How to Run the Example

1. Preparation

- 1. Install LabWindows™/CVI™.
- 2. Install NI Measurement & Automation Explorer (MAX), IVI Compliance Package, and NI-VISA from the NI Device Drivers.
- 3. Install the following instrument drivers:

Tektronix tkdpo4k IVI Driver Keysight hp34401a IVI Driver Fluke fl2638 CVI PnP Driver

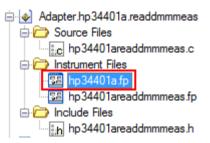
2. Build Example

Note: The projects may already include the needed fp or lib files. However, the path may be not correct because the location of fp and lib files on your computer may vary. In such case, you just need to delete them and then re-add the fp or lib files to the correct location.

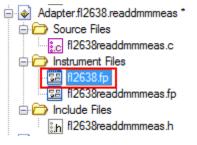
- 1. Open CHAL.cws. This workspace includes all the projects you need to build.
- 2. Add tkdpo4k.fp to project Adapter.tkdpo4k.gensignals.



3. Add hp34401a.fp to project Adapter.hp34401a.readdmmmeas.

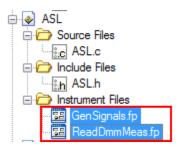


4. Add f12638.fp to project Adapter.fl2638.readdmmmeas.



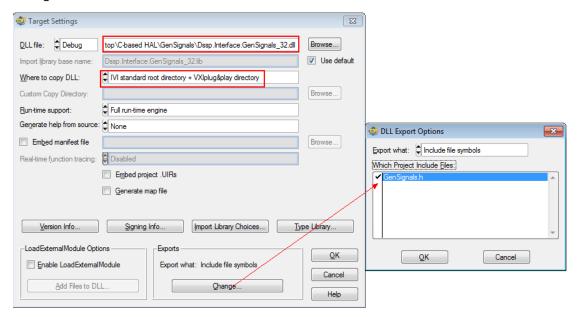
5. Add GenSignals.fp and ReadDmmMeas.fp to project ASL.

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6. Make sure the build target of each project (except ASLClientCodeExample) is **Dynamic Link Library** (**Build»Target Type**) and the Target Settings (**Build»Target Settings**) is identical to the following image.

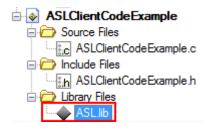
Note: Right click on each project and select **»Set Active Project** before attempting to configure each project's target settings.



The following table lists the DLL name of each project.

Droiget	DLL Name (Change 32 to 64 if building a 64-bit	
Project	DLL)	
GenSignals	Dssp.Interface.GenSignals_32.dll	
ReadDmmMeas	Dssp.Interface.ReadDmmMeas_32.dll	
Adapter.tkdpo4k.gensignals	adapter.tkdpo4k.gensignals_32.dll	
Adapter.hp34401a.readdmmmeas	adapter.hp34401a.readdmmmeas_32.dll	
Adapter.fl2638.readdmmmeas	adapter.fl2638.readdmmmeas_32.dll	
ASL	ASL.dll	

- 7. From the top down, set each project as the active project and build it (except ASLClientCodeExample). You can also use batch build (Build»Batch Build) to build them all at once.
- 8. Add ASL.lib to project ASLClientCodeExample. For 64-bit version of this exercise, add the 64-bit version ASL.lib to the project.



- 9. Make sure the build target of ASLClientCodeExample is Executable (Build»Target Type).
- 10. Build project ASLClientCodeExample.

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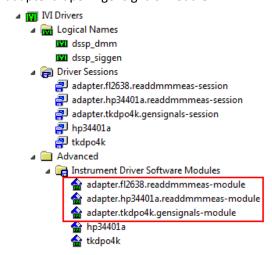
3. System Configuration

You can either configure your system manually in MAX, or you can use the pre-populated IviConfigurationStore.xml file that is provided in the zip file. Make sure to backup your existing IviConfigurationStore.xml file under C:\ProgramData\IVI Foundation\IVI, and then copy the provided IviConfigurationStore.xml file to the same location.

