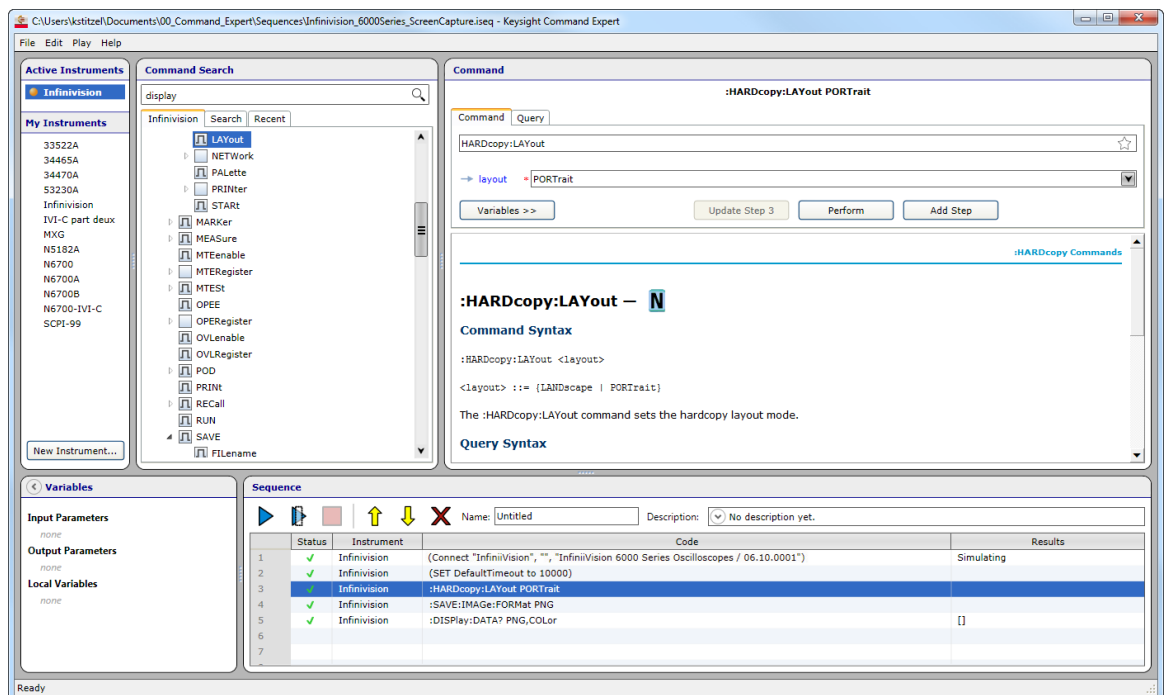


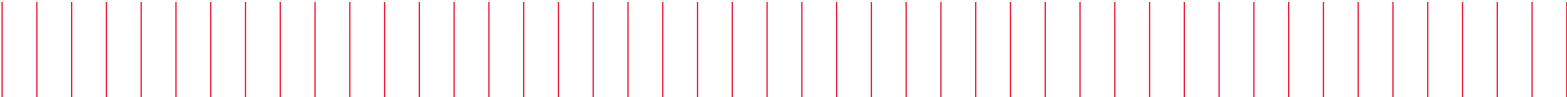
Keysight Technologies Command Expert

Data Sheet



Keysight's Command Expert is a FREE software application that provides fast and easy instrument control in many PC application environments!

All your instrument control in one interface!



Introduction

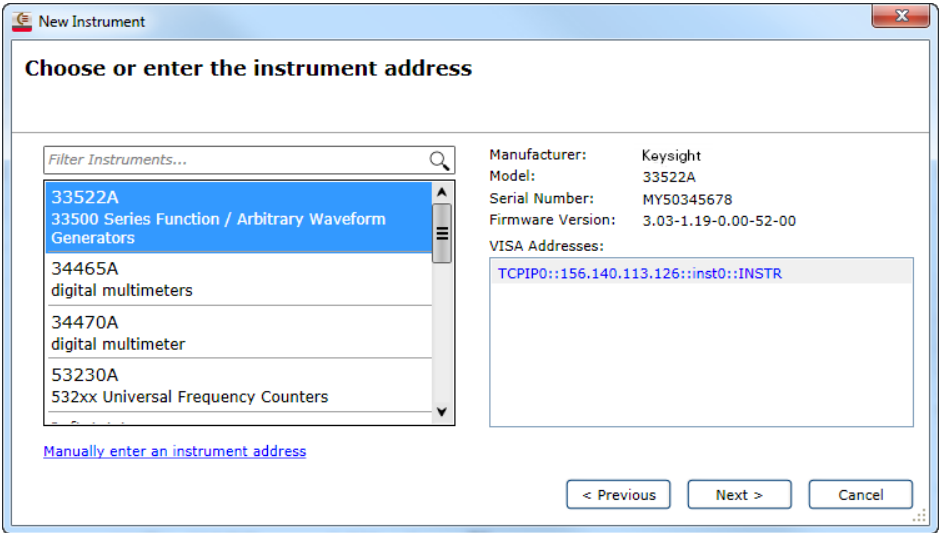
Controlling instruments has become more complicated as I/O options have increased and instruments have become more capable. PC applications typically do not offer assistance in finding the right instrument commands, setting the correct parameters, and passing data and variables.

