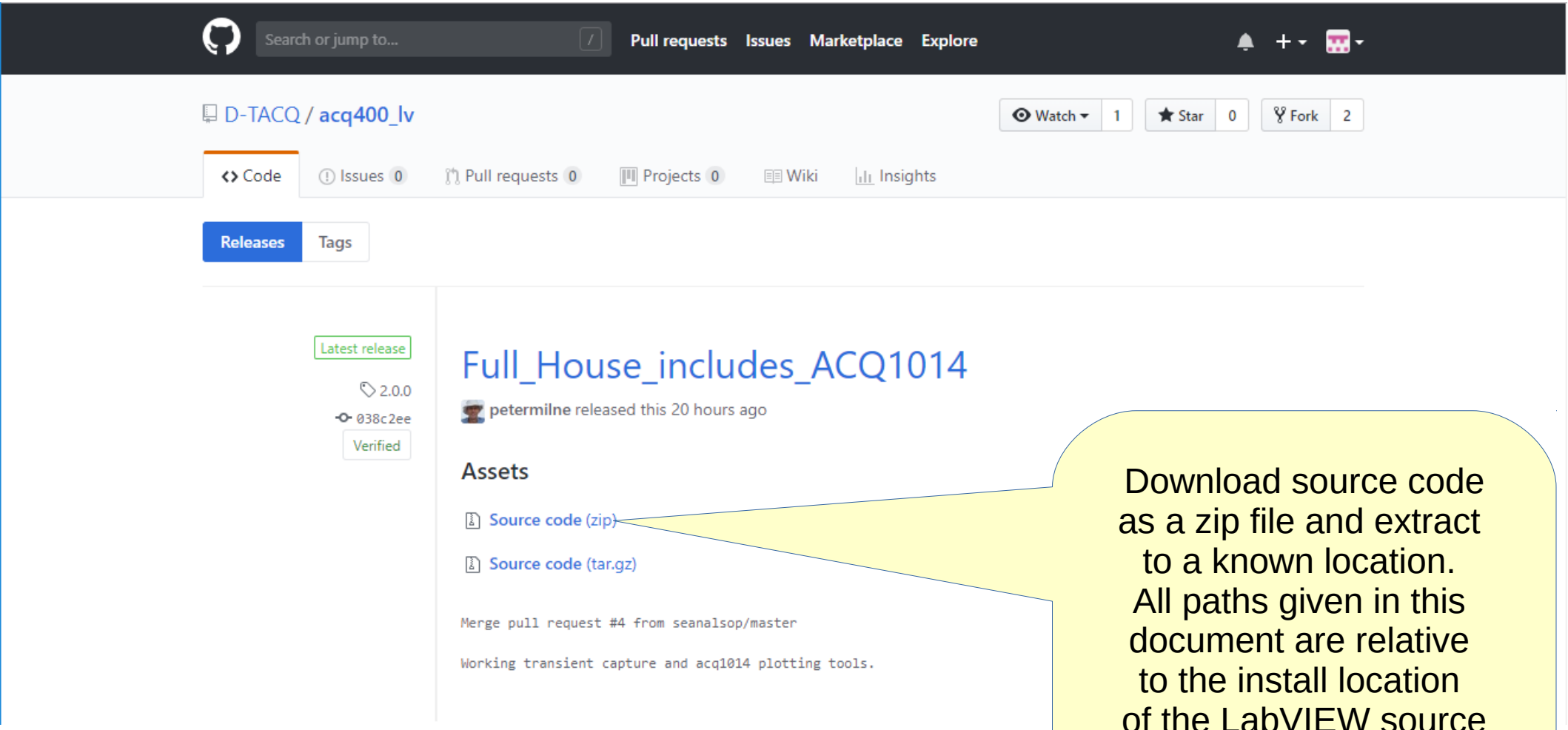
LabVIEW Guide – Installation Instructions

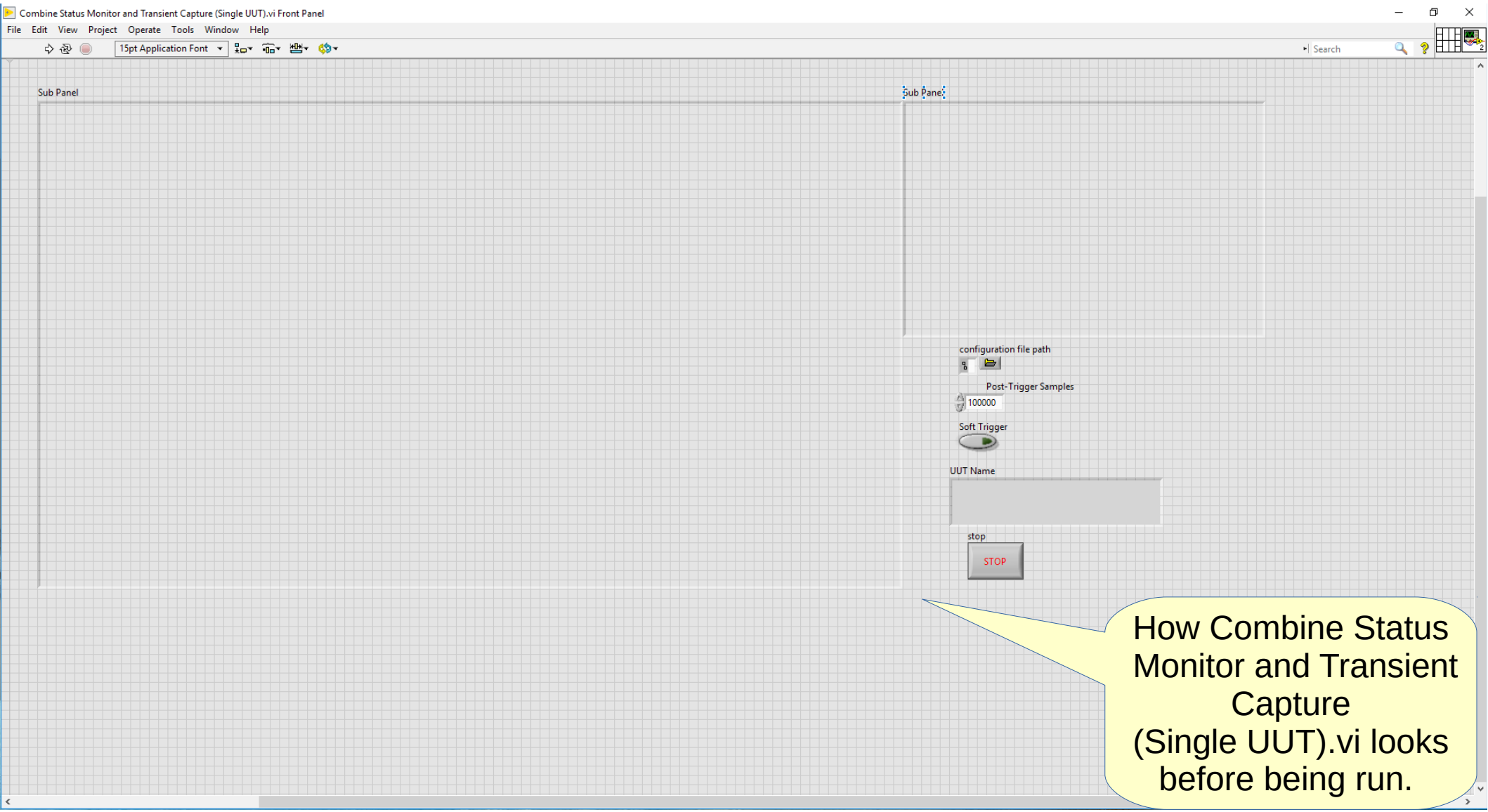
LabVIEW source available from: https://github.com/D-TACQ/acq400_lv/releases/tag/2.0.0

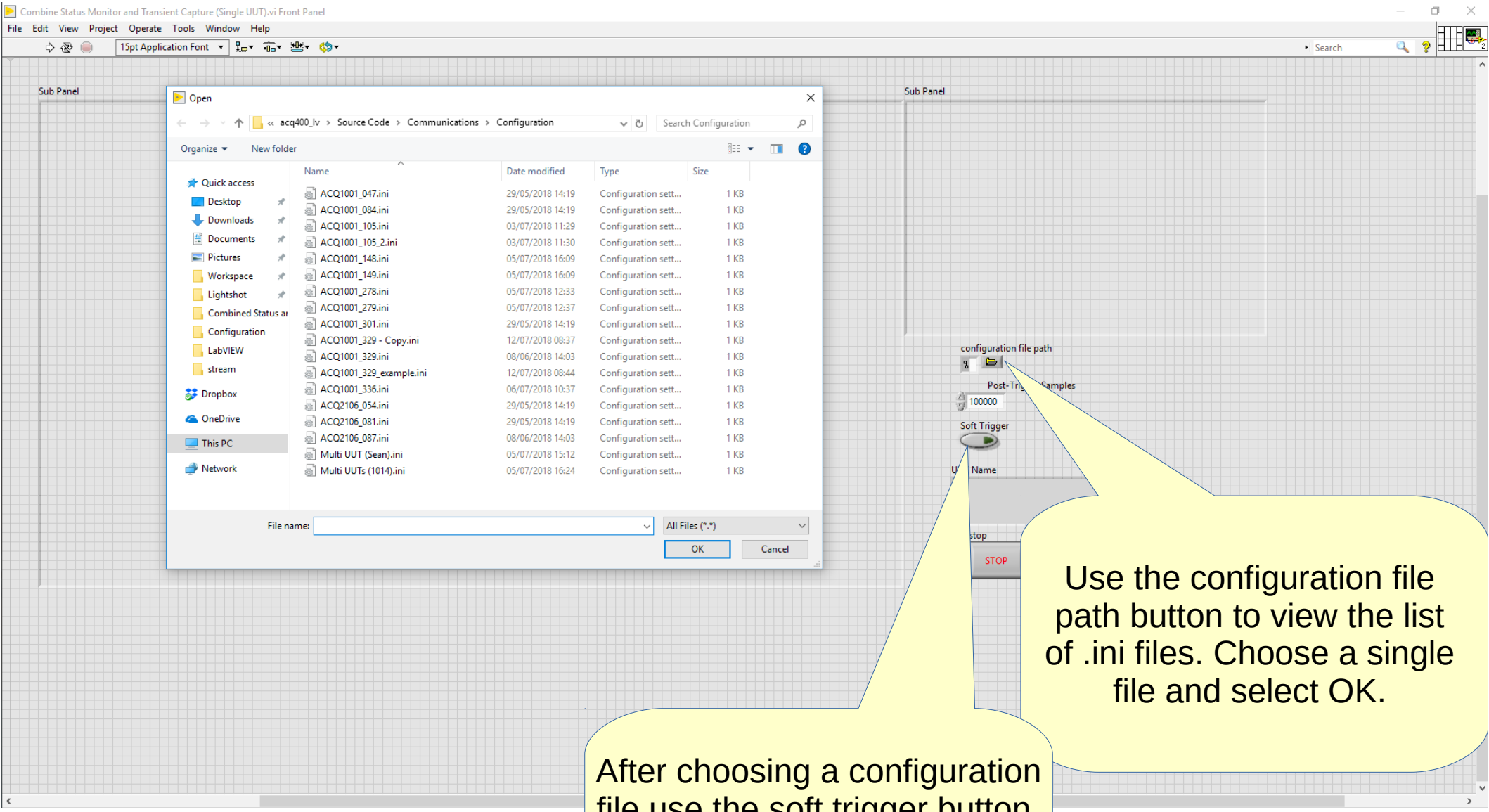


Download source code as a zip file and extract to a known location. All paths given in this document are relative to the install location of the LabVIEW source code. Any release from 2.0.0 onwards will be suitable.