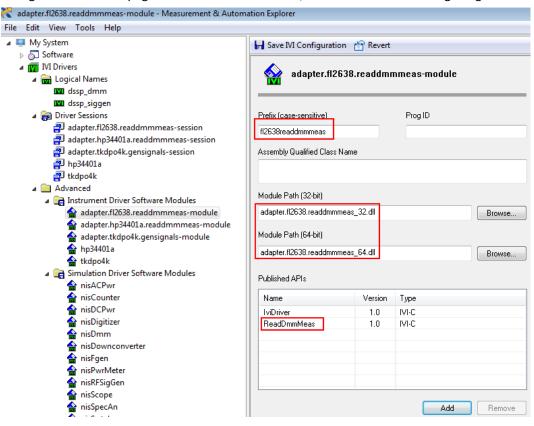
Complete the following steps to configure your system manually in MAX.

Note: Save each configuration before moving on to the next configuration step.

1. Create three software modules: adapter.fl2638.readdmmmeas-module, adapter.hp34401a.readdmmmeas-module, adapter.tkdpo4k.gensignals-module.



2. Configure the General page of each software module, as shown in the following image.



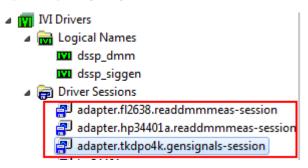
Note: The Published APIs will not pre-populate an option for ReadDmmMeas or GenSignals. You need to type it in manually.

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The following table shows the settings for each software module:

Software Module	Prefix	Module Path (32-bit), change "_32" to "_64" for 64-bit	Published APIs	
adapter.fl2638.readdmmmeas-m	fl2638readdmmme	adapter.fl2638.readdmmmeas_	ReadDmm	
odule	as	32.dll	Meas	
adapter.hp34401a.readdmmmea	hp34401areaddm	adapter.hp34401a.readdmmmea	ReadDmm	
s-module	mmeas	s_32.dll	Meas	
adapter.tkdpo4k.gensignals-mod	tkdno4kgonsignals	adapter.tkdpo4k.gensignals_	GenSignals	
ule	tkdpo4kgensignals	32.dll		

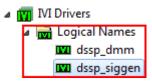
3. Create three driver sessions: adapter.hp34401a.readdmmmeas-session, adapter.fl2638.readdmmmeas-session and adapter.tkdpo4k.gensignals-session.



4. Configure each driver session. The following table shows the settings for each driver session.

Driver Session	Simulate With (General Tab)	Hardware (Hardware Tab)	Software Module
adapter.fl2638.readdmmm	Specific Driver	Add assets if you have live	adapter.fl2638.readdmm
eas-session	Specific Driver	instrument	meas-module
adapter.hp34401a.readdm	Specific Driver	Add assets if you have live	adapter.hp34401a.readd
mmeas-session	Specific Driver	instrument	mmmeas-module
adapter.tkdpo4k.gensignals	Specific Driver	Add assets if you have live	adapter.tkdpo4k.gensign
-session	Specific Driver	instrument	als-module

5. Create two logical names: dssp_dmm and dssp_siggen.



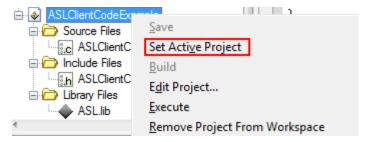
6. Link the two logical names with the proper driver session. Link dssp_dmm with adapter.fl2638.readdmmmeas-session or adapter.hp34401a.readdmmmeas-session. Link dssp_siggen with adapter.tkdpo4k.gensignals-session.

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4. Run Example

After configuring the Logical Names, Driver Sessions and Software Modules, you can run the example.

1. Set project ASLClientCodeExample as active project, then run it.



The following image displays the calling sequence. In MAX, dssp_dmm points to adapter.fl2638.readdmmmeas-session, dssp_siggen points to adapter.tkdpo4k.gensignals-session.

