

Geode Field Quick Start Guide

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Geode users, this guide is intended to help you quickly start a basic Geode survey. Note that all surveys are different, and the suggestions listed in this guide may not fit your scientific objectives. It is up to you, the user, to identify the specific settings that your survey requires.

First, a little background information. All PASSCAL Geodes that return from the field are tested, and during this process any data and configuration settings are erased, and the unit is reset to factory default settings. This is done for two reasons. First, we don't want to backtrack all the user settings in order to get the control software back into a standard configuration and, second, if the software doesn't detect any previous configuration information it will automatically solicit the user to enter all the valid information it needs to successfully collect a dataset. This feature makes startup for a new user fairly easy and straightforward.

Troubleshooting Setup: If you happen to lose track of your settings and forget what changes you have made, you can always make changes using the toolbar menu at the top of the Seismodule Controller software, or simply restore the unit back to factory defaults and start fresh.

Follow these reset steps if you want to re-run the setup from scratch:

1. In the "Systems" menu at the top of the software, select "Test" -> "Troubleshooting" -> "Reset All Parameters to Default".
2. Click "Yes" and hit the red X at top right to close out of the software.
3. Erase or move your saved logs and restart the Seismodule Controller software.

Connecting and firing up the system

Note: Always fully charge your laptop the night before your experiment to avoid a max current draw situation in the field that may needlessly drain your field batteries.

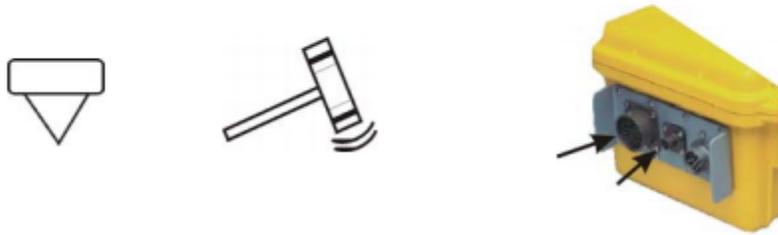
Connecting the System Together



- Connect the 12V power to the connector with the symbol



- **Connect the Geophone Spread Cables and the Trigger Input** to the connectors with the symbols shown below. Note that you will need an adapter cable if you have Cannon NK27 connectors on your spread cables.



- **Connect the Digital Interface Cable** to the Geode. You will recognize the Digital Interface Cable as it has identical connectors on either end, neither of which have pins. Geodes often have more than one



Digital Interface Cable, so you will want to connect to the one with the OUT symbol (above), which indicates data is transmitted OUT of the Geode back towards the storage and control device.

- Connect the other end of the Digital Interface Cable to the connector on the small **Network Interface Box (NIB)**. It is a small box, 5 cm square with a pinless connector on one side for the Geode interface cable and an RJ45 connector on the other. Connect the RJ45 connector to your laptop's network PCMCIA connector or to the network card of the computer you are using. If you have a NIB with a toggle switch on one side, put the toggle switch in the ON position.

Your completed setup should look similar to Figure 1, below.

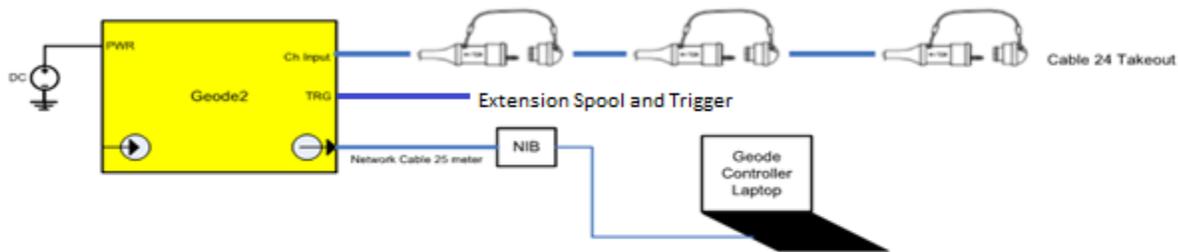


Figure 1 - Example equipment connection



Figure 2 - Desktop icon for the control software

Check that the blue LED on the Geode is blinking. The LED should have turned on when you switched the NIB box toggle switch to the ON position. If the LED is blinking, click the Seismodule Controller Icon in the laptop (see Figure 2 above). If the Blue LED is not blinking, toggle the Enable Power switch again. If this does not work, try pressing the red “test” button on the Geode. If the blue LED turns on after pressing the test button the 9V battery in your NIB Box may need to be replaced. If the light does not turn on after pressing the button on the Geode, then your Geode is not connected properly to 12V.