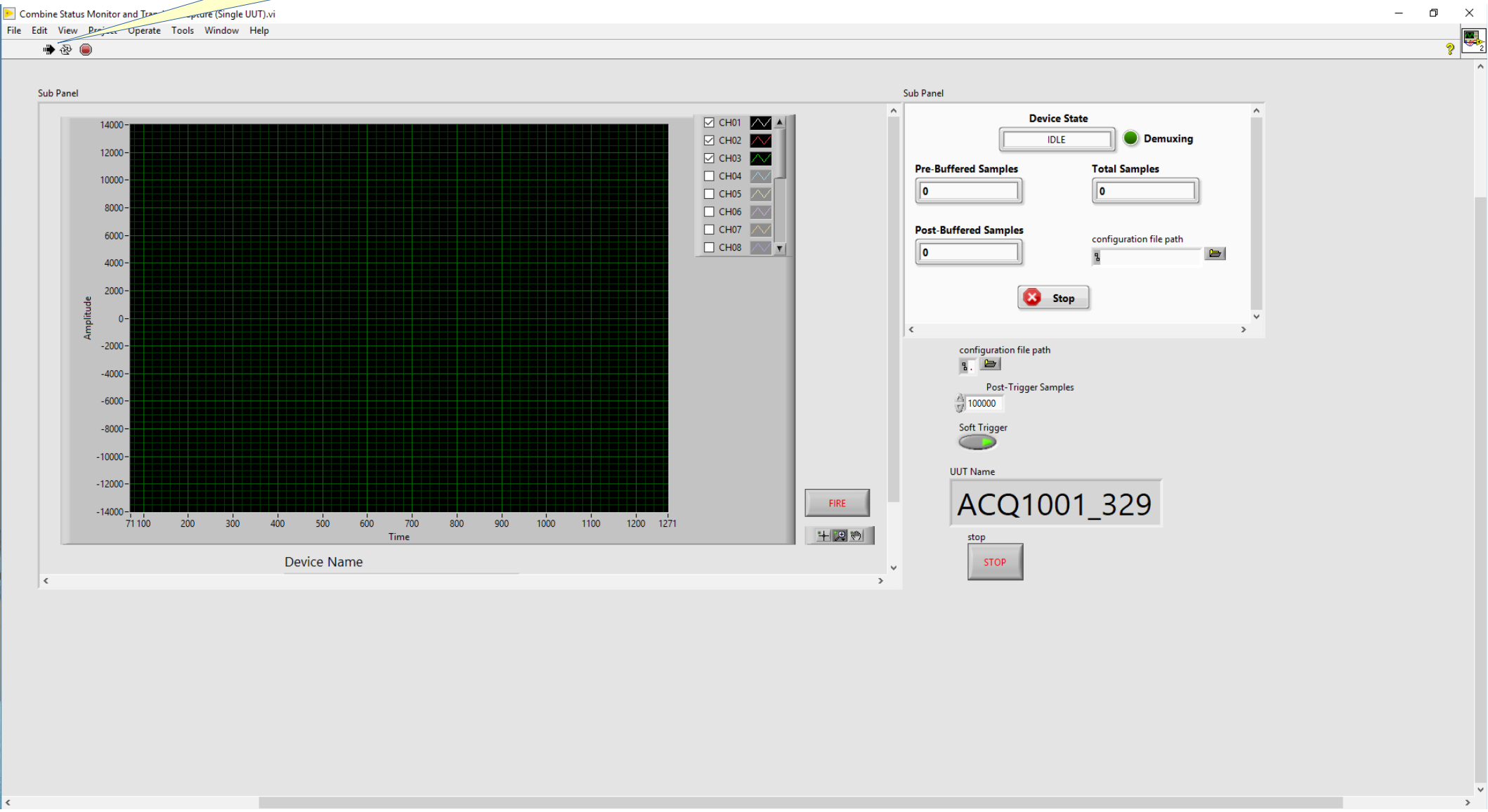
LabVIEW Guide – Transient capture

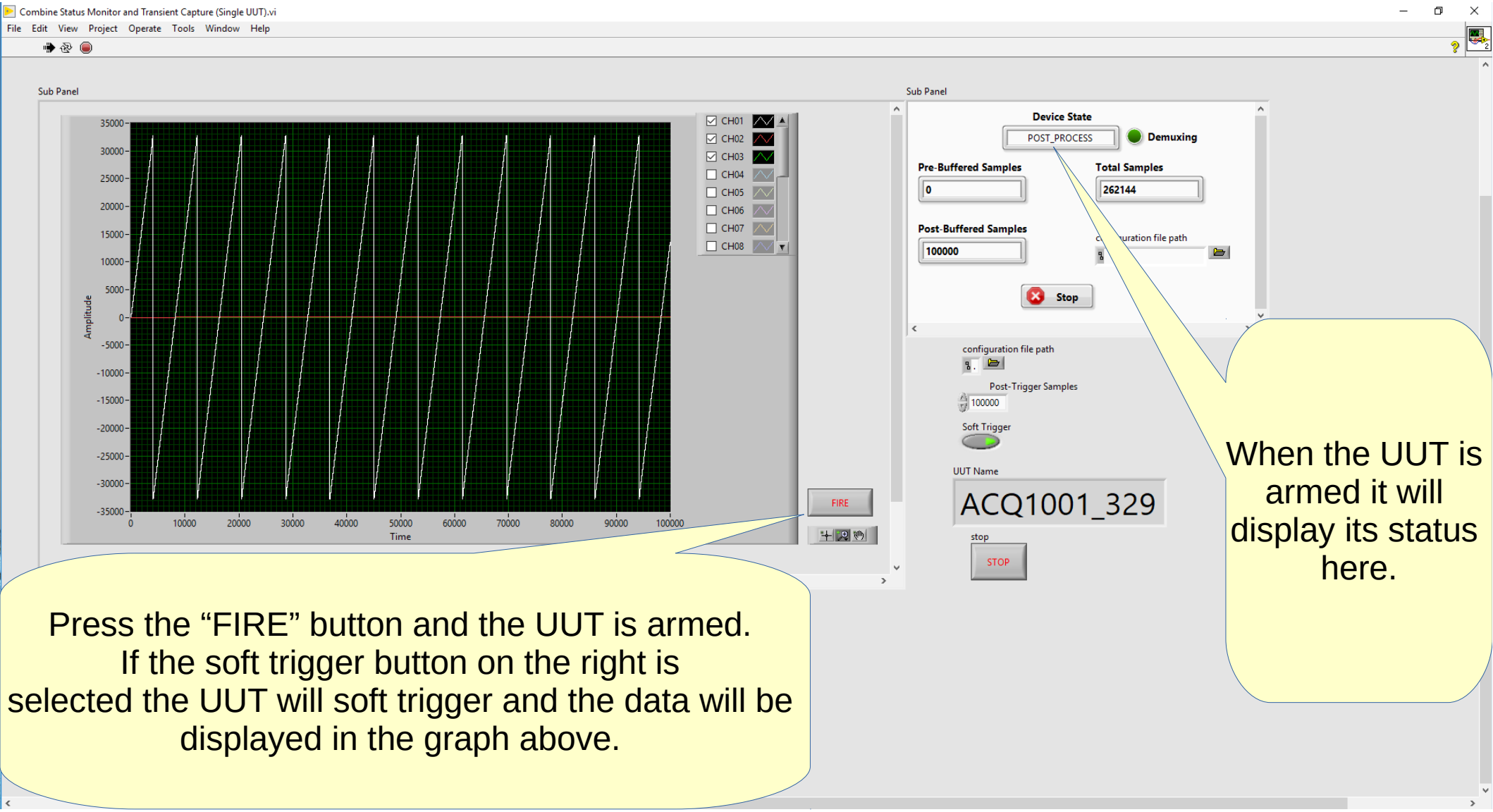
Vi available from: acq400_lv\Source Code\Combined Status and Transient\Combine Status Monitor and Transient Capture (Single UUT).vi




Combine Status Monitor and Transient Capture (Single UUT).vi Front Panel
File Edit View Project Operate Tools Window Help
15pt Application Font
Search
Sub Panel
Sub Panel
Open
acq400_lv › Source Code › Communications › Configuration
Search Configuration
Organize
New folder
Quick access
Desktop
Downloads
Documents
Pictures
Workspace
Lightshot
Combined Status ar
Configuration
LabVIEW
stream
Dropbox
OneDrive
This PC
Network
Name
Date modified
Type
Size
ACQ1001_047.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ1001_084.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ1001_105.ini 03/07/2018 11:29 Configuration sett... 1 KB
ACQ1001_105_2.ini 03/07/2018 11:30 Configuration sett... 1 KB
ACQ1001_148.ini 05/07/2018 16:09 Configuration sett... 1 KB
ACQ1001_149.ini 05/07/2018 16:09 Configuration sett... 1 KB
ACQ1001_278.ini 05/07/2018 12:33 Configuration sett... 1 KB
ACQ1001_279.ini 05/07/2018 12:37 Configuration sett... 1 KB
ACQ1001_301.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ1001_329 - Copy.ini 12/07/2018 08:37 Configuration sett... 1 KB
ACQ1001_329.ini 08/06/2018 14:03 Configuration sett... 1 KB
ACQ1001_329_example.ini 12/07/2018 08:44 Configuration sett... 1 KB
ACQ1001_336.ini 06/07/2018 10:37 Configuration sett... 1 KB
ACQ2106_054.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ2106_081.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ2106_087.ini 08/06/2018 14:03 Configuration sett... 1 KB
Multi UUT (Sean).ini 05/07/2018 15:12 Configuration sett... 1 KB
Multi UUTs (1014).ini 05/07/2018 16:24 Configuration sett... 1 KB
File name:
All Files (*.*)
OK
Cancel
configuration file path
100000
Soft Trigger
Name
STOP
Use the configuration file path button to view the list of .ini files. Choose a single file and select OK.
After choosing a configuration file use the soft trigger button to configure a soft trigger unless you want to use an external trigger with your UUT.

Press the “run vi” button in the top left of the screen and the graph and status monitor will be ready to display data as shown above.

