Stress Dependent Program Guide

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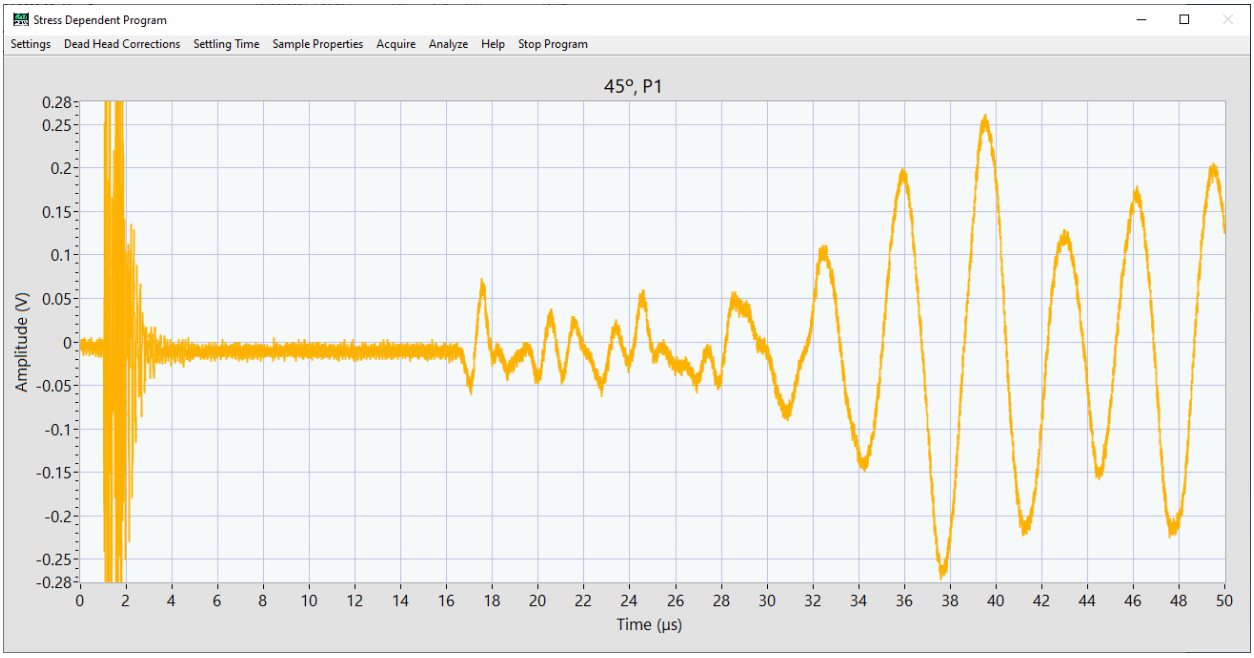

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Program Overview

The Stress Dependent Program is designed to be a versatile program capable of acquiring and analyzing data collected from the 3D stress dependent. This document is meant to help new users learn how to navigate, setup, and control the Stress Dependent Program easily. Some of the controls and indicators in the program have descriptions and tips associated with them. If you are unsure of what a control does or what a setting should be, hover the mouse over it for a few seconds to see its tip. You can also right click the control or indicator to access a more detailed description.

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Program Setup

The menu bar at the top of the program is how you will access the various settings windows. When beginning a new test, you can work your way from left to right to setup the instruments, acquire data, and prepare the reports. When you first open the Stress Dependent Program, it will load the last settings used when the program was closed. This is designed to save time and allow the user to close the program between samples if needed. Once a setting is changed, it is immediately used throughout the program and templates so there is no need to close the program to save your changes.

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Settings

The settings window is where the user can set the VISA Resources for the switchbox and oscilloscope. The values are set to defaults so they should never need to be changed.

NOTE: If for some reason the instruments are unplugged from the computer and plugged into a new USB port, these settings may need to be changed.