Command Expert combines instrument commands, documentation, syntax checking and command execution all in one simple interface. Command Expert works with instruments that use Standard Commands for Programmable Instrumentation (SCPI), IVI-C, or IVI-COM drivers.

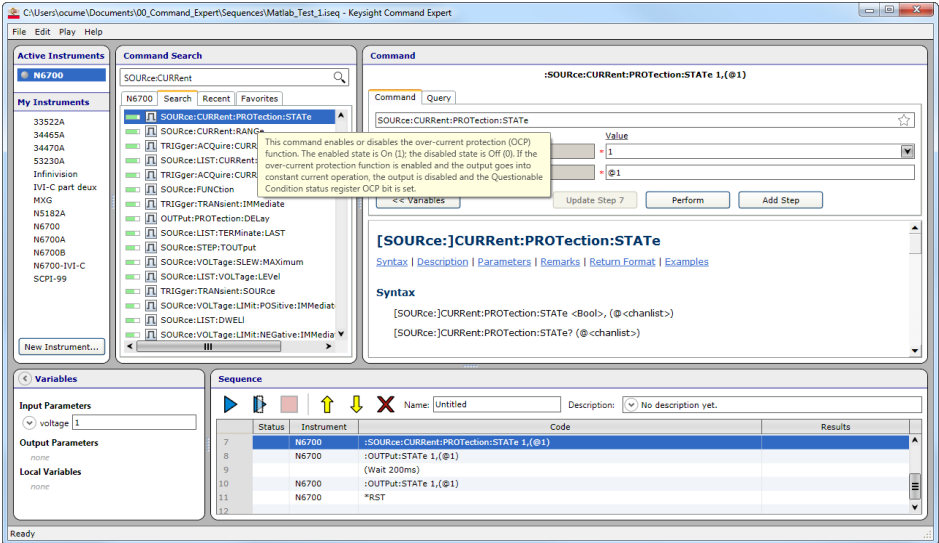
- Find instrument commands
- View complete command documentation
- Verify command syntax
- Build instrument command sequences
- Execute instrument command sequences
- Integrate sequences into PC application environments

Faster Startup

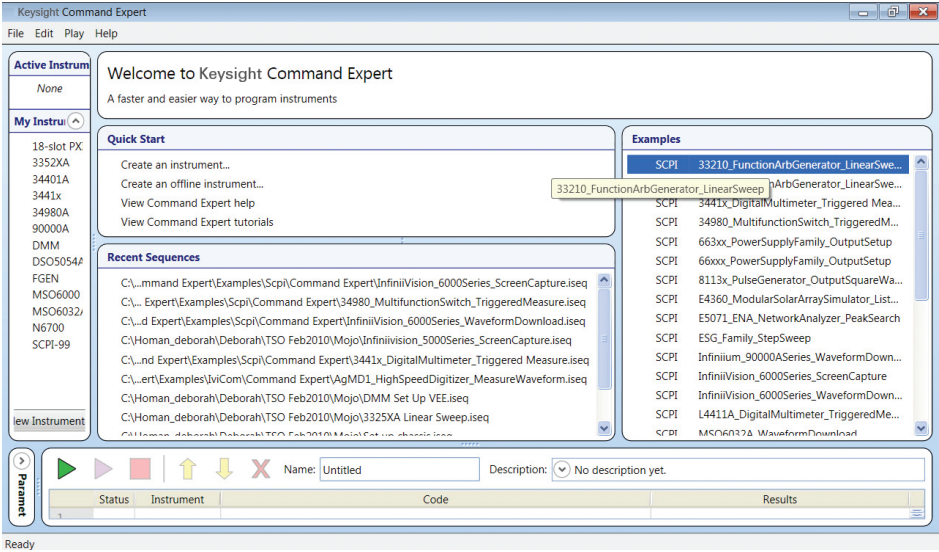
Connect to instruments that have been discovered by Keysight IO Libraries Suite. Quickly scan for instruments and configure them as Command Expert instruments.