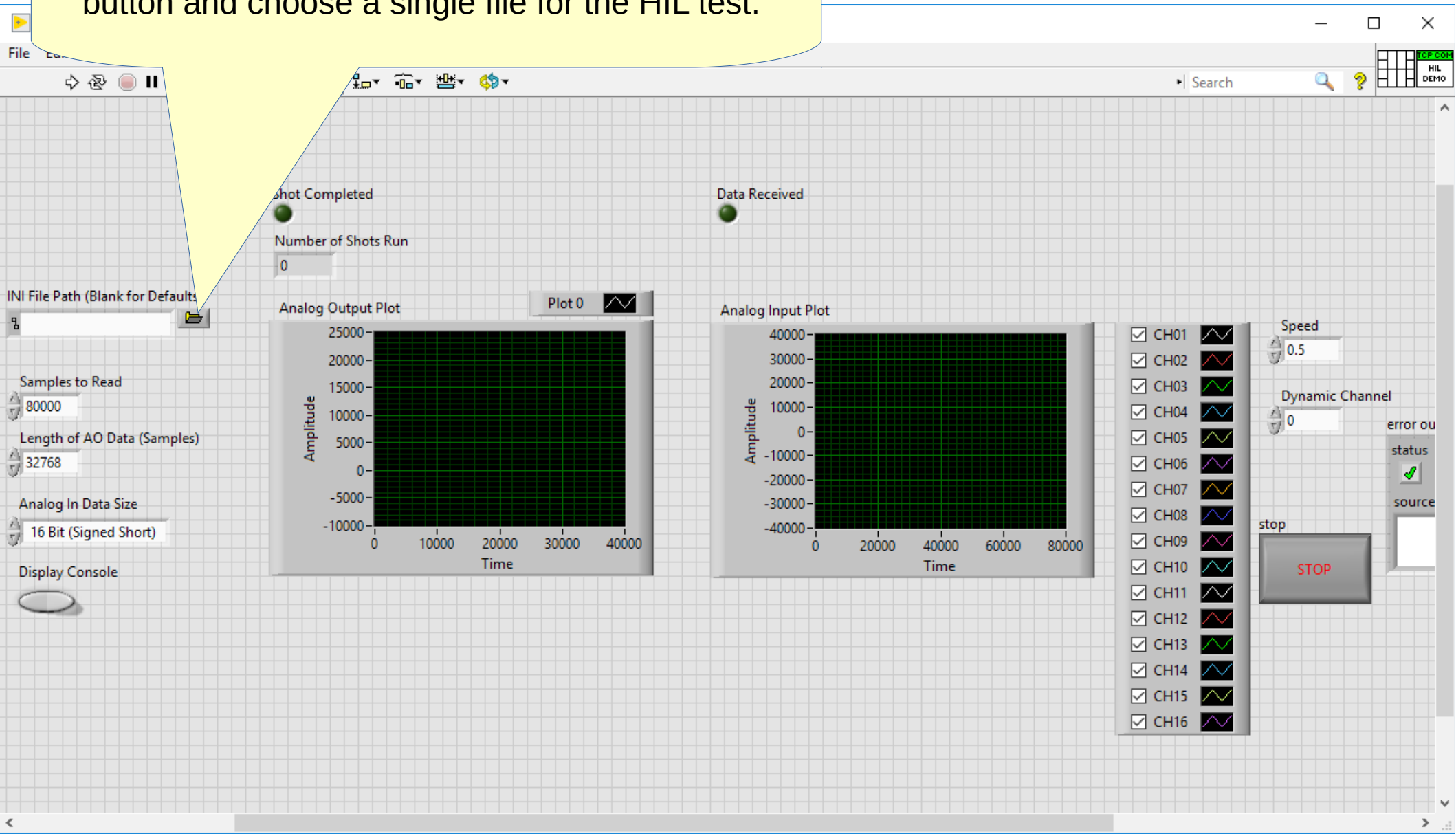


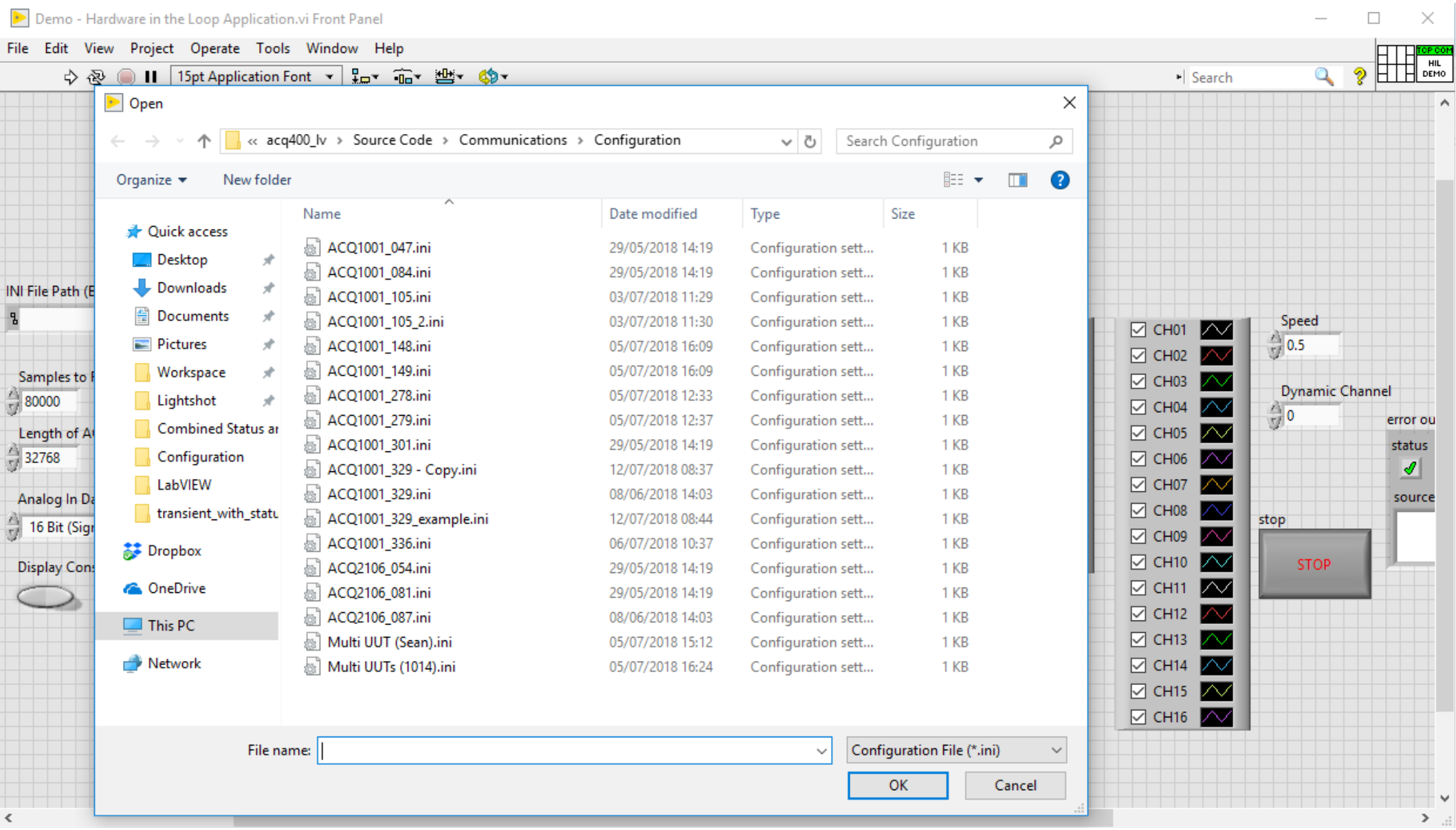

Combine Status Monitor and Transient Capture (Single UUT).vi
File Edit View Project Operate Tools Window Help
Sub Panel
Amplitude
Time
CH01
CH02
CH03
CH04
CH05
CH06
CH07
CH08
FIRE
Sub Panel
Device State
POST_PROCESS
Demuxing
Pre-Buffered Samples
0
Total Samples
262144
Post-Buffered Samples
100000
Stop
configuration file path
Post-Trigger Samples
100000
Soft Trigger
UUT Name
ACQ1001_329
stop
STOP
When the UUT is armed it will display its status here.
Press the “FIRE” button and the UUT is armed. If the soft trigger button on the right is selected the UUT will soft trigger and the data will be displayed in the graph above.

LabVIEW Guide – Hardware in the Loop

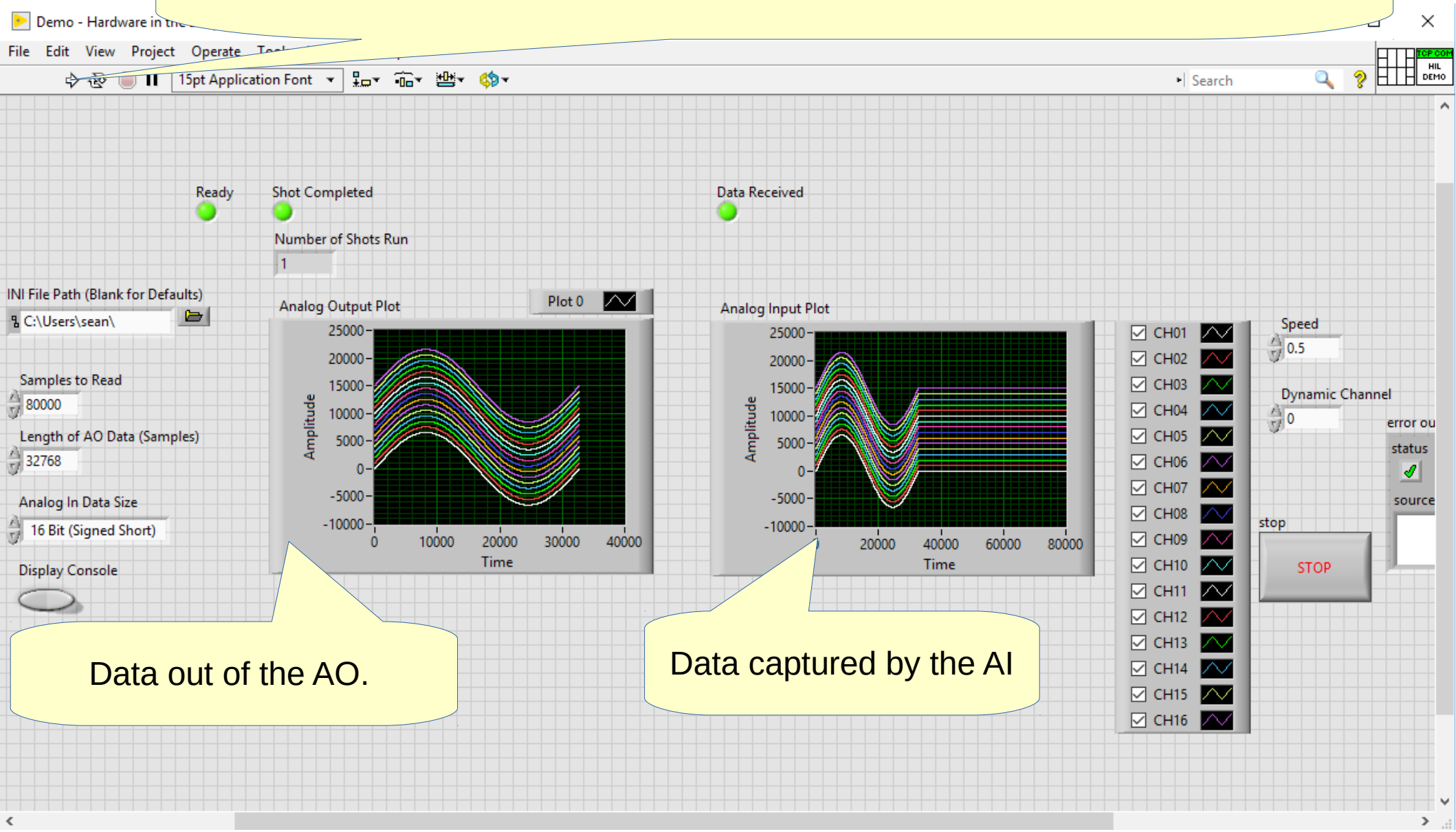
Vi available from: acq400_lv\Source Code\Hardware in the Loop (Advanced Demo)\Demo - Hardware in the Loop Application.vi

How the vi looks before it is run. Click the INI file path button and choose a single file for the HIL test.