Once the Seismodule Controller software is started, it will automatically step the user through a series of menus to create an acquisition configuration:

Survey Name: Enter the survey name, Experiment name

Acquisition Correlation: Enable or Disable correlation. Disable correlation if you’re not correlating with an outside signal.

Acquisition Stack Parameters: You can set a stack limit that will automatically save files and clear memory when that stack limit is reached. If you are working with an inexperienced crew, I would recommend setting this number to a high value, and using the Hot Keys to save and erase manually when the desired stack limit is reached. The Hot Keys for save and erase are: F7 (Save) and F2 (Clear Data). The “Replace” option will not stack your data.

Acquisition Timing Parameters: Set sample interval and Record Length

Acquisition Filter Parameters: Filters

Geophone Interval: Set your geophone spacing in meters or feet

Gains: High/Low gain selection

Geometry Menu: This menu shows the channel use setting and spacing for each geophone channel. You can set your first shot location here. If you plan to shoot off the line 20 meters, you would put a -20 in the box at the upper left. You will need to manually roll the shot location after every completed stack by entering the next location in the box. Use the F3 Hot Key after you save the previous shot. Note: the Geode also has an Auto roll capability for more experienced users.

Storage Parameters: In this menu you can select a file start number. If the number suggested by the software is any number other than 1, you may have previously saved files in your directory. You should move these old files or change directories if you are starting a new survey. Auto save will save a file after every hammer strike, or if the stack limit is reached depending on your selections in the “Acquisition Stack Parameters” menu. If you plan to use hot-keys to select and save your files during the survey, uncheck Auto Save. In this menu you can also select the file format you would like to save data in. The options are: Seg-2, Seg-d and Seg-y. If you prefer to see each individual file as it is saved then use seg-2 or seg-d, because seg-y saves all shots into one large file until a file size limit is reached.

Operator Log: In this menu you can select your log preferences. All information selected will be listed in the header of the log file. You can select a default template or enter your own log items and descriptions.

Trigger Options: In this menu you can set the trigger sensitivity, hold off, master trigger and arm mode. The trigger sensitivity is set to 50% by default. I have never needed to adjust the sensitivity, because when most triggers fail they fail completely, and once fully failed, modifications to sensitivity do not have any impact. By default the master trigger is always the Geode closest to the CPU. If you need to move the master trigger to another Geode in your survey line, you

can select that option here. With Arm Mode set to Auto, the trigger will automatically re-arm after each shot. You will see the bar at the bottom of the survey screen turn green after each shot.

That concludes the basic survey setup. If you need to adjust any of the initial settings mentioned above, all the same menus are available in the toolbar at top. **Note:** After the Geode is powered on, please set the NIB toggle switch to the center off position. This will allow the Software to close and power down the Geode properly when the survey is concluded.

Setting up the user interface: After the main configuration options are selected, you are left with a geometry toolbar at bottom and several overlapping menu screens. I will suggest a few options to make this display a little more user friendly.