Search capability displays a list of commands ranked by relevance. The results are displayed and can be selected to view the detailed documentation.



Examples provide sequences of commands that can be used directly in Command Expert and the PC application. These examples provide the building blocks for developing the sequences for the specific needs of each user. Simply enter the search term(s) and see the list of associated examples. Filters can narrow down the list by instrument, application and/or command type. SCPI, IVI-C, and IVI-COM examples are included.



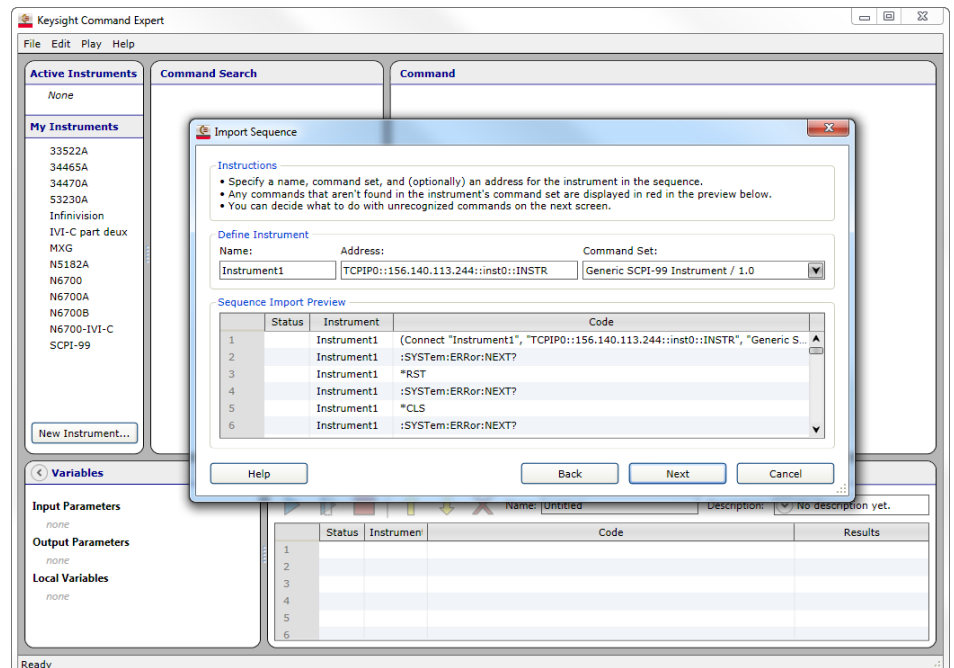
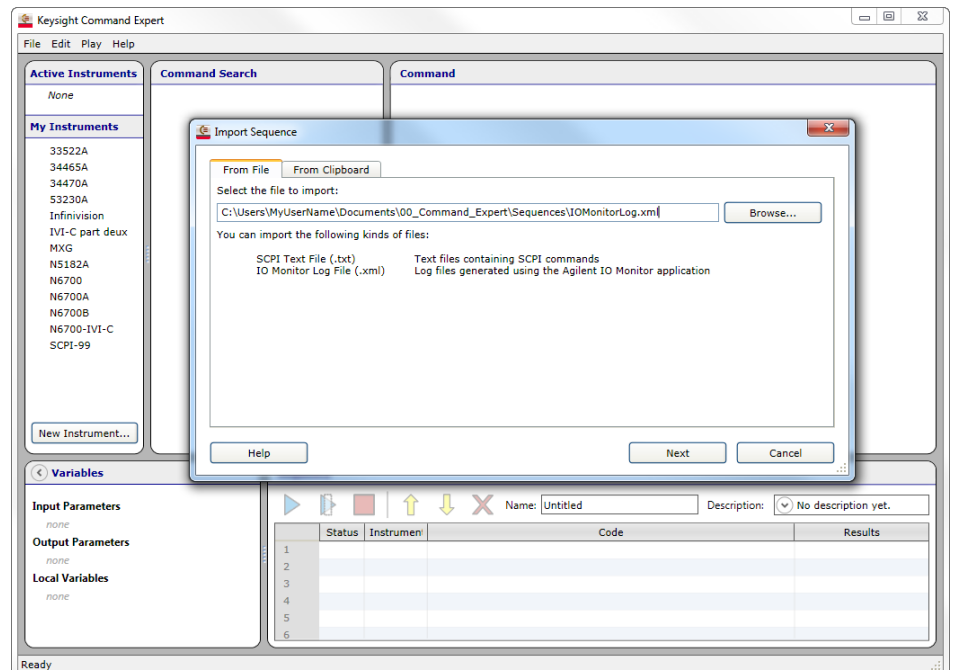
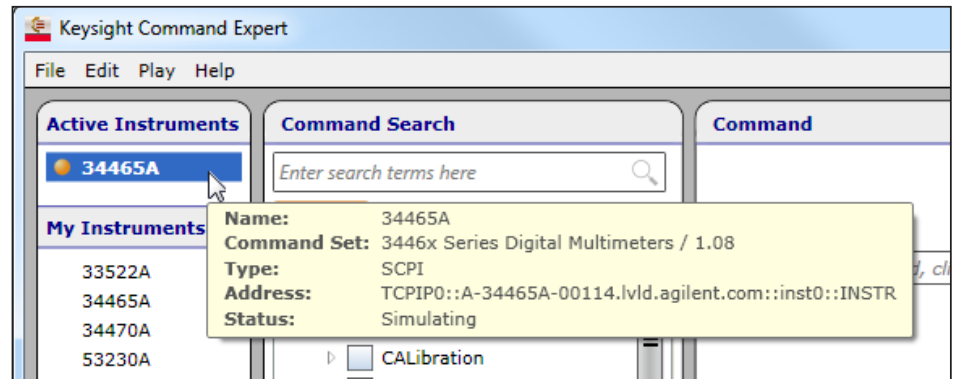
Faster Time to Measurements

