DAQ card

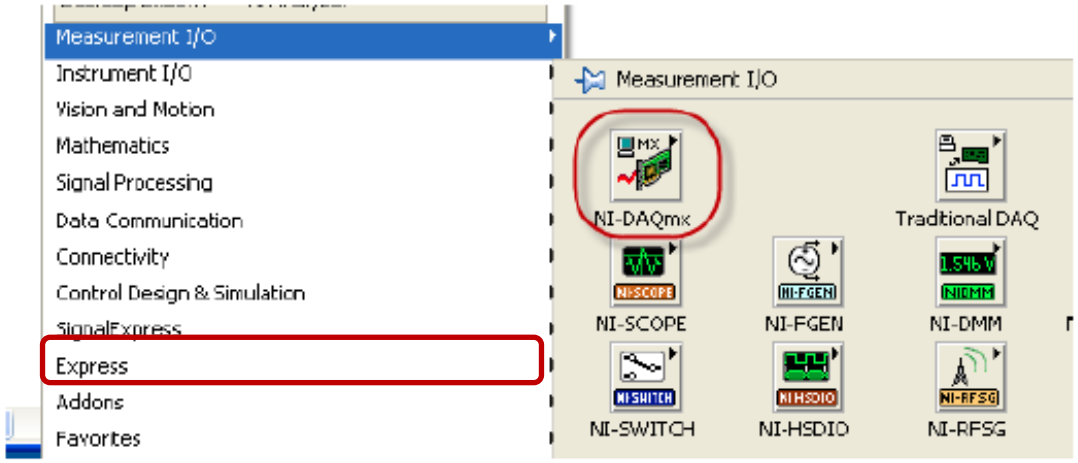
- NI PCI 6014
- DAQ assistant
- DAQ assistant for data acquisition
- DAQ assistant for signal generation

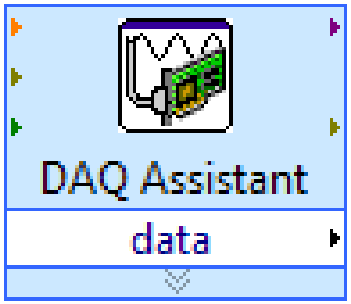
- File storage
- Linear Fit

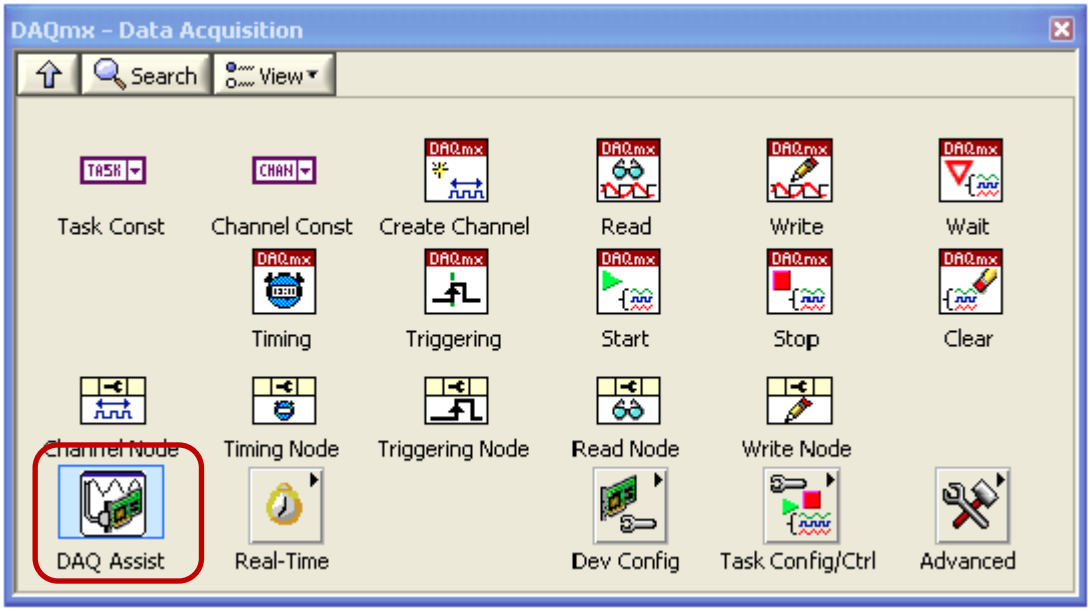
NI PCI 6014

- **Analog input**
  - 16 single-ended or 8 differential channels
  - 16 bits ADC
  - Maximum sampling rate of 200 KS/s
- **Analog output**
  - 2 channels
  - Update rate of 1 KHz
- **8 digital I/O lines**
- **Two 24-bit counters**
- **Digital triggering**

