



LIH_XOP

IGOR Pro XOP's for controlling
InstruTECH data acquisition interfaces

```

out_channels = 2
DACs.channels[0]=0 // DA 0 and DA 3 are used for stimulation
DACs.channels[1]=3

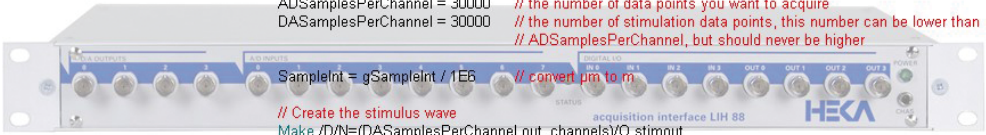
in_channels = 3
ADCs.channels[0]=6 // data is acquired from AD 6, 5, and 0
ADCs.channels[1]=5
ADCs.channels[2]=0

ADSamplesPerChannel = 30000 // the number of data points you want to acquire
DASamplesPerChannel = 30000 // the number of stimulation data points, this number can be lower than
// ADSamplesPerChannel, but should never be higher

SampleInt = gSampleInt / 1E6 // convert  $\mu\text{s}$  to  $\text{m}$ 

// Create the stimulus wave
Make /D/N=(DASamplesPerChannel,out_channels)/O stimout
SetScale/P x 0, SampleInt,"s", stimout
stimout [] [0]= 5*sin(2*PI*x)
stimout [] [1]= -3*sin(1*PI*x)

// Create the input wave
Make /D/N=(ADSamplesPerChannel,in_channels)/O readin
SetScale/P x 0, SampleInt,"s", readin
  
```



If you believe your job is to
make new discoveries...

...discover EPC DLL:

- Use IGOR Pro for stimulus generation
- Use IGOR Pro for data acquisition
- Acquisition and Analysis in a publication-quality graphing program

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to achieve the needed progress of tomorrow...



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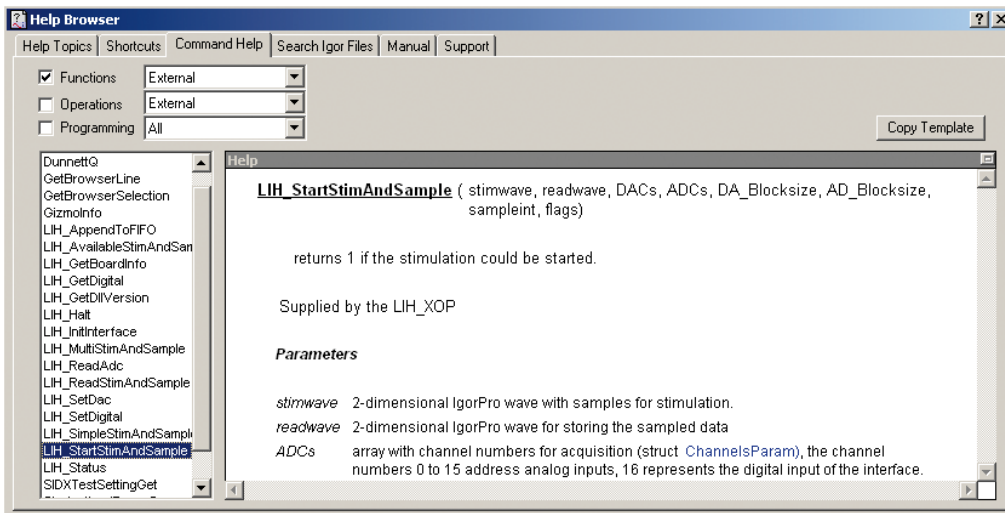
Introduction

IGOR Pro is an interactive software environment for experimentation with scientific and engineering data and for the production of publication-quality graphs and page layouts. IGOR has been used by tens of thousands of technical professionals since it was introduced by WaveMetrics Inc. back in 1989.

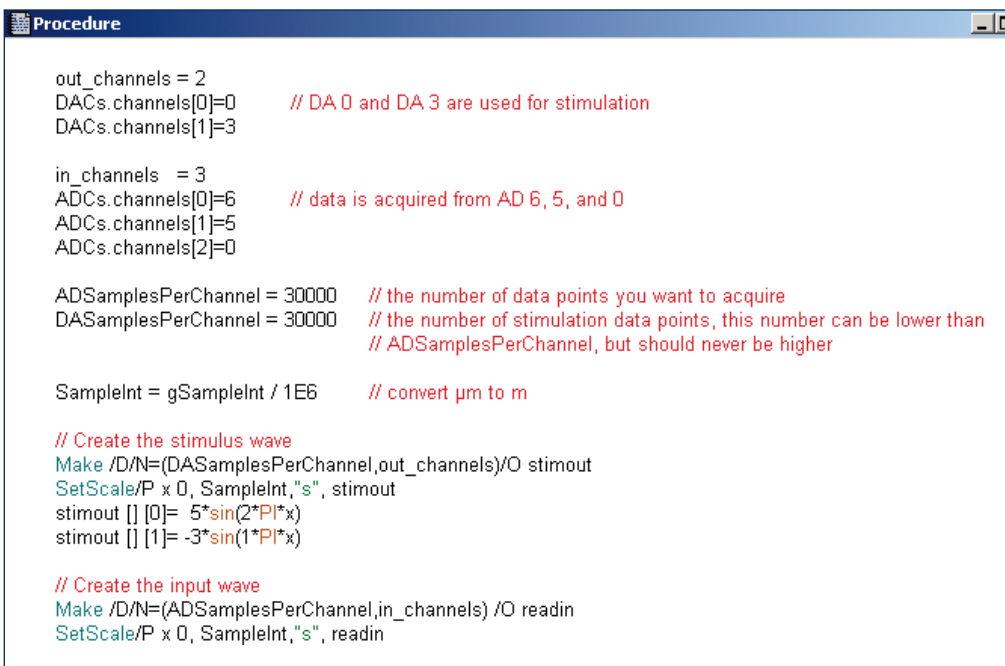
IGOR Pro's capabilities can be enhanced with the use of XOP's. "XOP" stands for "external operation." Originally XOP's were intended only to allow adding command-line operations to IGOR. Now XOP's can add operations, functions, menus, dialogs and windows. XOP's are also sometimes called "IGOR extensions."