Prototype command sequences with ease. Connect to the instruments through any I/O interface, and begin executing sequences of commands. Verify the sequence of commands before integrating into other programs.

Work in Simulation Mode if hardware is not available. An IO Monitor log file can be used as a data source for instrument simulation. Once hardware is available, run the commands and confirm the actual results.

Import Commands into Command Expert to create a sequence using an imported file. The two types of files that can be imported are:

1. A text file (.txt) that contains SCPI commands. The SCPI commands can also be imported from a document or an instrument web page.
2. An IO Monitor log file (.xml) created by Keysight IO Monitor. Keysight IO Monitor is part of the Keysight IO Libraries Suite).

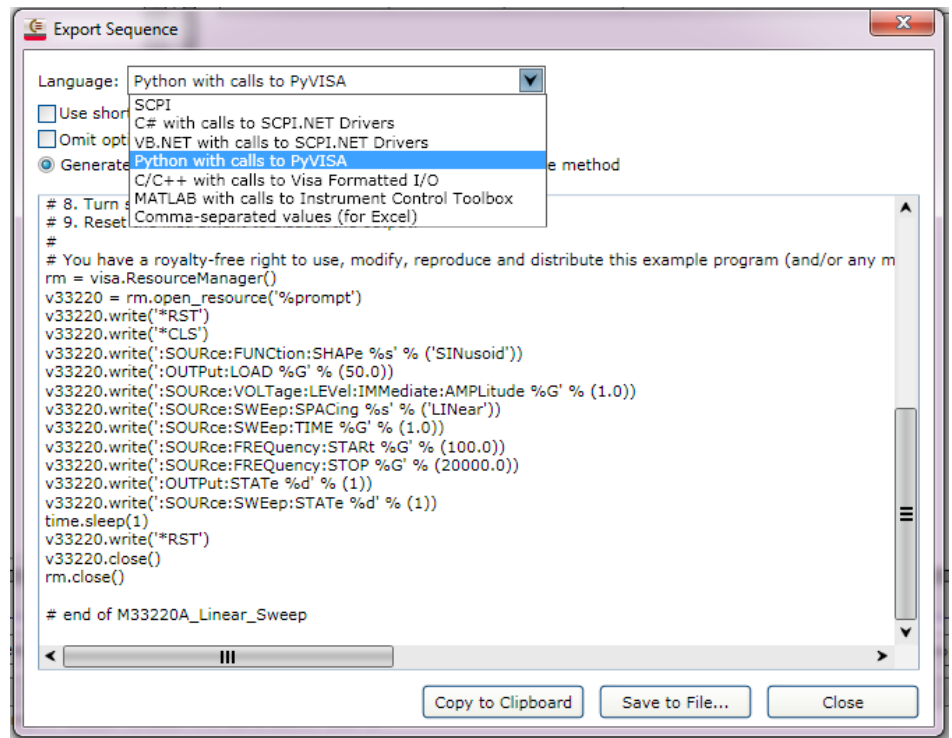


Export Sequences to Popular Programming Languages

Once a sequence has been created and debugged in Command Expert, easily export the full command sequence. Exporting the sequence will create working code in a variety of different languages allowing for simple copy/paste of the text into your favorite development environment.