DAQ assistant



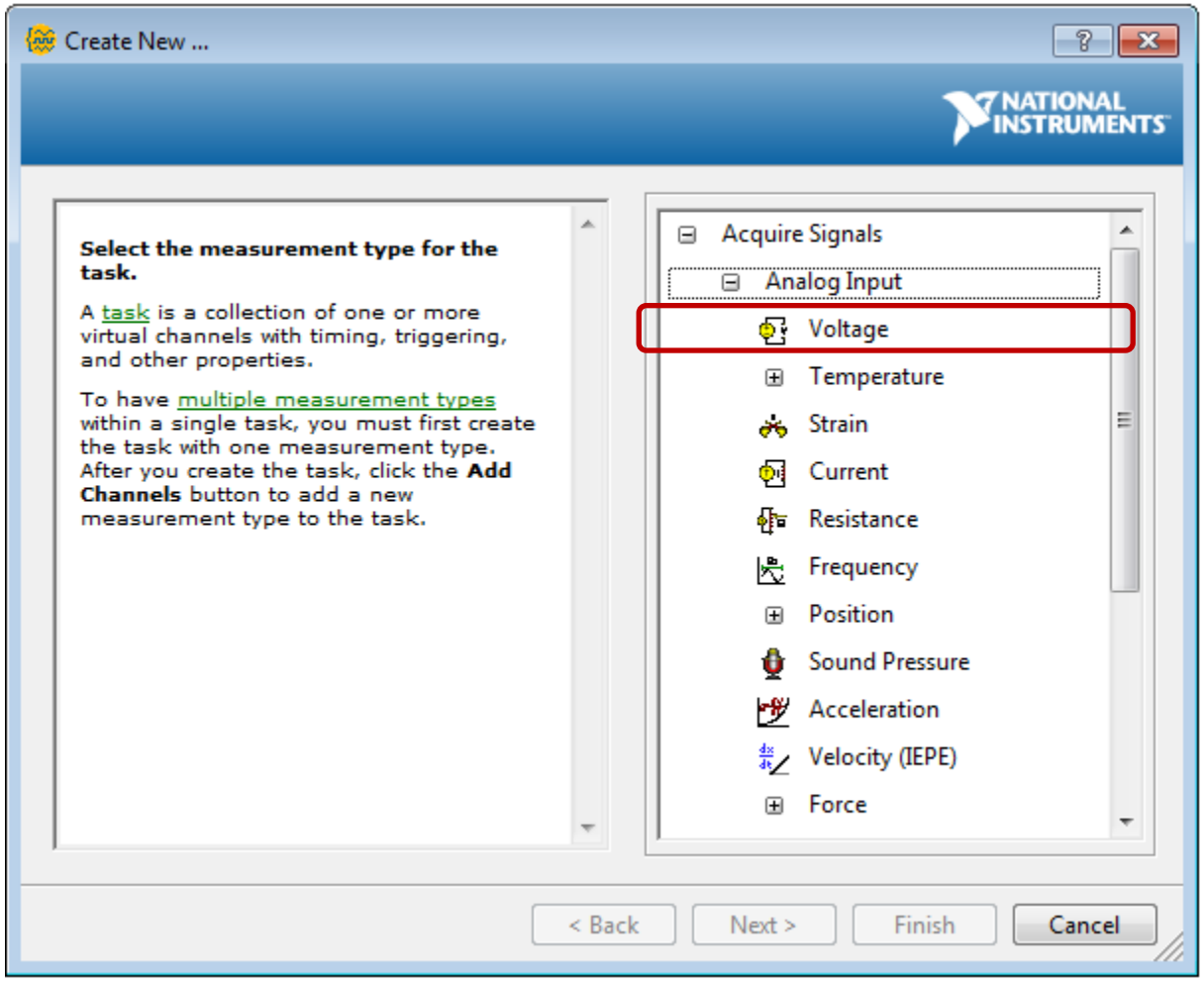




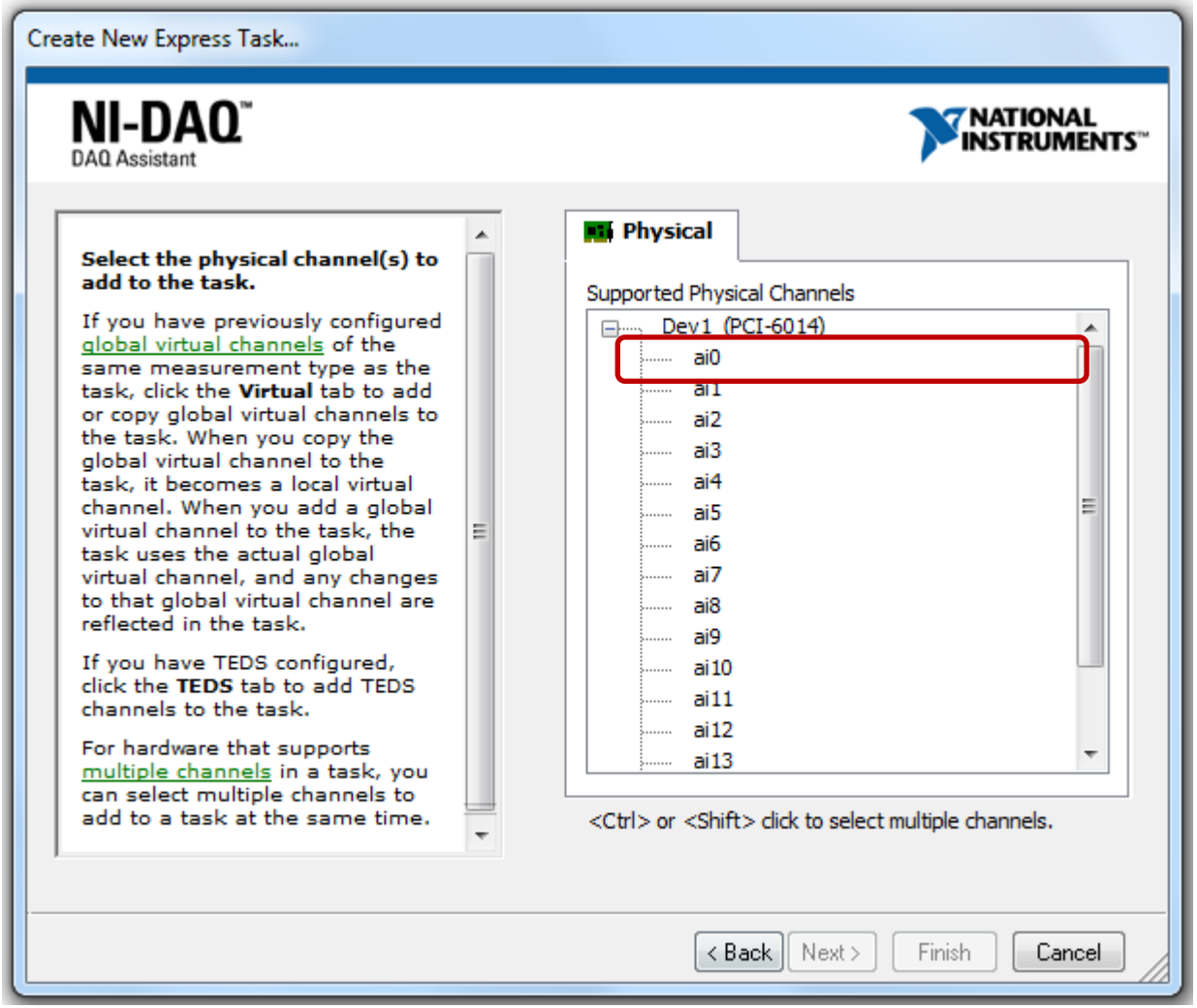
DAQ card

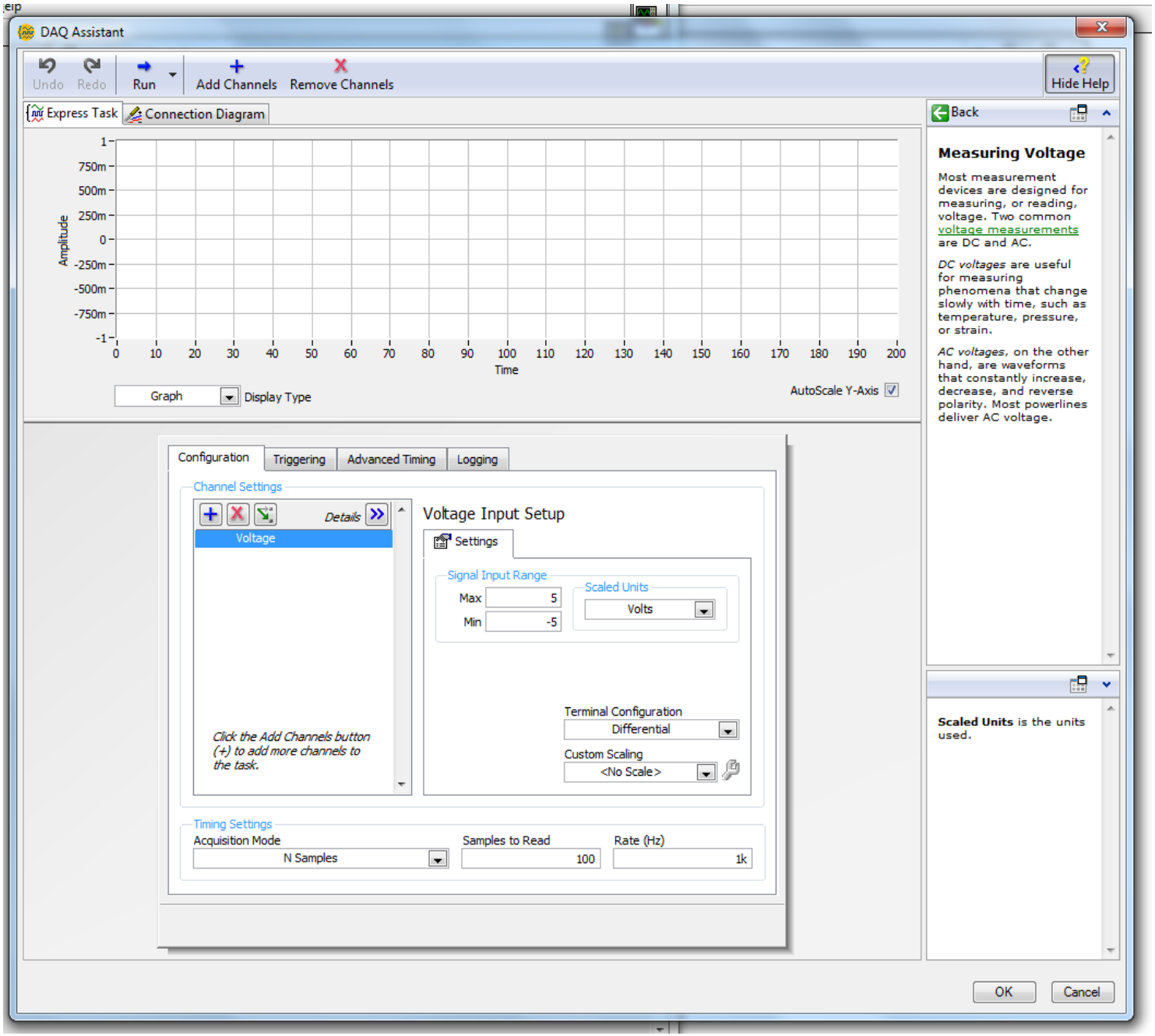
- NI PCI 6014
- DAQ assistant
- **DAQ assistant for data acquisition**
- DAQ assistant for signal generation

DAQ assistant for Data acquisition



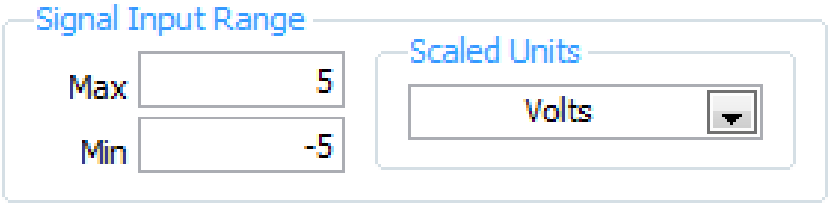
DAQ assistant for data acquisition




DAQ Assistant
Undo
Redo
Run
Add Channels
Remove Channels
Hide Help
Express Task
Connection Diagram
Amplitude
1
750m
500m
250m
0
-250m
-500m