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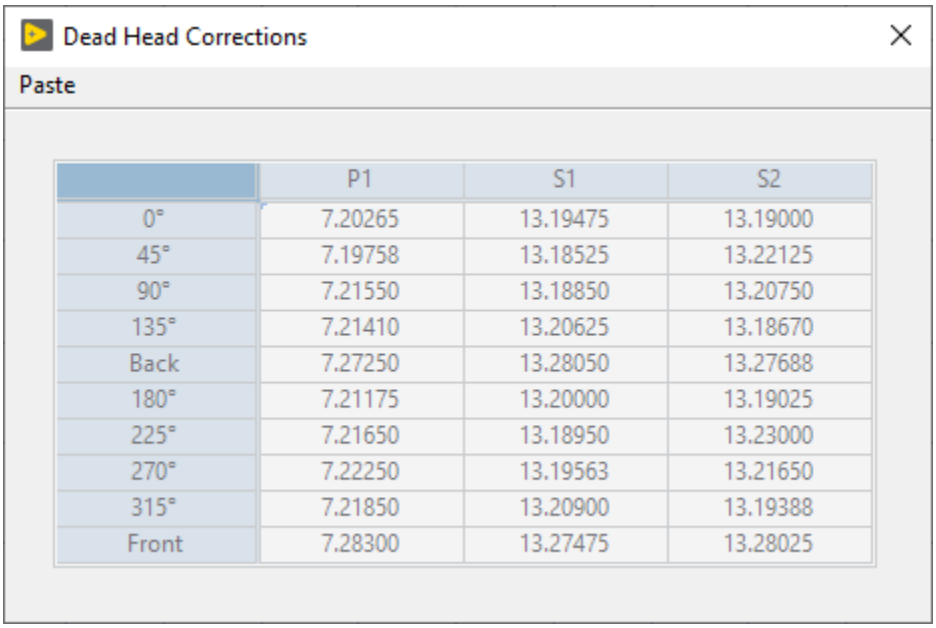
Dead Head Corrections

The dead head corrections are also set to default values, so they do not need to be adjusted regularly. When a new dead head correction test has been completed and you're ready to enter the data into the program, open the dead head corrections window, copy the data from excel, and click paste in the dead head corrections window menu (alternatively, you can click the window to select it and the press *ctrl + v*).

NOTE: when copying data from excel, the data must be in the exact format as shown below



	P1	S1	S2
0°	7.20265	13.19475	13.19000
45°	7.19758	13.18525	13.22125
90°	7.21550	13.18850	13.20750
135°	7.21410	13.20625	13.18670
Back	7.27250	13.28050	13.27688
180°	7.21175	13.20000	13.19025
225°	7.21650	13.18950	13.23000
270°	7.22250	13.19563	13.21650
315°	7.21850	13.20900	13.19388
Front	7.28300	13.27475	13.28025

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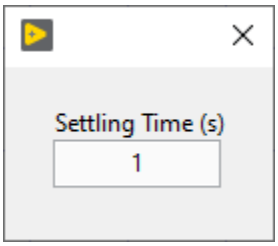
Settling Time

The settling time default value is set to one second and is the time the program allows to pass before acquiring a waveform and switching to the next sample face. It can be set to a longer interval for demonstration purposes but is not needed for quick and accurate data acquisition.



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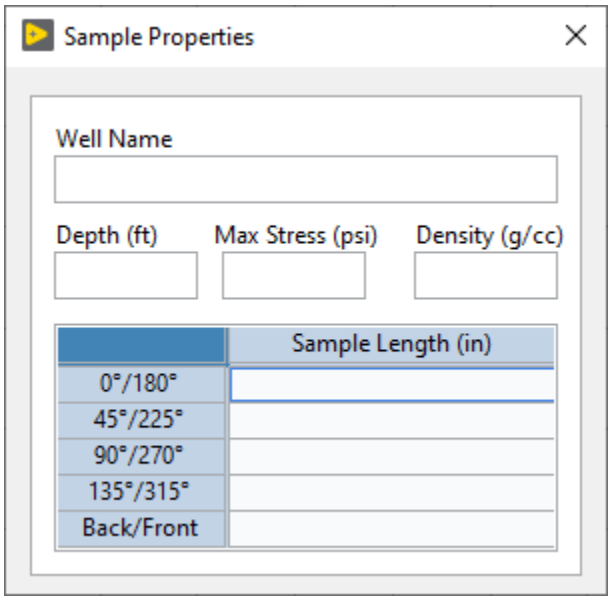
Sample Properties