1. Right click on the Geometry toolbar at the bottom and select Display settings (see Figure 3)

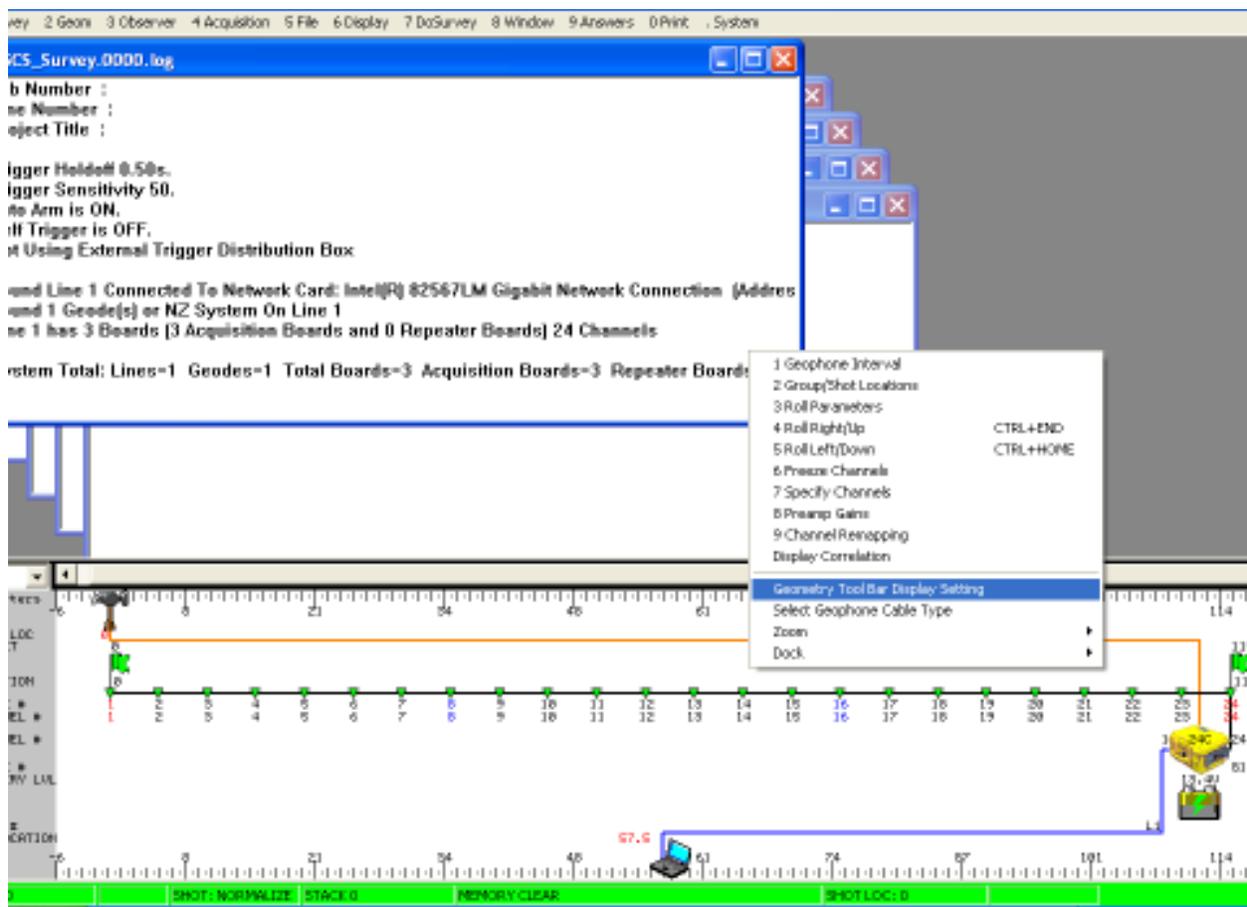


Figure 3 Selecting Display Settings

2. Uncheck "Show PC", "Show Battery", "Show Flag", and any others you think are unnecessary (Figure 4)

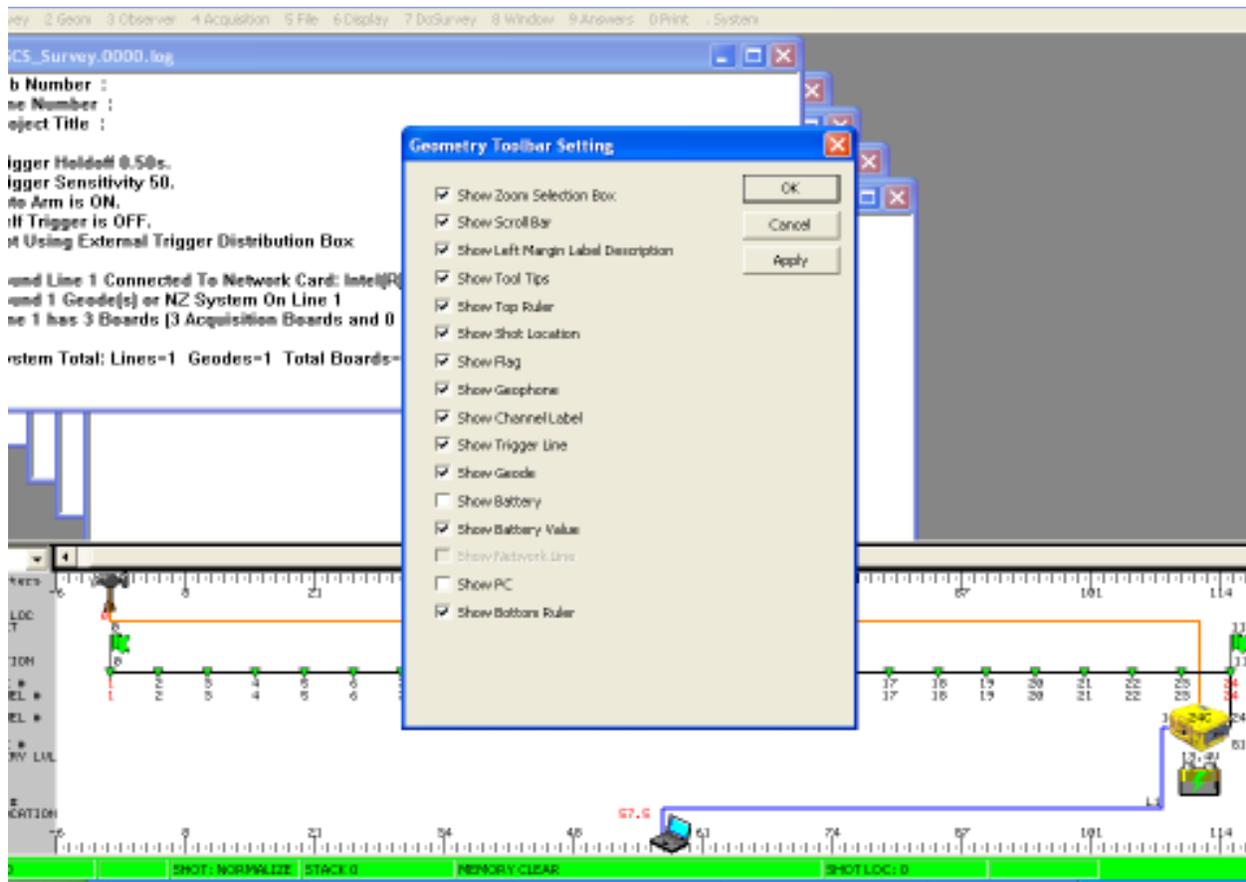


Figure 4. Checkbox selection in Geometry Toolbar Settings

