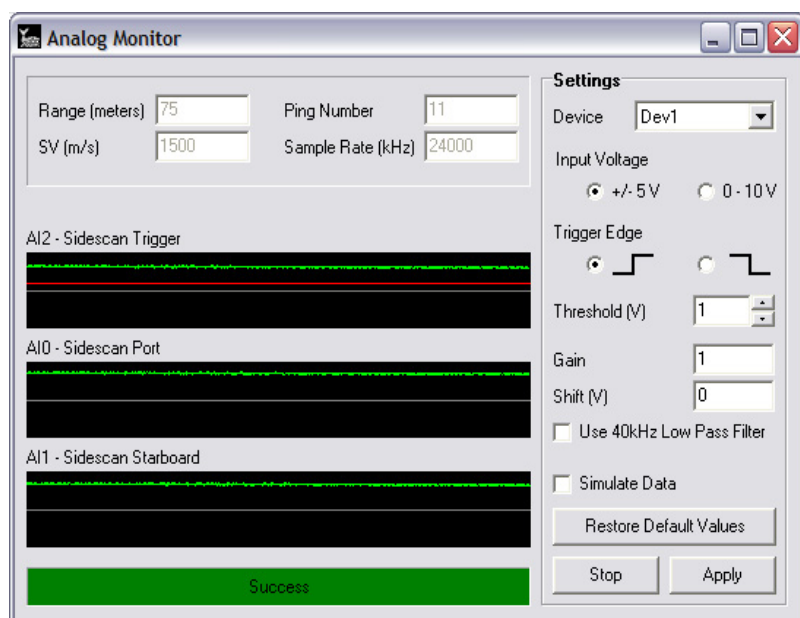
As you may already know, HYPACK® requires an analog-to-digital (A/D) converter box made by National Instruments (NI) to bring the analog signals into the HYPACK® PC in a form that we can use.

Previously, we recommended the NI-6024E PC Card. As NI has dropped support for the PC Cards under Windows Vista, our preferred A/D product is the NI USB-6221 BNC. This model uses USB for communication and has convenient BNC connectors in lieu of tedious screw terminals. We've also tested, in-house, the NI USB-6281 which is a higher-accuracy device with an on-board 40kHz anti-aliasing filter. The good news is that our software uses National Instruments' NIDAQ library which allows us to support all of the above devices easily.

ANALOG MONITOR

.ANALOG MONITOR is the module responsible for communicating with the NI converter box and passing the data to the HYPACK SURVEY sub-bottom driver and SIDESCAN SURVEY over shared memory ANALOG MONITOR.

Within ANALOG MONITOR you select which NIDAQ device to use (if you have more than one) and general settings of the input signals. Range and triggering options are configured in the appropriate survey program. Panels show a snapshot of the input signal; click on each label to cycle through the available input channels.



TRIGGERING

If you are using the USB-6221 or USB-6281 (or more accurately, any NI box that has output buffers), ANALOG MONITOR can generate its own triggers for side scan and sub-bottom and provides for generating a sub-bottom trigger as a multiple of the side scan trigger. If generating a trigger, the signal should be split and also connected *back* into the NI device on the appropriate input channel. Below are some simple diagrams for wiring the A/D box for common use cases.

FIGURE 1. Side scan only, External trigger (left) Internal Trigger (right)