The sample properties window is where you will enter the well name, depth (ft), max stress (psi), sample density (g/cc), and the length (in) of each sample face. The well name, depth, and max stress are used for automatically generating the sample file names for the raw data files so it is important to remember to enter them before each test. The density and length are not needed until the data processing step so if you do not have the needed information at the beginning of the test, you must remember to manually enter them into each spreadsheet. The program will prompt you for them again when the data has been regressed.



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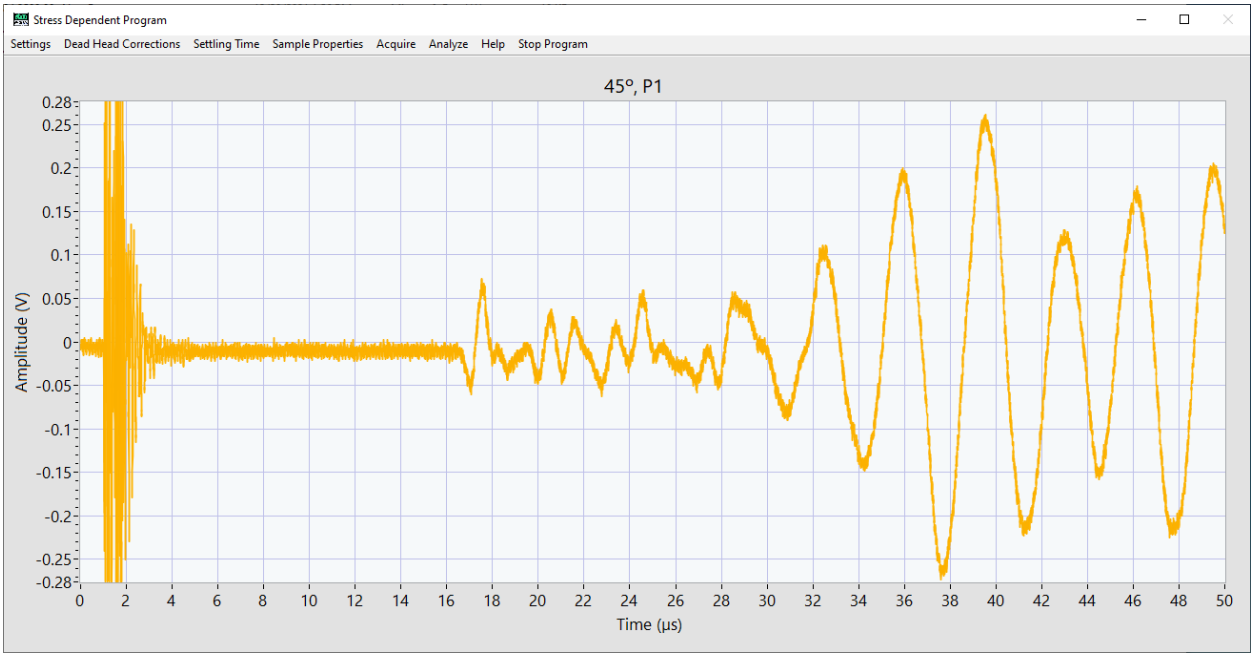
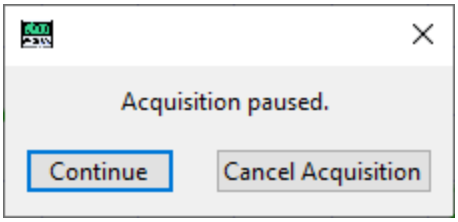
Acquire

Once all settings have been entered, click acquire to begin the data acquisition. The program will switch the switchbox to the first face, wait the number of seconds specified by the settling time, then capture the waveform, an repeat until all waveforms have been captured. The graphs title will change to indicate which wave and face you are viewing.