Demo - Hardware in the Loop Application.vi Front Panel
File Edit View Project Operate Tools Window Help
15pt Application Font
Search
Open
« acq400_lv › Source Code › Communications › Configuration
Search Configuration
Organize
New folder
Quick access
Desktop
Downloads
Documents
Pictures
Workspace
Lightshot
Combined Status ar
Configuration
LabVIEW
transient_with_statu
Dropbox
OneDrive
This PC
Network
Name
Date modified
Type
Size
ACQ1001_047.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ1001_084.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ1001_105.ini 03/07/2018 11:29 Configuration sett... 1 KB
ACQ1001_105_2.ini 03/07/2018 11:30 Configuration sett... 1 KB
ACQ1001_148.ini 05/07/2018 16:09 Configuration sett... 1 KB
ACQ1001_149.ini 05/07/2018 16:09 Configuration sett... 1 KB
ACQ1001_278.ini 05/07/2018 12:33 Configuration sett... 1 KB
ACQ1001_279.ini 05/07/2018 12:37 Configuration sett... 1 KB
ACQ1001_301.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ1001_329 - Copy.ini 12/07/2018 08:37 Configuration sett... 1 KB
ACQ1001_329.ini 08/06/2018 14:03 Configuration sett... 1 KB
ACQ1001_329_example.ini 12/07/2018 08:44 Configuration sett... 1 KB
ACQ1001_336.ini 06/07/2018 10:37 Configuration sett... 1 KB
ACQ2106_054.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ2106_081.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ2106_087.ini 08/06/2018 14:03 Configuration sett... 1 KB
Multi UUT (Sean).ini 05/07/2018 15:12 Configuration sett... 1 KB
Multi UUTs (1014).ini 05/07/2018 16:24 Configuration sett... 1 KB
File name:
Configuration File (*.ini)
OK
Cancel
INI File Path (E
Samples to R
80000
Length of A
32768
Analog In Da
16 Bit (Sign
Display Cons
CH01
CH02
CH03
CH04
CH05
CH06
CH07
CH08
CH09
CH10
CH11
CH12
CH13
CH14
CH15
CH16
Speed
0.5
Dynamic Channel
0
error ou
status
source
stop
STOP
TOP CON
HIL DEMO

If the default settings are okay for the hardware you are using then click the run button in the top left of the window and the loop test will begin.

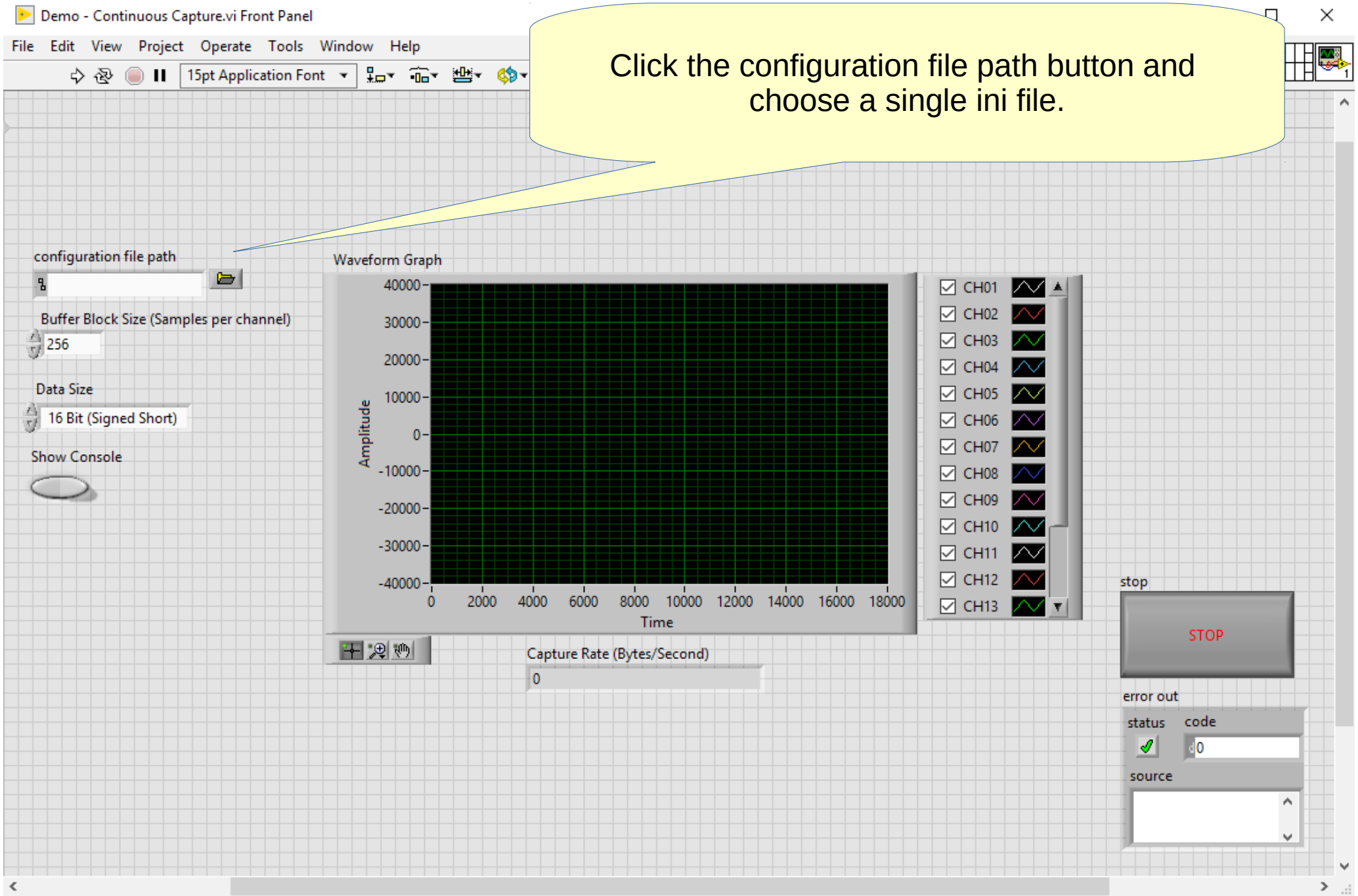


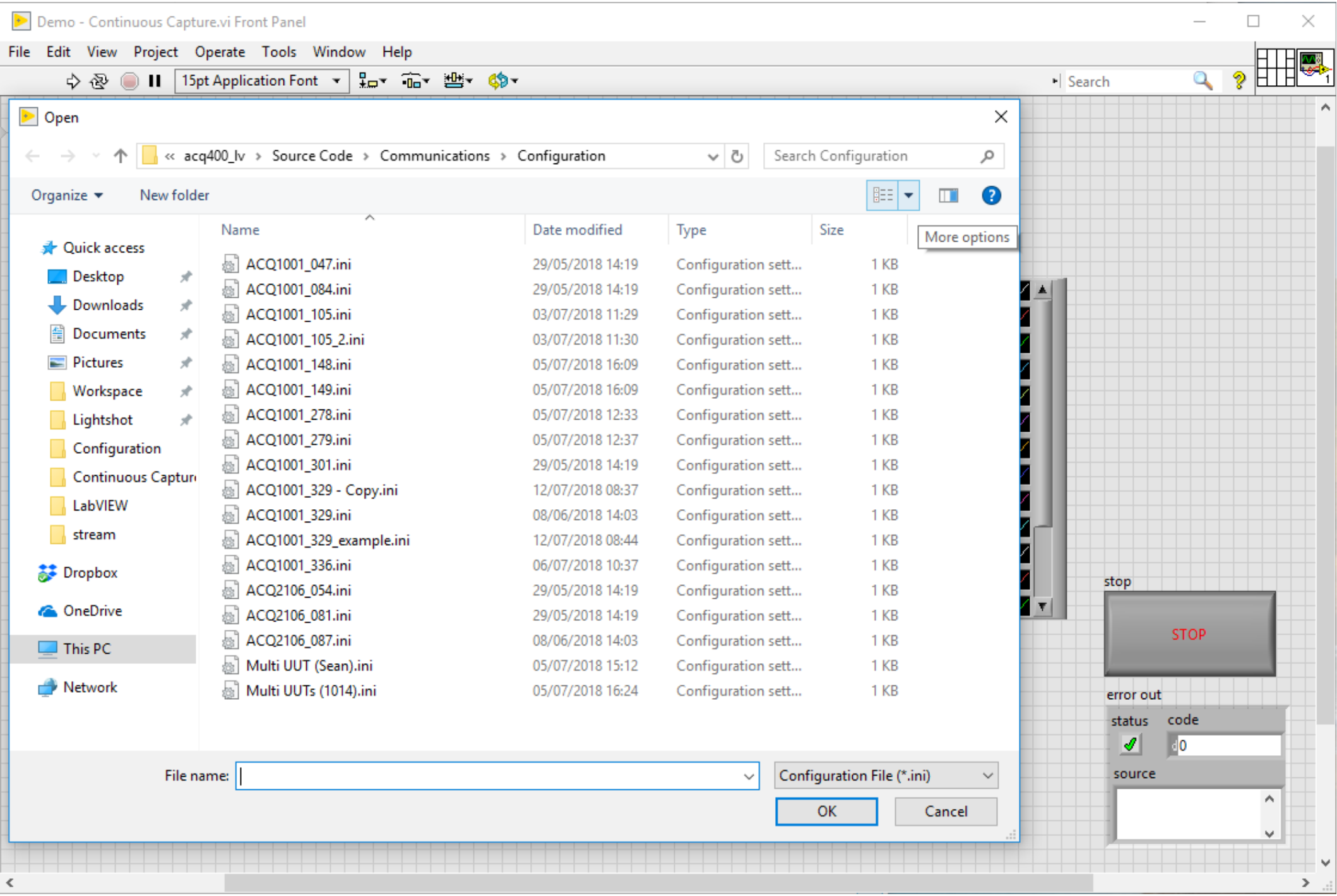
Data out of the AO.