Supported Export Formats

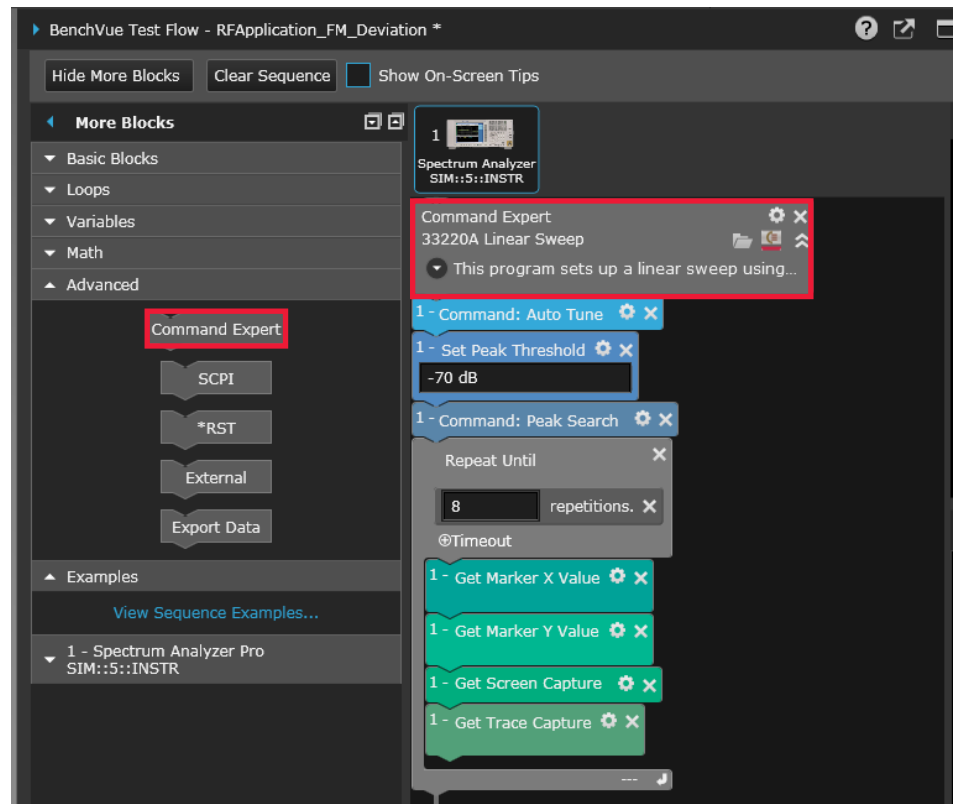
- SCPI
- C# with calls to SCPI.NET Drivers
- VB.NET with calls to SCPI.NET Drivers
- Python with calls to PyVISA
- C/C++ with calls to VISA Formatted I/O
- MATLAB with calls to Instrument Control Toolbox
- Comma-separated values (for Excel)



BenchVue Test Flow Integration

Import Command Expert sequences directly into Keysight's BenchVue Test Flow application which enables test automation without needing to write a single line of code. Together BenchVue Test Flow and Command Expert allow users to automate, loop, and export results of simple to complex tests with hundreds of different types of instruments.

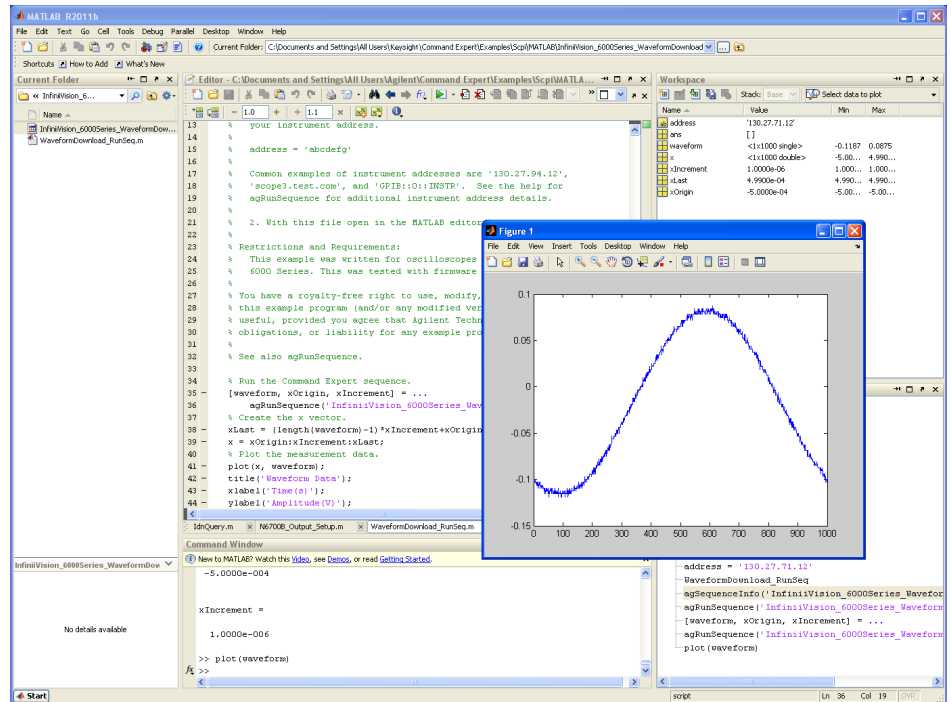
The Command Expert Block inside of BenchVue Test Flow enables users to import previously developed Command Expert Sequences or to generate new sequences immediately. Use Test Flow to control the flow of your test, and Command Expert to get the exact instrument setup for demanding test needs.