NOTE: While the acquisition is taking place, you can press the *spacebar* to pause the acquisition. While paused, you have the options of either continuing the acquisition or canceling the acquisition.



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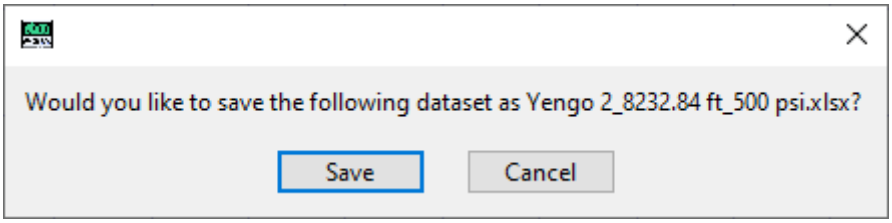
When the acquisition is done, the program will ask if you would like to save the data at this time. When you press save, the program will open a file dialog box allowing you to select where you would like to save the dataset. If you press cancel, all data from the previous acquisition will be lost.

NOTE: The file name in the prompt is based off the sample properties information. If the file name seems incorrect, cancel the prompt, update the sample properties, and re-acquire the data.



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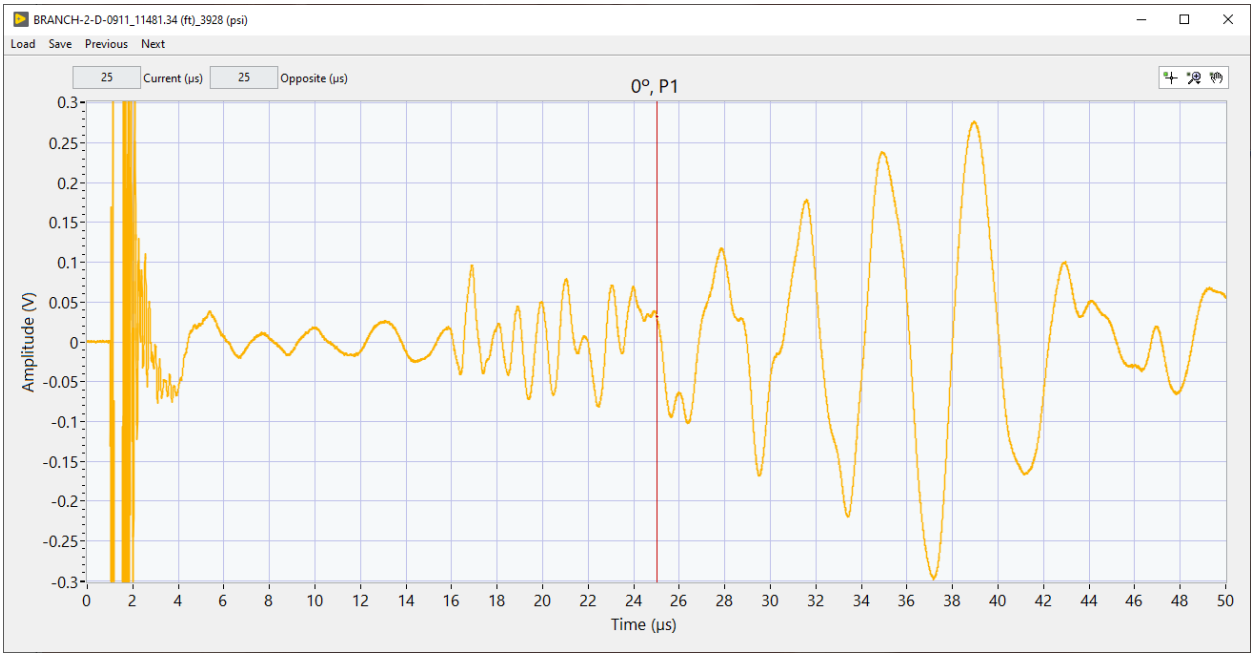
Analyze

When it's time to pick your arrival times, select Analyze. The program will ask you to select the raw data file for the sample you would like to analyze and load it into the window seen below.