- In the “Windows” menu at the top toolbar, uncheck the Pilot and Spectra windows or Pilot and Log windows, and Tile all Windows Vertically (see Figure 5)

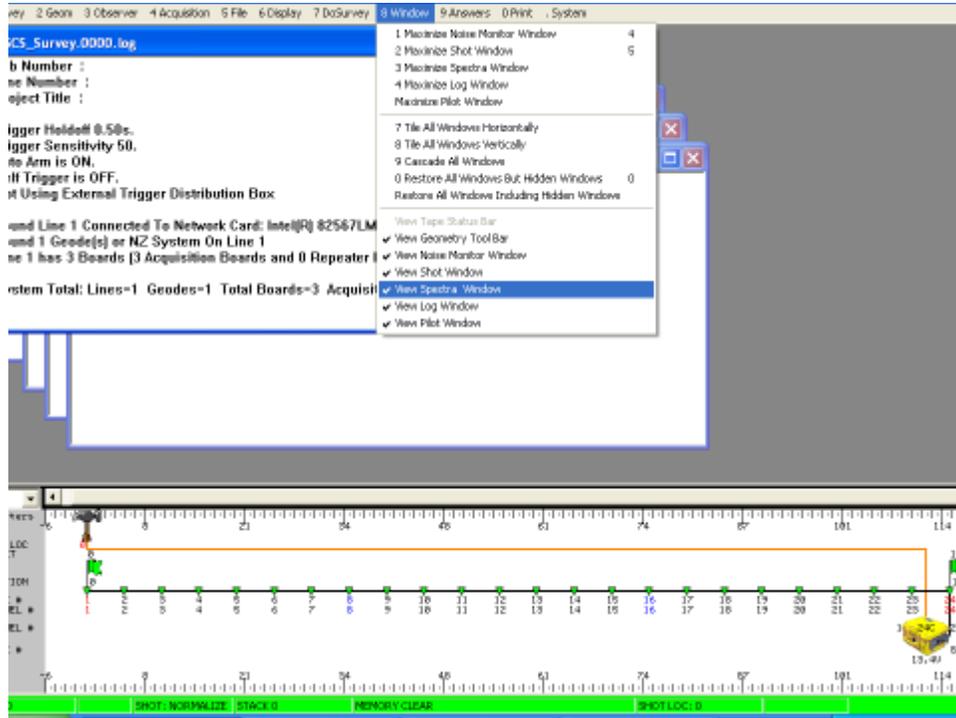


Figure 5. Checkbox options for the “Windows” Menu

- You should be left with a setup that looks similar to that shown in Figure 6. At this point you are ready to shoot and acquire data.