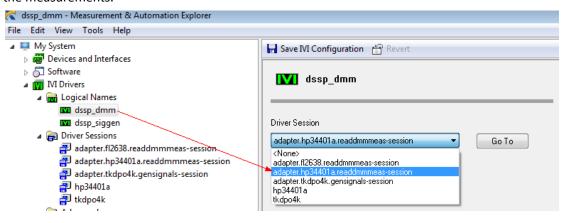
```
Initialize devices...
In HAL DSSP Interface function: GenSignals_InitWithOptions...
In HALDSSP Adapter function: tkdpo4kgensignals_InitWithOptions...
Calling tkdpo4k IVI-C specific function: tkdpo4k_InitWithOptions...
In HALDSSP Interface function: ReadDmmHeas_InitWithOptions...
In HALDSSP Adapter funtion: fl2638readdmmmeas_InitWithOptions...
Initialize in simulation mode...
All devices have been initialized.

Generate signal...
In HALDSSP Adapter function: GenSignals_GenerateSignal...
Calling tkdpo4k IVI-C specific function: tkdpo4k_ConfigureOutputImpedance...
Calling tkdpo4k IVI-C specific function: tkdpo4k_ConfigureOutputEnabled...
Signal has been generated...

Read signal...
In HALDSSP Interface function: ReadDmmHeas_ReadVoltage...
I'm in simulation mode, I'll return a randon voltage.
In HALDSSP Adapter function: fl2638readdmmmeas_ReadVoltage...
I'm in simulation mode, I'll return a randon frequency.
Finish reading signal...
Close devices...
I'm in simulation mode, I'll return a randon frequency.
Finish reading signal...
Close devices...
In HALDSSP Interface function: GenSignals_close...
Calling tkdpo4k IVI-C specific function: tkdpo4k_Cone...
In HALDSSP Adapter function: fl2638readdmmeas_ReadPreq...
I'm in simulation mode, I'll return a randon frequency.
Finish reading signal...
Close devices...
In HALDSSP Adapter function: GenSignals_close...
Calling tkdpo4k IVI-C specific function: tkdpo4k_close...
In HALDSSP Adapter function: ReadDmmHeas_close...
Calling tkdpo4k IVI-C specific function: tkdpo4k_close...
In HALDSSP Adapter function: ReadDmmHeas_close...
Close in simulation mode...
All devices have been closed.

Press Enter to exit...
```

You can make dssp_dmm point to adapter.hp34401a.readdmmmeas-session if you want to use the Keysight 34401A to do the measurements.



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You do not need to change any of your test code. Running the example again displays the calling sequence, as shown in the following image.

```
Initialize devices...
In HAL DSSP Interface function: GenSignals_InitWithOptions...
In HALDSSP Adapter function: tkdpodkgensignals_InitWithOptions...
Calling tkdpodk IVI-C specific function: tkdpodk_InitWithOptions...
In HALDSSP Interface function: ReadDnmMeas_InitWithOptions...
Calling bp344Bla IVI-C specific function: hp344Bla_InitWithOptions...
Calling hp344Bla IVI-C specific function: hp344Bla_InitWithOptions...
All devices have been initialized.

Generate signal...
In HALDSSP Adapter function: GenSignals_GenerateSignal...
Calling tkdpodk IVI-C specific function: tkdpodk_ConfigureOutputImpedance...
Calling tkdpodk IVI-C specific function: tkdpodk_ConfigureOutputImpedance...
Calling tkdpodk IVI-C specific function: tkdpodk_ConfigureOutputEnabled...

Signal has been generated...

Read signal...
In HALDSSP Interface function: ReadDmmMeas_ReadVoltage...
In HALDSSP Adapter function: hp344Blareaddmmmeas_ReadVoltage...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureMeasurement...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureTrigger...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureMeasurement...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureMeasurement...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureMeasurement...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureTrigger...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureMeasurement...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureTrigger...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureTrigger...
Calling hp344Bla IVI-C specific function: hp344Bla_ConfigureTrigger...
Calling hp344Bla_ConfigureTrigger...
Calling hp344Bla_ConfigureTrigger...
Calling hp344Bla_ConfigureTrigger...
Calling hp344Bla_ConfigureTrigger...
Calling hp344Bla_Configur
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