NOTE: You can analyze one dataset while acquiring another.



From this window, you can load a different file to analyze, you can save your current arrival time selections to a spreadsheet, or you can navigate to the next or previous waveform. To make an arrival time selection, grab the cursor located in the center of the graph and drag it to the desired position. As the cursor moves, and indicator in the top left corner of the screen will display the current selection in microseconds. To the right of this indicator is an additional indicator that displays the arrival time selection for the opposite sample face. You may use these to QC your work. Additionally, you may press shift to toggle the opposite face's waveform on or off for better comparison.

NOTE: The default value for all selections is 25 microseconds so this will be displayed in the indicator until the selection is changed.

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Appendix

This appendix is designed to assist the user with problems associated with the stress dependent equipment such as the switchbox and oscilloscope.

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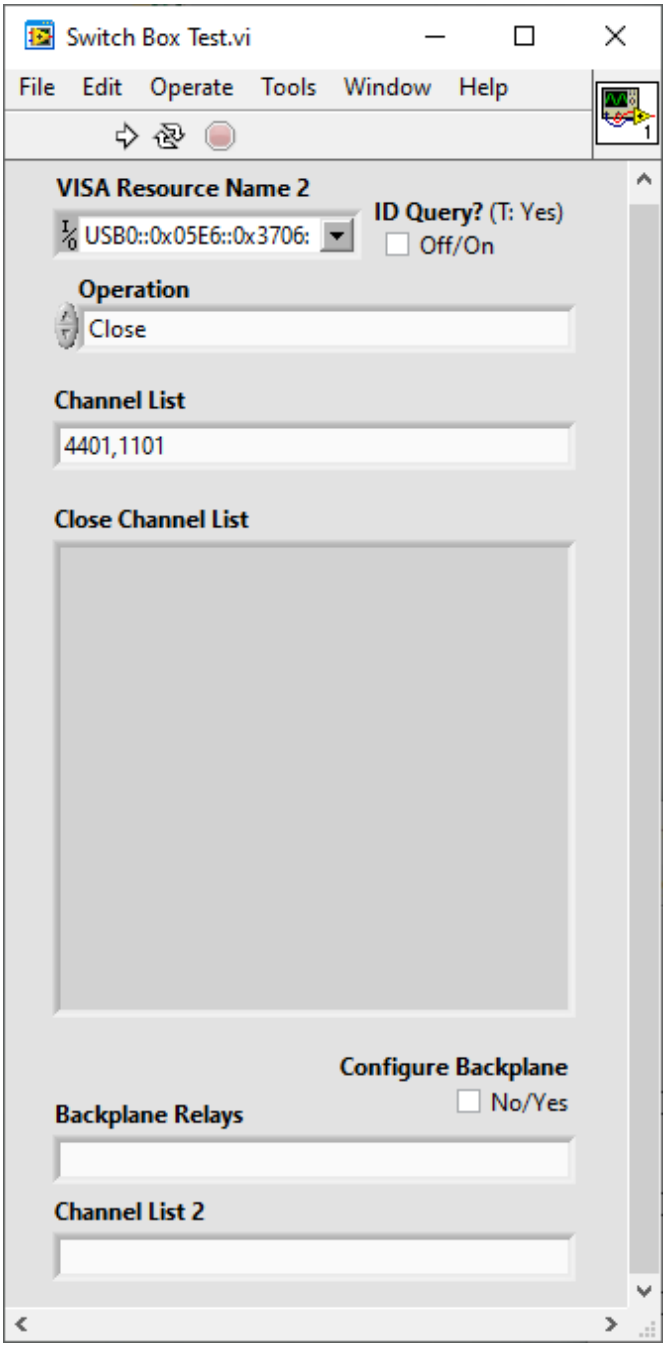
Switchbox

The table below lists the switch box commands associated with each capture for each surface. **NOTE:** To measure the 180^{o} - Front faces, you must latch the back-plane relays using the commands listed at the bottom of the table. Should you need to latch individual latches for troubleshooting purposes, you can enter these commands separated by a comma into the *Switch Box Program*.