MATLAB Add-On

The Command Expert MATLAB Add-on is a set of MATLAB functions that run Command Expert sequences in MATLAB. Run an entire sequence in a single line of MATLAB code. The instrument control sequence can be developed in the Command Expert graphical environment that shows full instrument documentation and enables the ability to rapidly find, perform, and sequence instrument commands. The sequence can contain a mix of SCPI, IVI-C and IVI-COM commands.

Command Expert can also generate MATLAB code for a sequence of SCPI commands. The generated code uses MATLAB and Instrument Control Toolbox. Each SCPI command in the sequence is translated into one or more lines of MATLAB code.

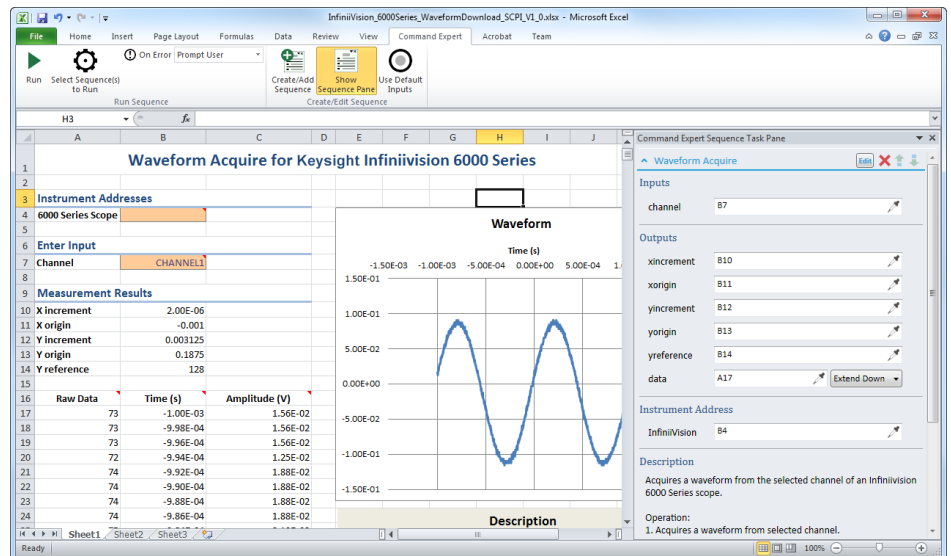


Excel Add-In

When Command Expert is installed, a new Command Expert tab in the Excel ribbon is available. Select "Create/Add Sequence" in the Command Expert Task Pane to bring up Command Expert and build an instrument command sequence.

Run the sequence directly from Excel. The sequence can transfer settings data from the Excel workbook to the instrument, and retrieve measurement data from the instrument directly into the Excel workbook.

Share workbooks with other users.



Python Add-On

The Python Add-on is a set of Python functions that let you run Command Expert sequences in Python. The entire sequence can be run in a single line of Python code. The instrument control sequence can be developed in the Command Expert graphical environment that displays full instrument documentation and enables the ability to rapidly find, perform and sequence the instrument commands. The sequence can contain a mix of SCPI, IVI-C and IVI-COM commands. Use with PyVISA in Python.