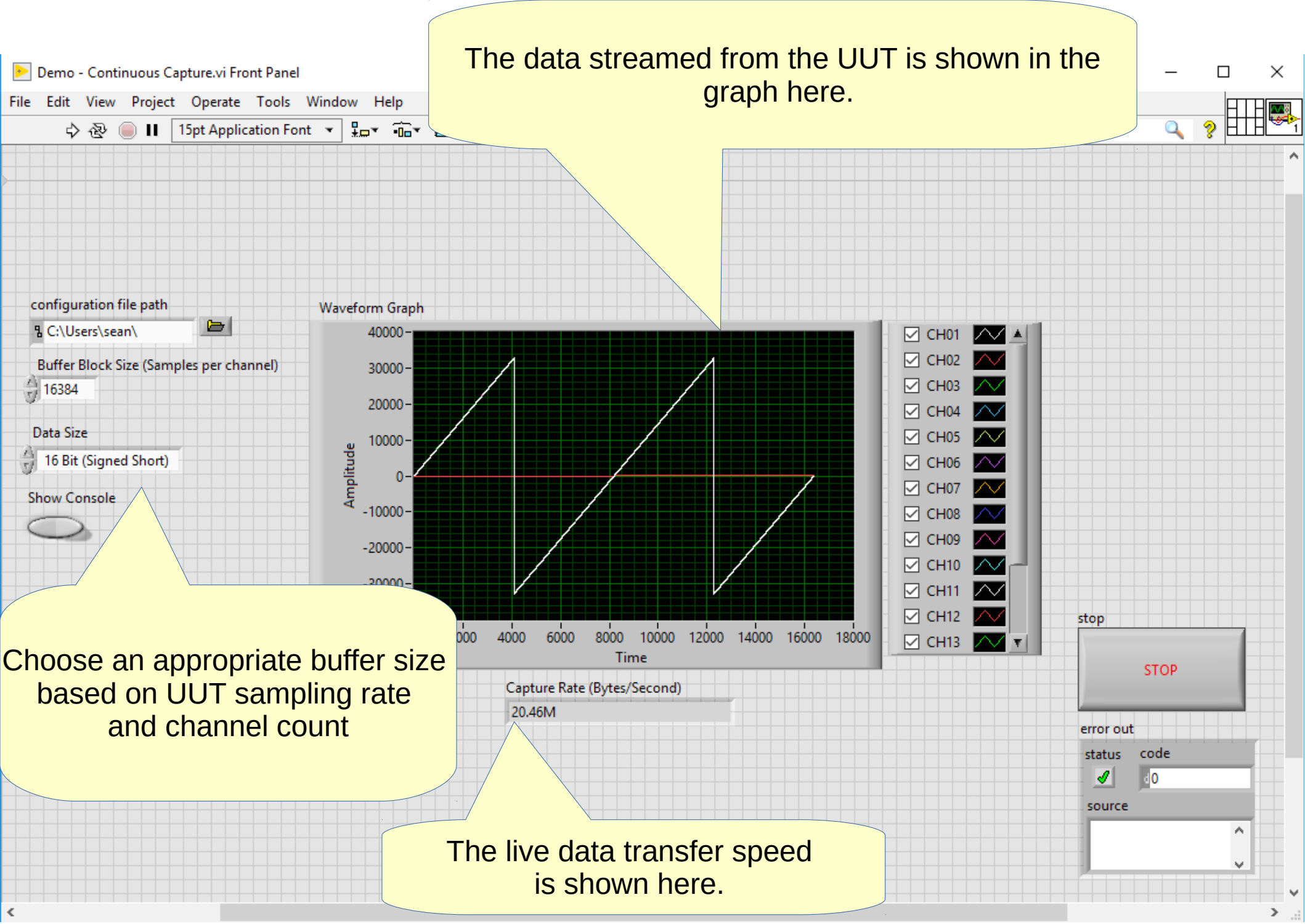
Data captured by the AI

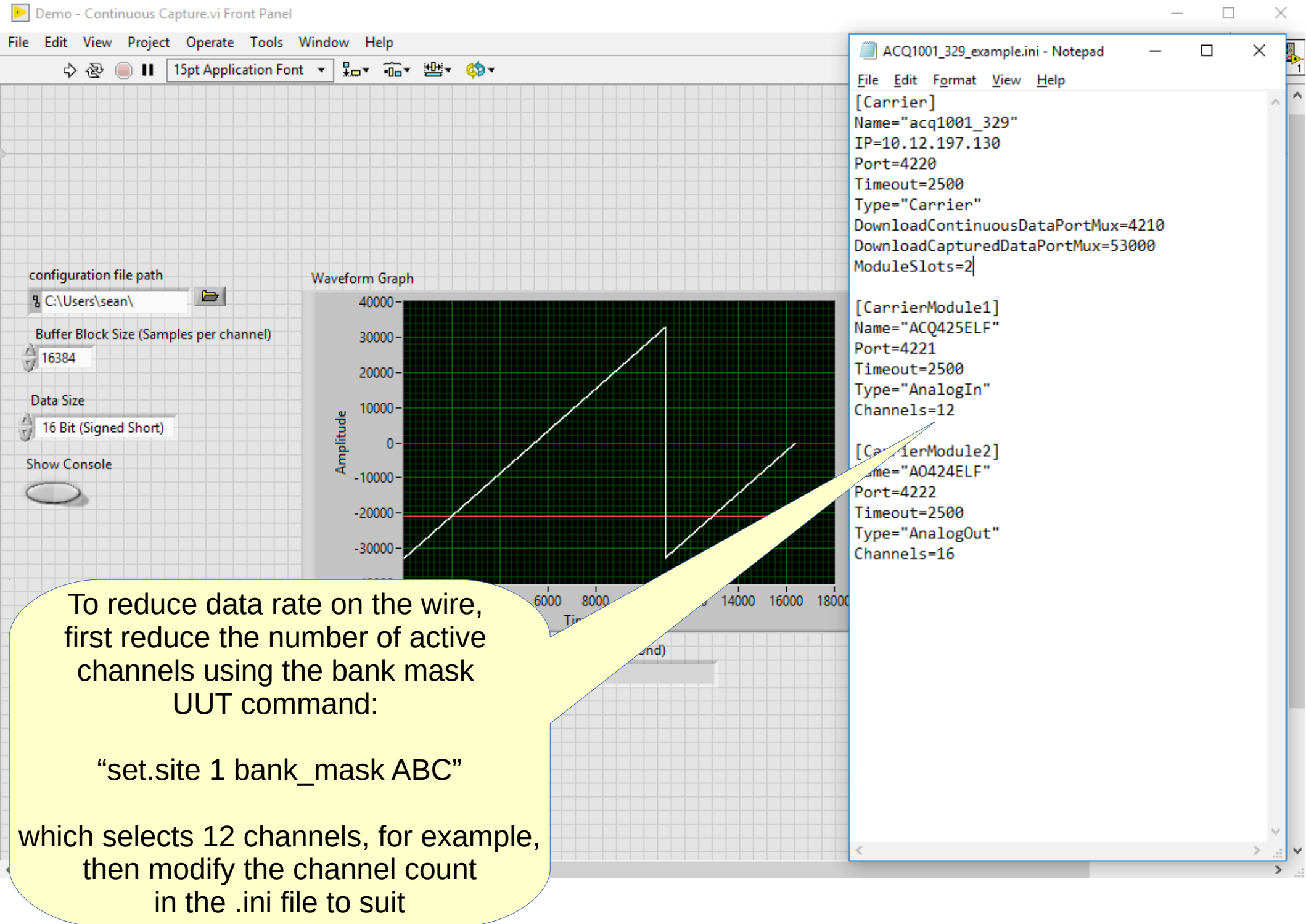
LabVIEW Guide – Streaming data

Vi available from: acq400_lv\Source Code\Continuous Capture (Advanced Demo)\Demo - Continuous Capture.vi



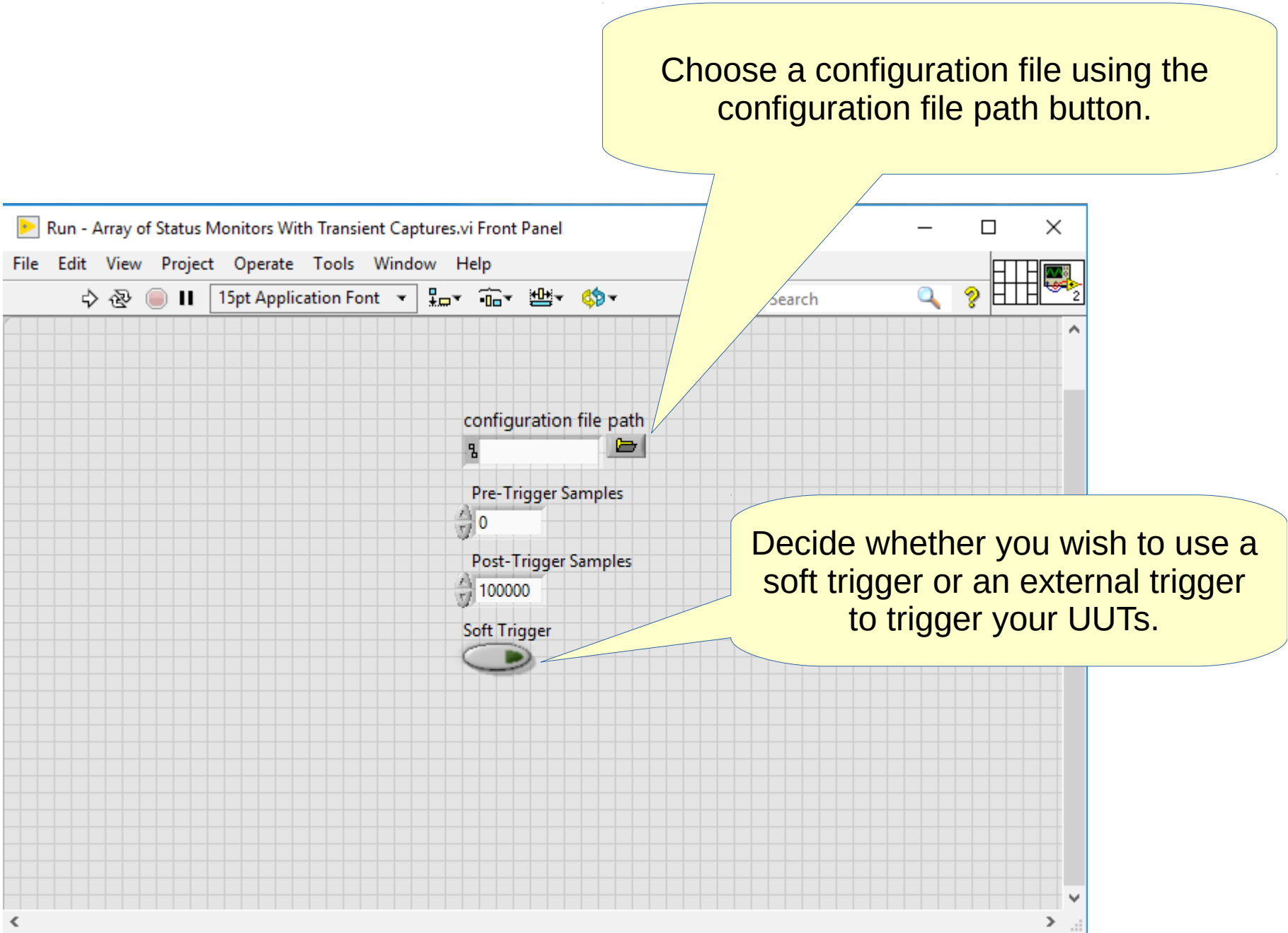

Demo - Continuous Capture.vi Front Panel
File Edit View Project Operate Tools Window Help
15pt Application Font
Search
Open
« acq400_lv › Source Code › Communications › Configuration
Search Configuration
Organize
New folder
More options
Quick access
Desktop
Downloads
Documents
Pictures
Workspace
Lightshot
Configuration
Continuous Captur
LabVIEW
stream
Dropbox
OneDrive
This PC
Network
Name
Date modified
Type
Size
ACQ1001_047.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ1001_084.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ1001_105.ini 03/07/2018 11:29 Configuration sett... 1 KB
ACQ1001_105_2.ini 03/07/2018 11:30 Configuration sett... 1 KB
ACQ1001_148.ini 05/07/2018 16:09 Configuration sett... 1 KB
ACQ1001_149.ini 05/07/2018 16:09 Configuration sett... 1 KB
ACQ1001_278.ini 05/07/2018 12:33 Configuration sett... 1 KB
ACQ1001_279.ini 05/07/2018 12:37 Configuration sett... 1 KB
ACQ1001_301.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ1001_329 - Copy.ini 12/07/2018 08:37 Configuration sett... 1 KB
ACQ1001_329.ini 08/06/2018 14:03 Configuration sett... 1 KB
ACQ1001_329_example.ini 12/07/2018 08:44 Configuration sett... 1 KB
ACQ1001_336.ini 06/07/2018 10:37 Configuration sett... 1 KB
ACQ2106_054.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ2106_081.ini 29/05/2018 14:19 Configuration sett... 1 KB
ACQ2106_087.ini 08/06/2018 14:03 Configuration sett... 1 KB
Multi UUT (Sean).ini 05/07/2018 15:12 Configuration sett... 1 KB
Multi UUTs (1014).ini 05/07/2018 16:24 Configuration sett... 1 KB
File name:
Configuration File (*.ini)
OK
Cancel
stop
STOP
error out
status
code
0
source