HEKA provides IGOR XOP's that add data acquisition capabilities to IGOR Pro. These XOP's mimic all of the driver capabilities for the InstruTECH data acquisition interfaces in a comprehensive way that offers complete programming control via IGOR Pro. The XOP's are supplied with the appropriate drivers, XOP itself, help files and example IGOR experiments demonstrating how to create stimulation and acquisition in IGOR Pro.

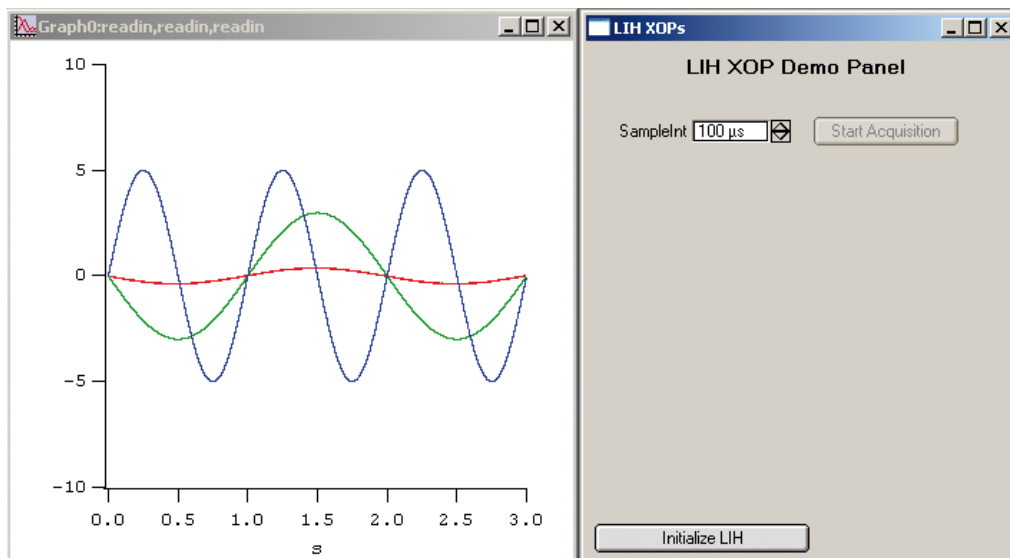
A Quick View into IGOR



To use an XOP in IGOR Pro it is just a simple matter of copying the XOP file to the IGOR Pro Extensions folder. When IGOR Pro starts, the XOP(s) will be loaded automatically into memory. A quick look with the Help Browser will display all of the necessary commands for direct access of the InstruTECH interfaces. Functions starting with either "LIH_" or "ITC", depending on which XOP is loaded, indicates that these functions are available.



The LIH_XOP is supplied with a number of example experiments, one such example is the "ContinuousRecording.pxp". This example is a good illustration of the basic usage of the LIH_XOP commands for performing a stimulation and data acquisition. It can also serve as a good starting point for creating your own custom procedures.



This example also takes advantage of user interface functions built into IGOR Pro for creating control buttons and data graphs.

Different versions of IGOR Pro XOP's

IGOR Pro LIH XOP - Supports the InstruTECH ITC-16, ITC-18, ITC-1600, LIH-1600 and LIH 8+8. This universal XOP requires IGOR Pro version 5.x. and above. The functions provided by this XOP are based on the HEKA EPCDLL. A help file and demo macros are included.

IGOR Pro 5.x Universal XOP - Supports the InstruTECH ITC-16, ITC-18 and ITC-1600. This XOP requires IGOR Pro version 5.x. The functions provided by this XOP are based on the ITC universal driver model. Note that legacy ITC-16 and ITC-18 XOP calls are not supported in this version. A help file and demo macros are included. The ITC / EPC driver is also required. Please note that for MacOS X, IGOR Pro 5.x does not support native Intel code therefore this XOP is for PPC based Macintosh computers only!

IGOR Pro 6.x Universal XOP - Supports the InstruTECH ITC-16, ITC-18 and ITC-1600. This XOP requires IGOR Pro version 6.x. The functions provided by this XOP are based on the ITC universal driver model. Note that legacy ITC-16 and ITC-18 XOP calls are not supported in this version. A help file and demo macros are included. The ITC / EPC driver is also required. Please note that IGOR Pro 6.x and this XOP are required for all Intel based Macintosh computers.

IGOR Pro 5.x InstruTECH ITC-18 - Supports the InstruTECH ITC-18. This XOP requires IGOR Pro version 5.x. The functions provided by this XOP are based on the original ITC-18 legacy driver model plus additional support for the USB-18 host interface. A help file and demo macros are included. The ITC / EPC driver is also required. Please note that for MacOS X, IGOR Pro 5.x does not support native Intel code therefore this XOP is for PPC based Macintosh computers only!

IGOR Pro 6.x InstruTECH ITC-18 - Supports the InstruTECH ITC-18. This XOP requires IGOR Pro version 6.x. The functions provided by this XOP are based on the original ITC-18 legacy driver model plus additional support for the USB-18 host interface. A help file and demo macros are included. The ITC / EPC driver is also required. Please note that IGOR Pro 6.x and this XOP are required for all Intel based Macintosh computers.

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