Example 1: The below configuration will allow you to view the P1 wave for the 0^{o} face. Press the run arrow to execute the command.



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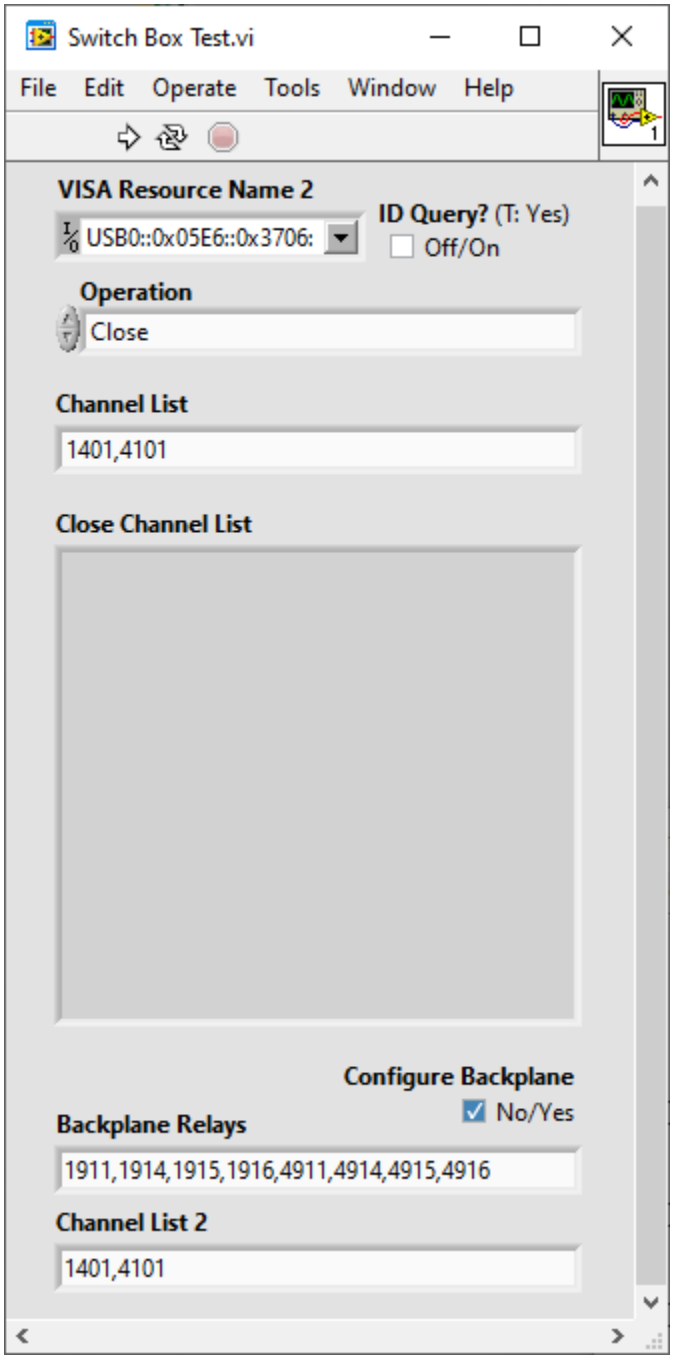
Example 2: The below configuration will allow you to view the P1 wave for the 180^{o} face. Press the run arrow to execute the command.