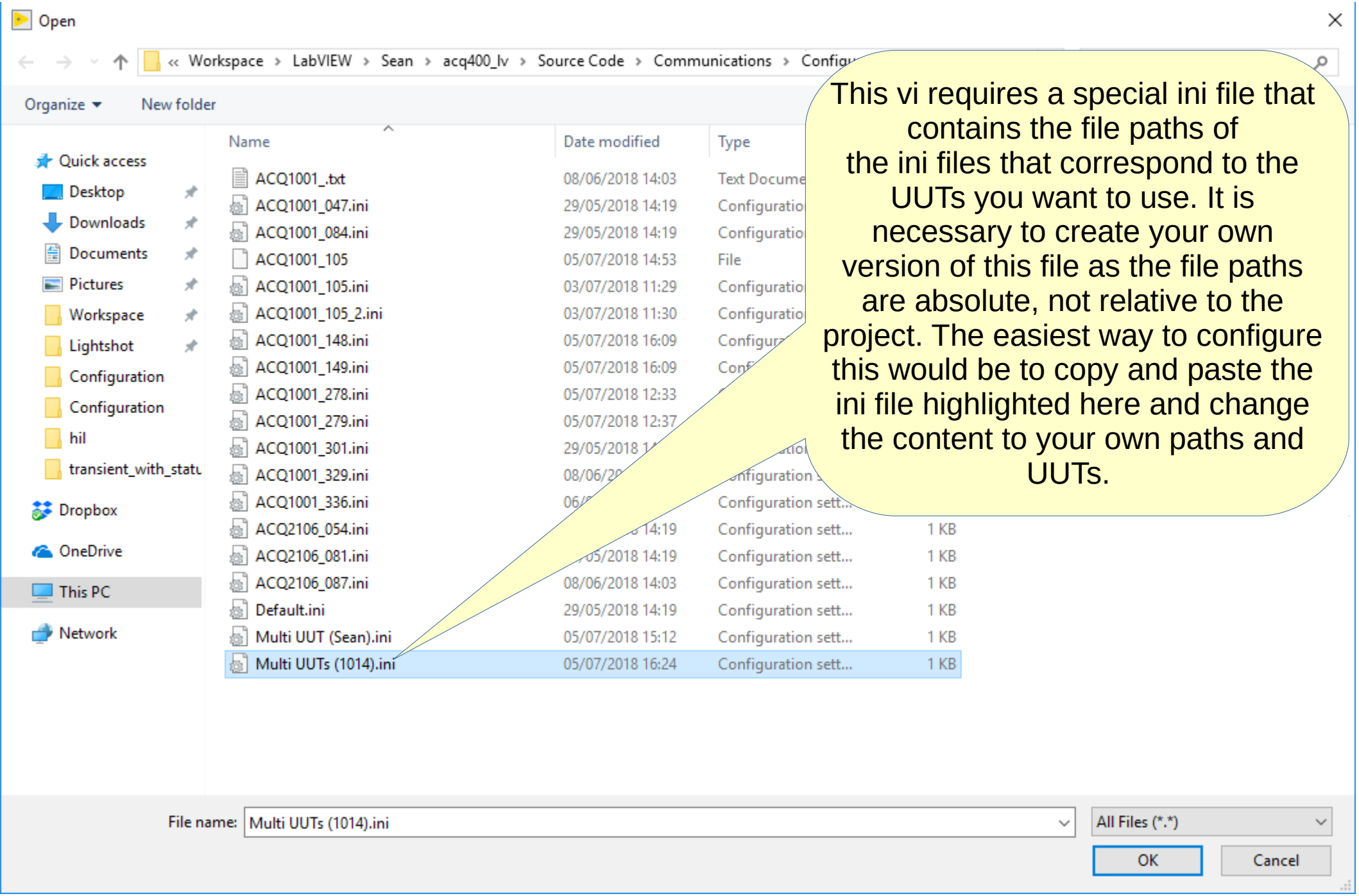

The data streamed from the UUT is shown in the graph here.
Demo - Continuous Capture.vi Front Panel
File Edit View Project Operate Tools Window Help
15pt Application Font
configuration file path
C:\Users\sean\
Buffer Block Size (Samples per channel)
16384
Data Size
16 Bit (Signed Short)
Show Console
Waveform Graph
Amplitude
Time
CH01 CH02 CH03 CH04 CH05 CH06 CH07 CH08 CH09 CH10 CH11 CH12 CH13
Capture Rate (Bytes/Second)
20.46M
stop
STOP
error out
status
code
source
Choose an appropriate buffer size based on UUT sampling rate and channel count
The live data transfer speed is shown here.


Demo - Continuous Capture.vi Front Panel
File Edit View Project Operate Tools Window Help
15pt Application Font
configuration file path
C:\Users\sean\
Buffer Block Size (Samples per channel)
16384
Data Size
16 Bit (Signed Short)
Show Console
Waveform Graph
Amplitude
40000
30000
20000
10000
0
-10000
-20000
-30000
6000
8000
14000
16000
18000
ACQ1001_329_example.ini - Notepad
File Edit Format View Help
[Carrier]
Name="acq1001_329"
IP=10.12.197.130
Port=4220
Timeout=2500
Type="Carrier"
DownloadContinuousDataPortMux=4210
DownloadCapturedDataPortMux=53000
ModuleSlots=2
[CarrierModule1]
Name="ACQ425ELF"
Port=4221
Timeout=2500
Type="AnalogIn"
Channels=12
Port=4222
Timeout=2500
Type="AnalogOut"
Channels=16
To reduce data rate on the wire, first reduce the number of active channels using the bank mask UUT command:
“set.site 1 bank_mask ABC”
which selects 12 channels, for example, then modify the channel count in the .ini file to suit

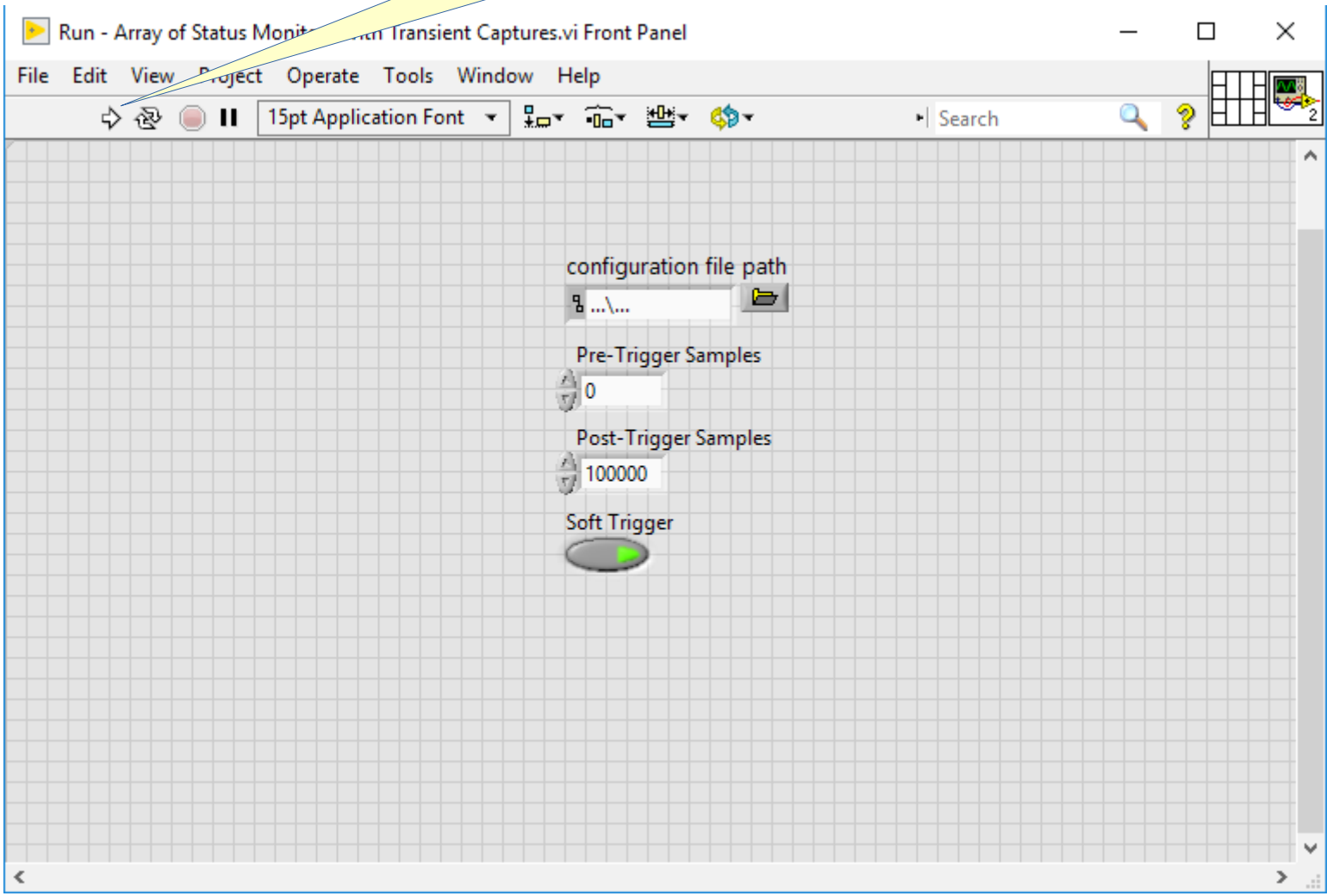
LabVIEW Guide – acq1014 Interface

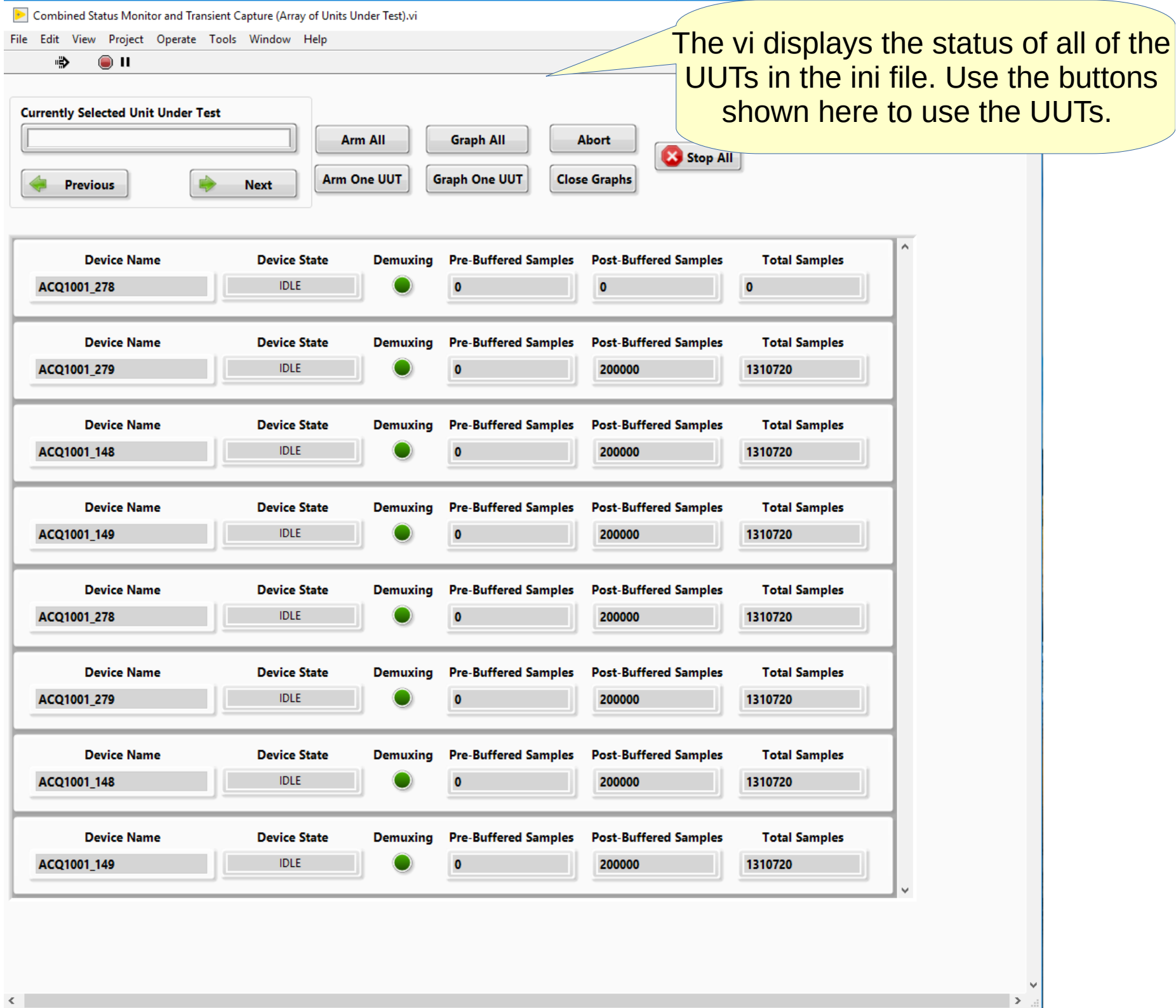
Vi available from: acq400_lv\Source Code\Combined Status and Transient\Run - Array of Status Monitors With Transient Captures.vi