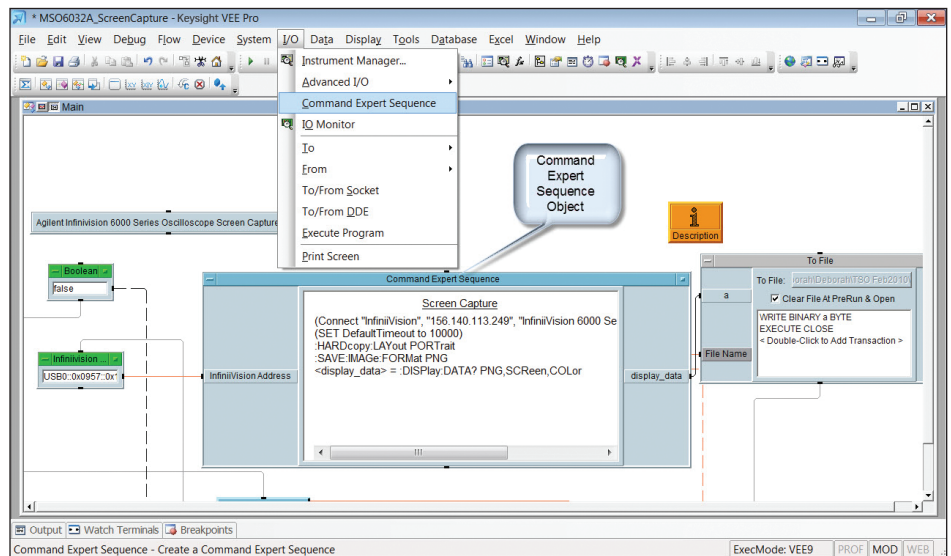
```
>>> import keysight.command_expert as ag
>>> ag.sequence_info('c:/temp/power supply output')
Inputs:
  voltage      3.0 , <type 'float'>
  chanlist     01 , <type 'str'>

Outputs:
  idn          <type 'str'>

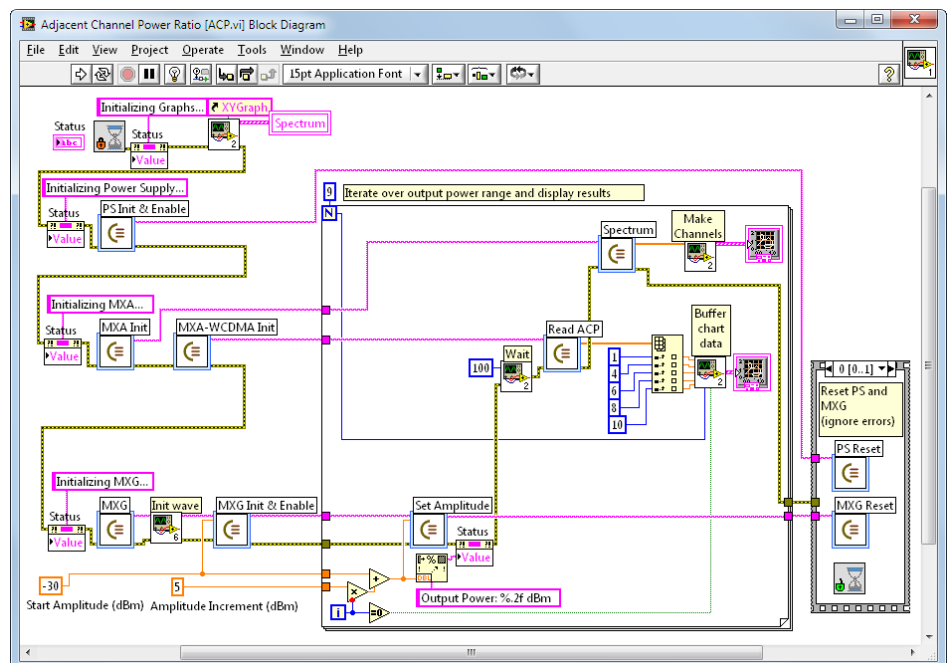
Instruments:
  N6700        '' , N6700 Power Supplies / C.02.18
>>> idn = ag.run_sequence('c:/temp/power supply output', \
... ['TCPIP0::156.140.113.178::inst0::INSTR'], [4.0, '01'])
>>> print idn
<'Agilent Technologies,N6700B,MY43005147,D.01.02',>
>>>
```

Integration with Graphical Programming Environments

In Keysight VEE, Command Expert is a new add-on that provides a VEE object called the Command Expert Sequence object. Each Command Expert Sequence object contains a sequence of instrument commands. Double-click on the sequence and Command Expert will open up on the screen. Add different parameters and commands then save the sequence. Additional parameters become new terminals to the Command Expert Sequence object once updated in Command Expert.



In LabVIEW, Command Expert is a new add-on that provides a LabVIEW Express VI called the Sequence block. Double-click on the sequence block and Command Expert will open up on the screen. Add different parameters and commands then click OK to update the sequence. Sequence parameters become terminals on the Sequence object in LabVIEW.