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	FACE	WAVE	RECORD	PULSE
	0°	P1	4401	1101
		S1	4502	1102
		S2	4603	1103
	45°	P1	4404	1104
		S1	4505	1105
		S2	4606	1106
	90°	P1	4407	1107
		S1	4508	1108
		S2	4609	1109
	135°	P1	4410	1110
		S1	4511	1111
		S2	4612	1112
	Rear	P1	4413	1113
		S1	4514	1114
		S2	4615	1115
BACK-PLANE RELAYS	180°	P1	1401	4101
		S1	1502	4102
		S2	1603	4103
	225°	P1	1404	4104
		S1	1505	4105
		S2	1606	4106
	270°	P1	1407	4107
		S1	1508	4108
		S2	1609	4109
	315°	P1	1410	4110
		S1	1511	4111
		S2	1612	4112
	Front	P1	1413	4113
		S1	1514	4114
		S2	1615	4115

BACK-PLANE RELAYS: 1911, 1914, 1915, 1916, 4911, 4914, 4915, 4916

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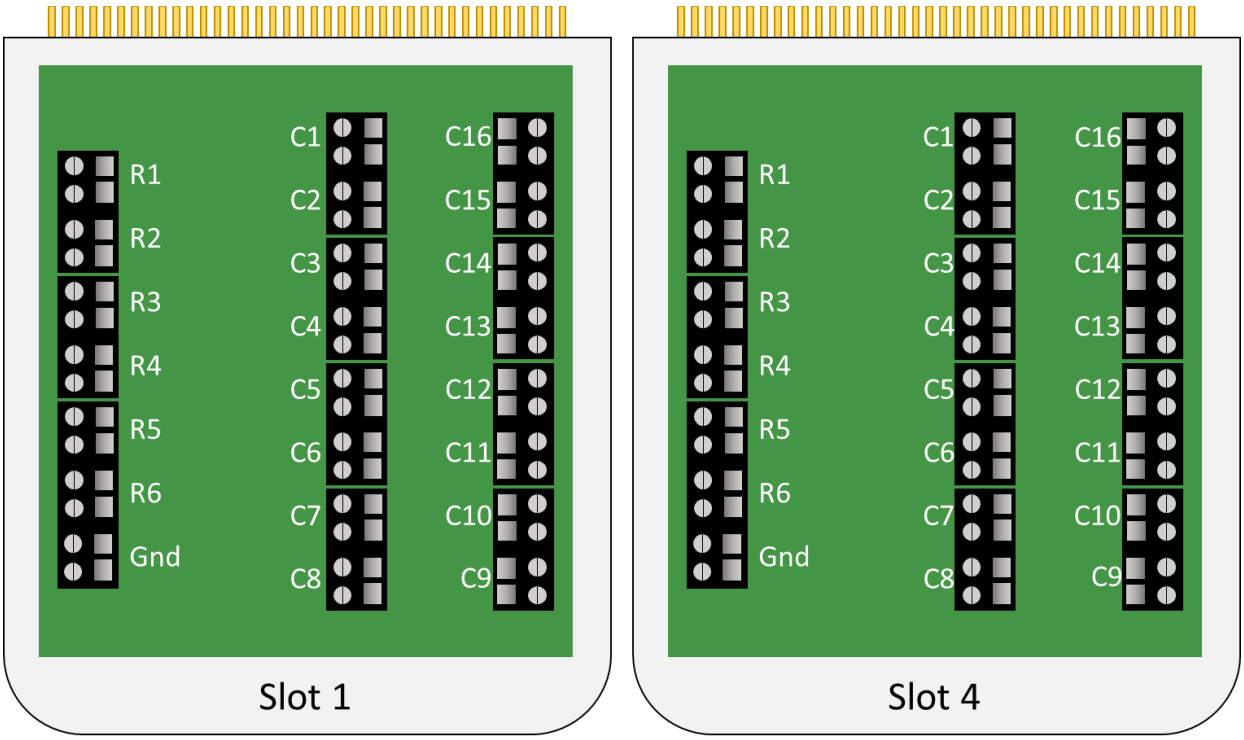
The following image shows the two 16-Channel slot cards used with the switchbox. The cards are connected to slot 1 and slot 4. Channels 1-15 on each card are connected to a specific crystal on the stress dependent. Relay 1 on slot 1 is connected to the pulser. Relay 4-6 on slot 4 is connected to the oscilloscope.