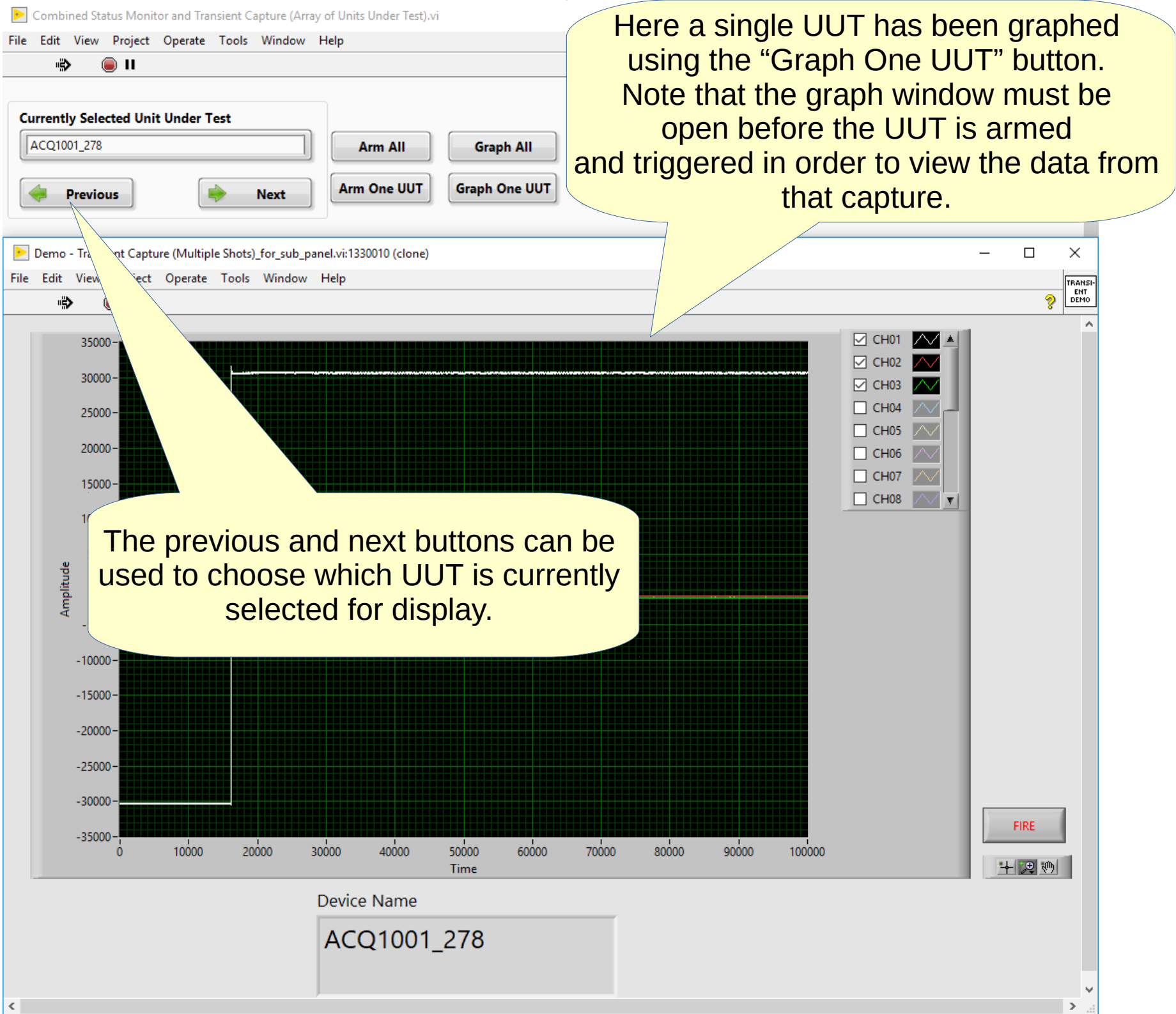


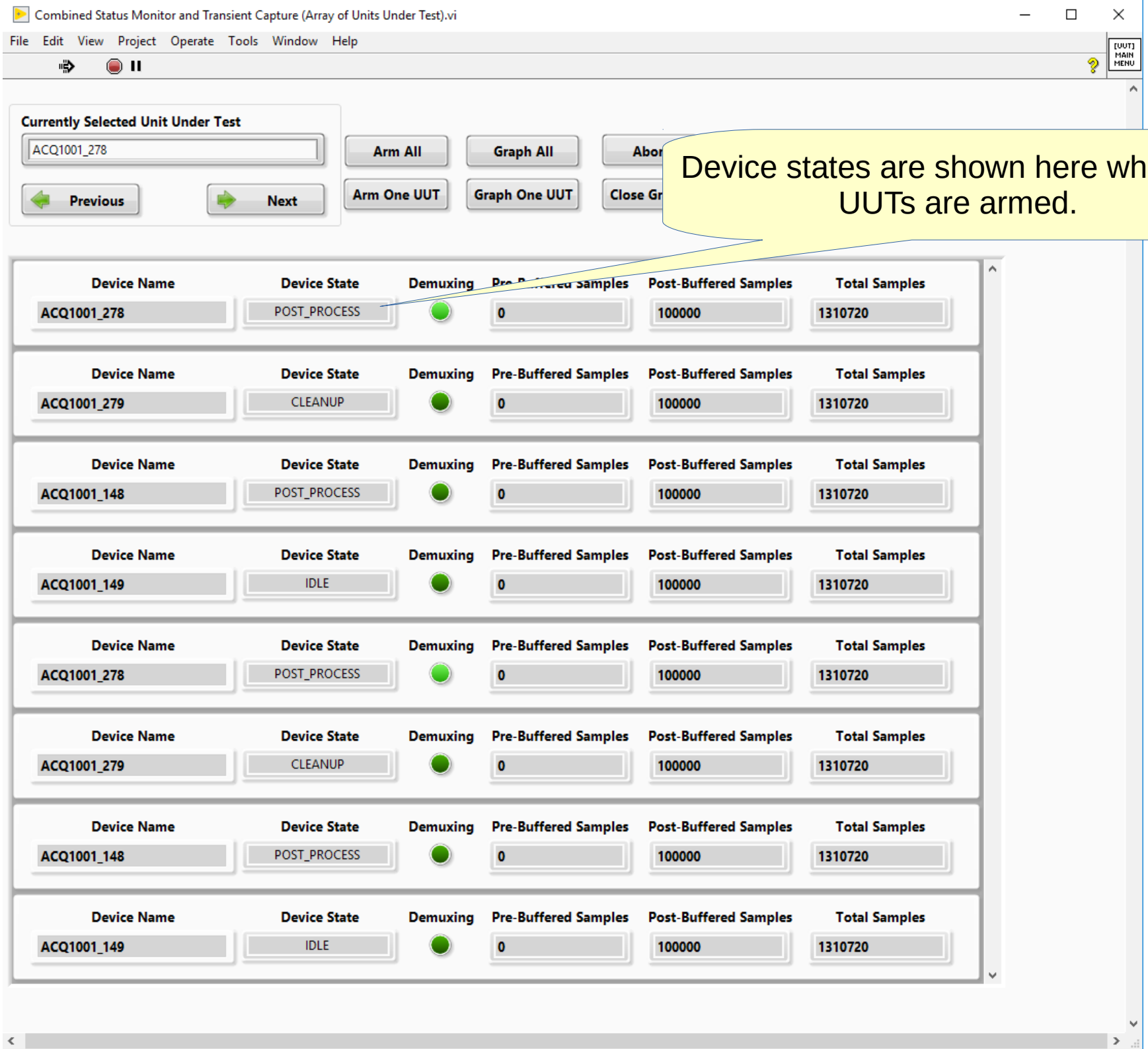

Open
« Workspace › LabVIEW › Sean › acq400_lv › Source Code › Communications › Configu
Organize
New folder
Quick access
Desktop
Downloads
Documents
Pictures
Workspace
Lightshot
Configuration
Configuration
hil
transient_with_statu
Dropbox
OneDrive
This PC
Network
Name
Date modified
Type
ACQ1001_.txt 08/06/2018 14:03 Text Docume
ACQ1001_047.ini 29/05/2018 14:19 Configuratio
ACQ1001_084.ini 29/05/2018 14:19 Configuratio
ACQ1001_105 05/07/2018 14:53 File
ACQ1001_105.ini 03/07/2018 11:29 Configuratio
ACQ1001_105_2.ini 03/07/2018 11:30 Configuratio
ACQ1001_148.ini 05/07/2018 16:09 Configura
ACQ1001_149.ini 05/07/2018 16:09 Confi
ACQ1001_278.ini 05/07/2018 12:33
ACQ1001_279.ini 05/07/2018 12:37
ACQ1001_301.ini 29/05/2018 14
ACQ1001_329.ini 08/06/20 nfiguration
ACQ1001_336.ini 06/ Configuration sett...
ACQ2106_054.ini 14:19 Configuration sett... 1 KB
ACQ2106_081.ini 05/2018 14:19 Configuration sett... 1 KB
ACQ2106_087.ini 08/06/2018 14:03 Configuration sett... 1 KB
Default.ini 29/05/2018 14:19 Configuration sett... 1 KB
Multi UUT (Sean).ini 05/07/2018 15:12 Configuration sett... 1 KB
Multi UUTs (1014).ini 05/07/2018 16:24 Configuration sett... 1 KB
This vi requires a special ini file that contains the file paths of the ini files that correspond to the UUTs you want to use. It is necessary to create your own version of this file as the file paths are absolute, not relative to the project. The easiest way to configure this would be to copy and paste the ini file highlighted here and change the content to your own paths and UUTs.
File name: Multi UUTs (1014).ini
All Files (*.*)
OK
Cancel