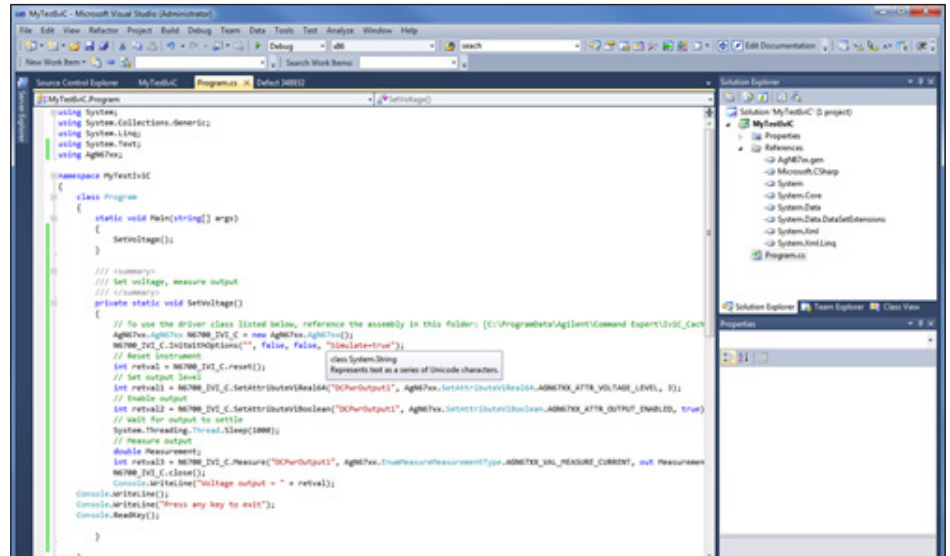


Easily Control Instruments in Visual Studio Programs

Command Expert automatically generates SCPI.NET drivers for the instruments that include a SCPI command set. This provides access to all of the instrument SCPI commands in .NET.

SCPI.NET drivers provide an efficient way to add instrument control steps without leaving the Visual Studio environment while making use of standard Visual Studio productivity aids such as Intellisense and compile-time type checking. It is even possible to view full documentation for SCPI commands within Visual Studio.

In addition, the SCPI.NET drivers perform data translation between native .NET data types and instrument commands and responses. This can be particularly useful with block data commands such as retrieving waveforms.



PC operating requirements for Command Expert 1.6

Operating system	Microsoft Windows 7: 32-bit or 64-bit – Editions: Starter, Home Basic, Home Premium, Professional, Ultimate, Enterprise Microsoft Windows 8 or 8.1: 32-bit or 64-bit – Editions: Base, Professional, Enterprise Microsoft Windows 10: 32-bit or 64-bit – Editions: Home, Pro, Enterprise, Education
Disk	At least 1 GB free disk space
Keysight IO Libraries Suite	Version 15.0 or above www.keysight.com/find/iosuite
Monitor	At least 1024x768 monitor resolution
Browser	Any supported version of Microsoft Internet Explorer

The current list of instrument SCPI Command Sets can be found at:

www.keysight.com/find/commandsetlist

Application development environment requirements for Command Expert

MATLAB	MATLAB R2009a through R2016a
SystemVue	SystemVue 2013.07 and above
Visual studio	Visual studio 2005, 2008, 2010, 2013, or 2015
Python	Python 2.5, 2.6, 2.7, 3.2, 3.3, 3.4, or 3.5 (32-bit or 64-bit) Python must be installed for all users (not "just for me").
LabVIEW	LabVIEW 8.2.1 through 2015
VEE	VEE Pro 9.22 or 9.32 of VEE Pro or VEE Runtime
Excel	Excel 2007, 2010, 2013, or 2016

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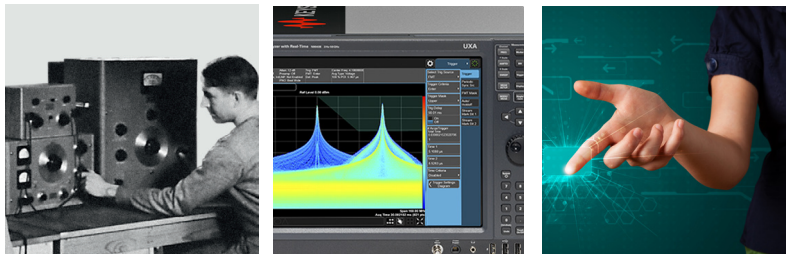
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Taiwan	0800 047 866
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