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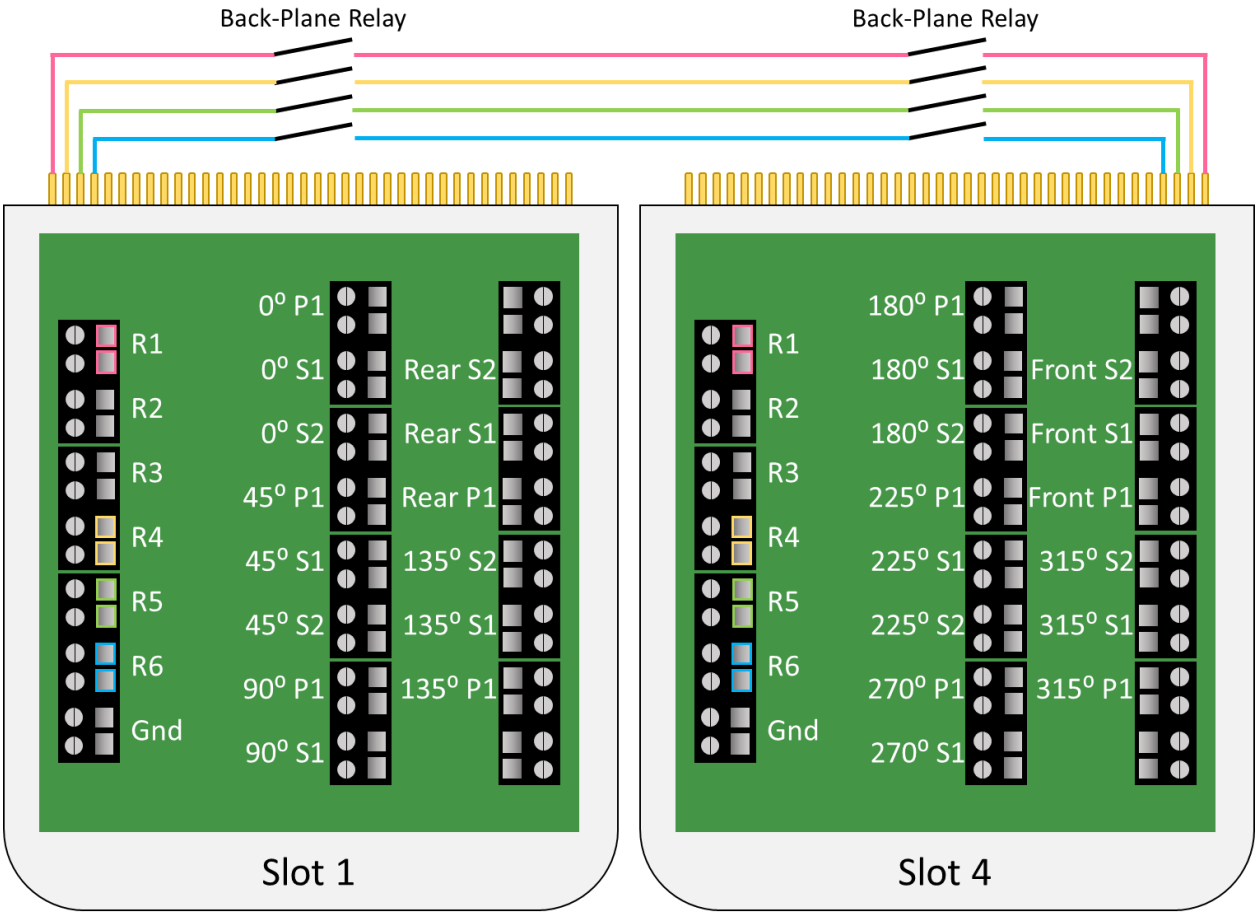
The following image gives further detail as to how the cards are connected to the stress dependent. Additionally, you can see how the relays are connected through the back-plane relays inside the switchbox.



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Oscilloscope