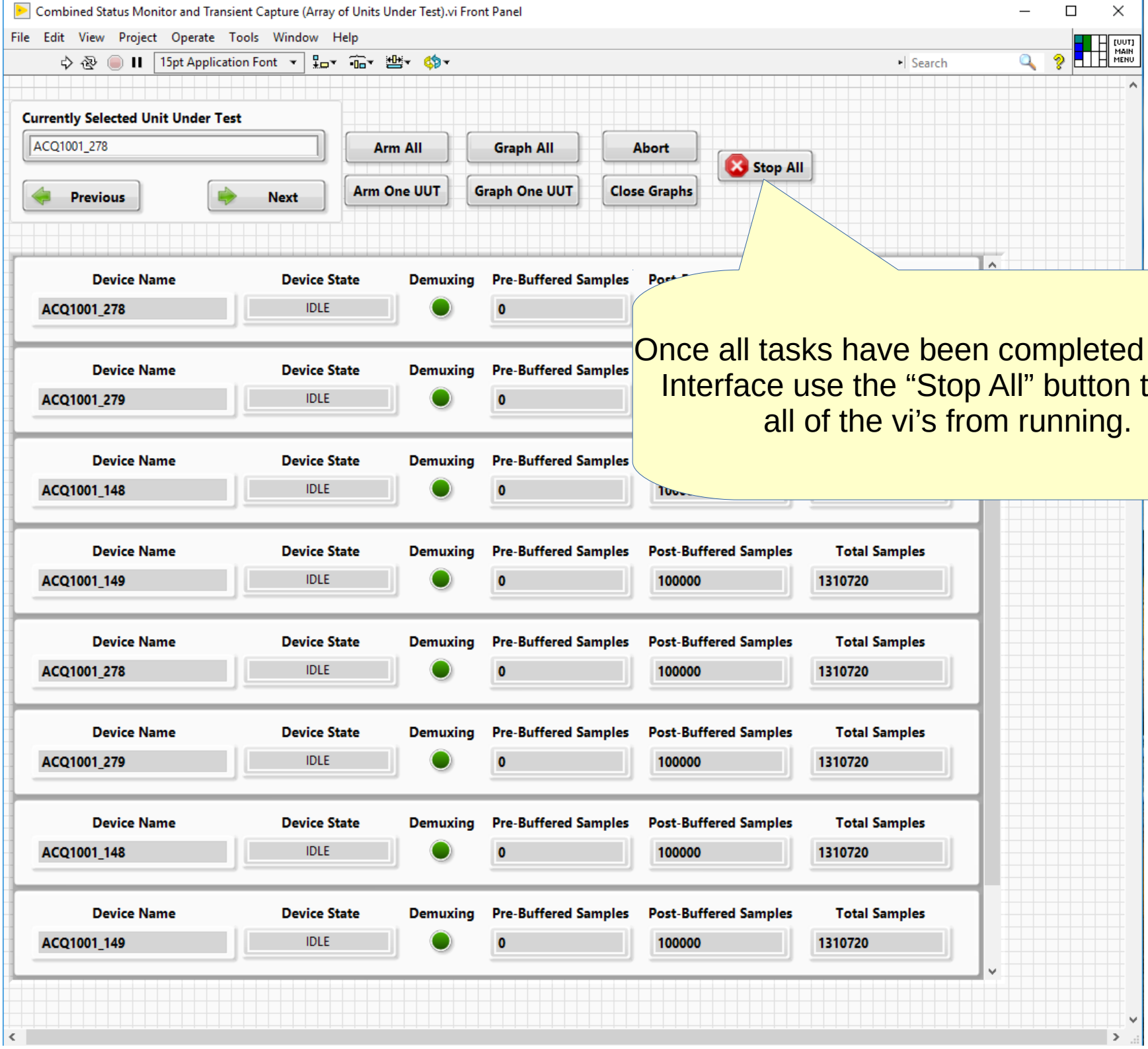
Once the correct ini file has been chosen run the vi from the button in the top left of the window.




Combined Status Monitor and Transient Capture (Array of Units Under Test).vi
File Edit View Project Operate Tools Window Help
The vi displays the status of all of the UUTs in the ini file. Use the buttons shown here to use the UUTs.
Currently Selected Unit Under Test
Arm All
Graph All
Abort
Stop All
Previous
Next
Arm One UUT
Graph One UUT
Close Graphs
Device Name
Device State
Demuxing
Pre-Buffered Samples
Post-Buffered Samples
Total Samples
ACQ1001_278
IDLE
0
0
ACQ1001_279
IDLE
0
200000
1310720
ACQ1001_148
IDLE
0
200000
1310720
ACQ1001_149
IDLE
0
200000
1310720
ACQ1001_278
IDLE
0
200000
1310720
ACQ1001_279
IDLE
0
200000
1310720
ACQ1001_148
IDLE
0
200000
1310720
ACQ1001_149
IDLE
0
200000
1310720

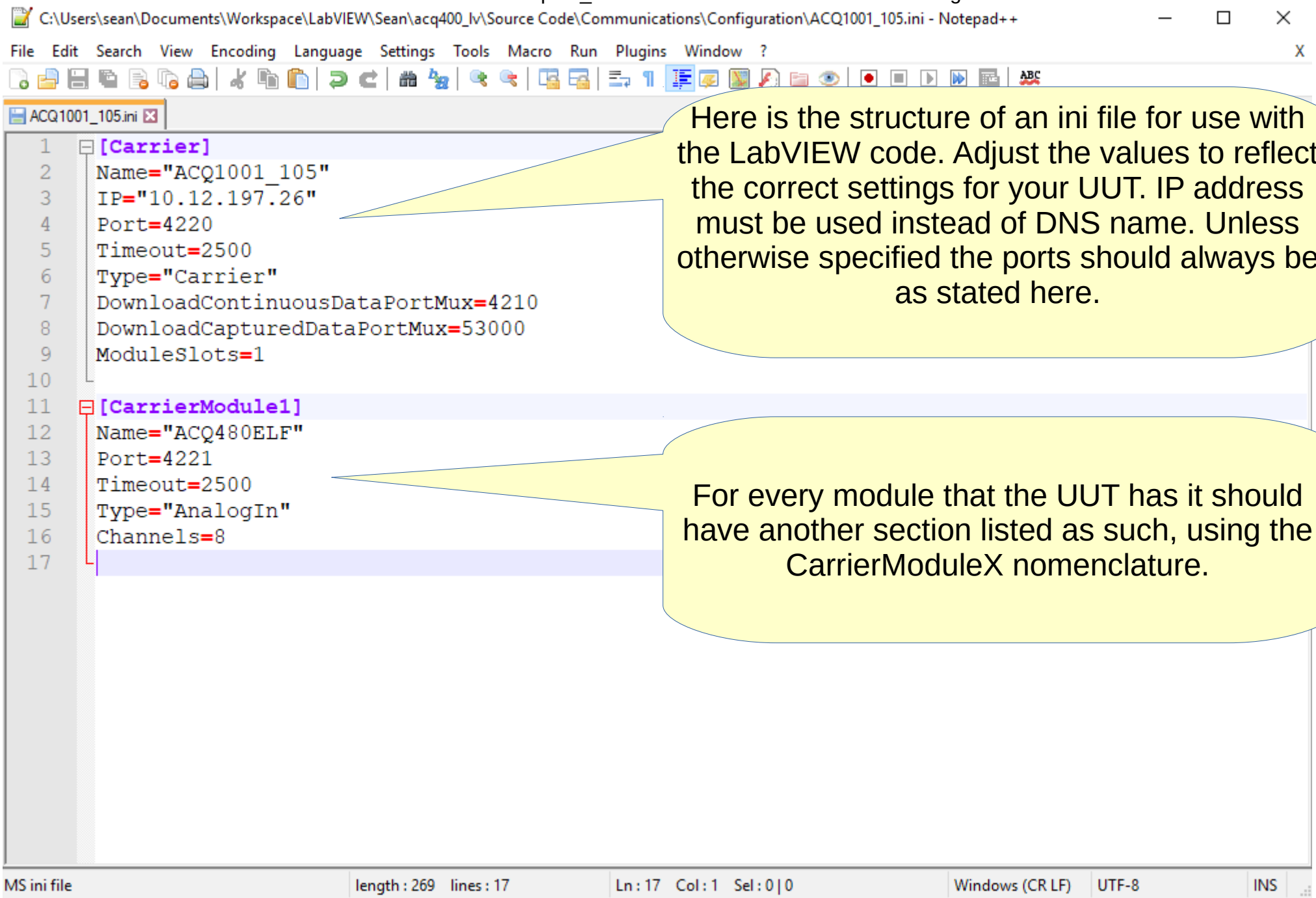

Combined Status Monitor and Transient Capture (Array of Units Under Test).vi
File Edit View Project Operate Tools Window Help
Currently Selected Unit Under Test
ACQ1001_278
Arm All
Graph All
Previous
Next
Arm One UUT
Graph One UUT
Here a single UUT has been graphed using the “Graph One UUT” button. Note that the graph window must be open before the UUT is armed and triggered in order to view the data from that capture.
Demo - Tr nt Capture (Multiple Shots)_for_sub_panel.vi:1330010 (clone)
File Edit View ect Operate Tools Window Help
TRANSI-ENT DEMO
CH01
CH02
CH03
CH04
CH05
CH06
CH07
CH08
Amplitude
35000
30000
25000
20000
15000
-10000
-15000
-20000
-25000
-30000
-35000
0
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
Time
The previous and next buttons can be used to choose which UUT is currently selected for display.
FIRE
Device Name
ACQ1001_278


Combined Status Monitor and Transient Capture (Array of Units Under Test).vi
File Edit View Project Operate Tools Window Help
[UUT] MAIN MENU
Currently Selected Unit Under Test
ACQ1001_278
Previous
Next
Arm All
Graph All
Arm One UUT
Graph One UUT
Device states are shown here when the UUTs are armed.
Device Name Device State Demuxing Pre-Buffered Samples Post-Buffered Samples Total Samples
ACQ1001_278 POST_PROCESS 0 100000 1310720
Device Name Device State Demuxing Pre-Buffered Samples Post-Buffered Samples Total Samples
ACQ1001_279 CLEANUP 0 100000 1310720
Device Name Device State Demuxing Pre-Buffered Samples Post-Buffered Samples Total Samples
ACQ1001_148 POST_PROCESS 0 100000 1310720
Device Name Device State Demuxing Pre-Buffered Samples Post-Buffered Samples Total Samples
ACQ1001_149 IDLE 0 100000 1310720
Device Name Device State Demuxing Pre-Buffered Samples Post-Buffered Samples Total Samples
ACQ1001_278 POST_PROCESS 0 100000 1310720
Device Name Device State Demuxing Pre-Buffered Samples Post-Buffered Samples Total Samples
ACQ1001_279 CLEANUP 0 100000 1310720
Device Name Device State Demuxing Pre-Buffered Samples Post-Buffered Samples Total Samples
ACQ1001_148 POST_PROCESS 0 100000 1310720
Device Name Device State Demuxing Pre-Buffered Samples Post-Buffered Samples Total Samples
ACQ1001_149 IDLE 0 100000 1310720


Combined Status Monitor and Transient Capture (Array of Units Under Test).vi Front Panel
File Edit View Project Operate Tools Window Help
15pt Application Font
Search
[UUT] MAIN MENU
Currently Selected Unit Under Test
ACQ1001_278
Arm All
Graph All
Abort
Stop All
Previous
Next
Arm One UUT
Graph One UUT
Close Graphs
Device Name
Device State
Demuxing
Pre-Buffered Samples
Post-Buffered Samples
Total Samples
ACQ1001_278
IDLE
0
ACQ1001_279
IDLE
0
ACQ1001_148
IDLE
0
ACQ1001_149
IDLE
0
100000
1310720
ACQ1001_278
IDLE
0
100000
1310720
ACQ1001_279
IDLE
0
100000
1310720
ACQ1001_148
IDLE
0
100000
1310720
ACQ1001_149
IDLE
0
100000
1310720
Once all tasks have been completed with the Interface use the “Stop All” button to stop all of the vi’s from running.

LabVIEW Guide – ini files

Ini files available from: acq400_lv\Source Code\Communications\Configuration



Here is the structure of an ini file for use with the LabVIEW code. Adjust the values to reflect the correct settings for your UUT. IP address must be used instead of DNS name. Unless otherwise specified the ports should always be as stated here.

For every module that the UUT has it should have another section listed as such, using the CarrierModuleX nomenclature.