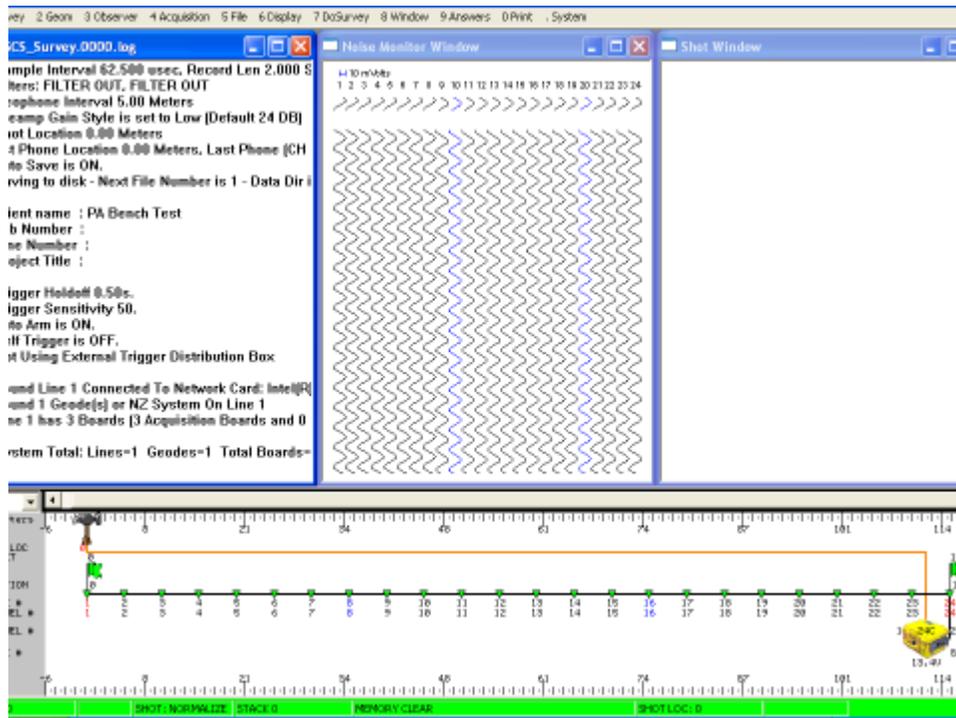


Figure 6. Appearance of Screen just prior to Shooting and Acquiring Data

In conclusion, I hope this document will help guide you in easily setting up and running a survey using the Geode Software. The options I used in this demonstration are not ideal for every experiment, but I hope they will provide the user with a reference and some setup experience before the big field survey.

Tips: Default setting has Geophone-1/channel-1 starting at the pigtail end of the cable. I prefer to reverse the order and have channel-1 starting at the first Geode location. To reverse the channel sequence, select the Channel Remapping option in the Geometry Toolbar Settings shown in Figure 3. Check the Enable Channel Remapping box and also check the Reverse Channel Order box up top. Don't forget your Hot Keys. They are an easy and powerful way to navigate complicated software. Ideally, once you are set up you should be able to run the entire survey using only 4 Hot Keys. When working on a field course survey with students, for example, you may have some false trigger or bad hammer swings. In this case it might be useful to turn off the Auto Save and use the Hot Keys to save and erase only the known good data files/hammer strikes.

Cables: *There are a few things we would like you to do and not do when handling the cables:*

- ***DO NOT wind the cables around your shoulder and elbow (like an extension cord), rolling or winding the cables causes internal stress on the wiring and will lead to cable failure. Cables should be loaded into the boxes or barrels spaghetti-style... do not spool them in (Figure 7).***
- ***Mark any bad takeouts or geophones with some kind of marking tape, and leave a note in the barrel or box.***
- ***Replace all caps on connectors...keep the connectors clean...keep and return the Geodes clean, Thank You.***



Figure 7. Proper Spaghetti-style method for storing Geode cables