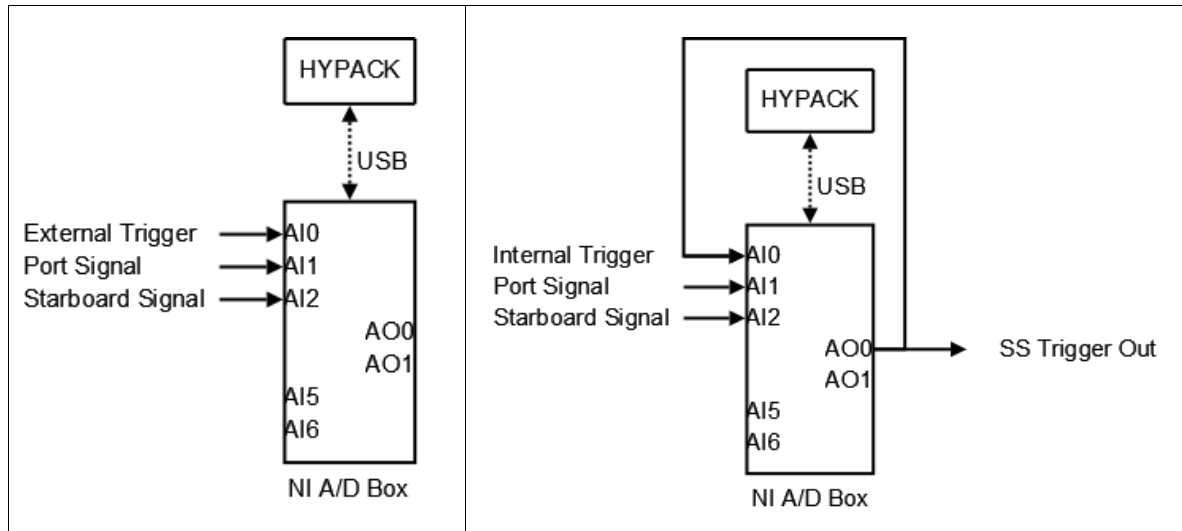
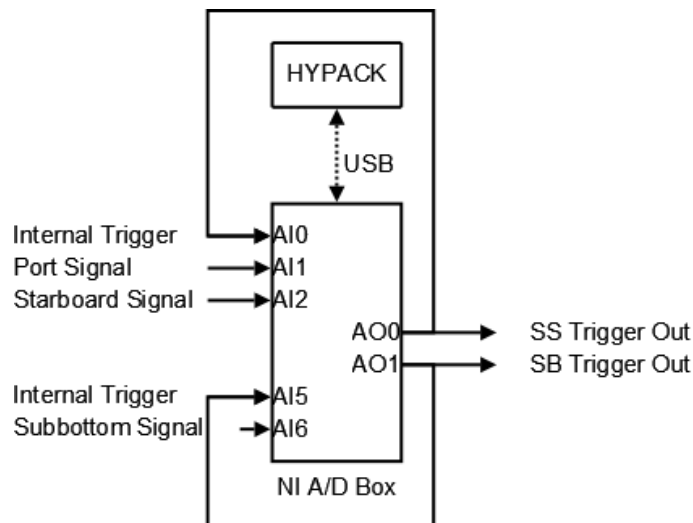


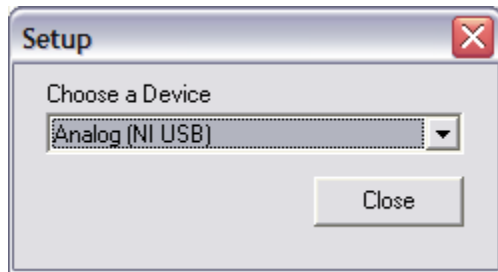
FIGURE 2. Trigger



Sub-bottom acquisition is handled with a HYPACK SURVEY driver (subbot.dll). In the past we have had separate drivers for different sub-bottom systems (e.g. Stratabox, Innomar SES), but going forward subbot.dll will be “one driver to rule them all”. Clicking the driver

setup in HARDWARE shows a dialog where you can choose the specific device you are using.

FIGURE 3. Subbot.dll Setup Dialog



During acquisition you can configure sub-bottom triggering mode, interval, sample period and delay. Sub-bottom data is logged to SEG Y.

FIGURE 4. Configuring the Subbot Driver During Survey

Subbot.dll adds a side-scrolling sub-bottom view to SURVEY with gain and filtering controls.

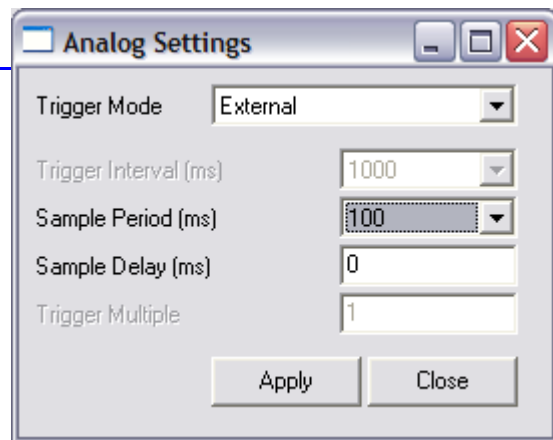


FIGURE 5. Subbot Device Window and Controls