-750m
-1
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200
Time
Graph
Display Type
AutoScale Y-Axis
Back
Measuring Voltage
Most measurement devices are designed for measuring, or reading, voltage. Two common voltage measurements are DC and AC.
DC voltages are useful for measuring phenomena that change slowly with time, such as temperature, pressure, or strain.
AC voltages, on the other hand, are waveforms that constantly increase, decrease, and reverse polarity. Most powerlines deliver AC voltage.
Configuration
Triggering
Advanced Timing
Logging
Channel Settings
Details
Voltage
Click the Add Channels button (+) to add more channels to the task.
Voltage Input Setup
Settings
Signal Input Range
Max
5
Min
-5
Scaled Units
Volts
Terminal Configuration
Differential
Custom Scaling
<No Scale>
Timing Settings
Acquisition Mode
N Samples
Samples to Read
100
Rate (Hz)
1k
Scaled Units is the units used.
OK
Cancel

DAQ assistant for data acquisition

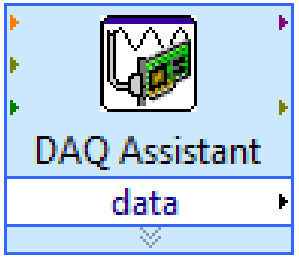
- Signal input range
  - Max and min value expected

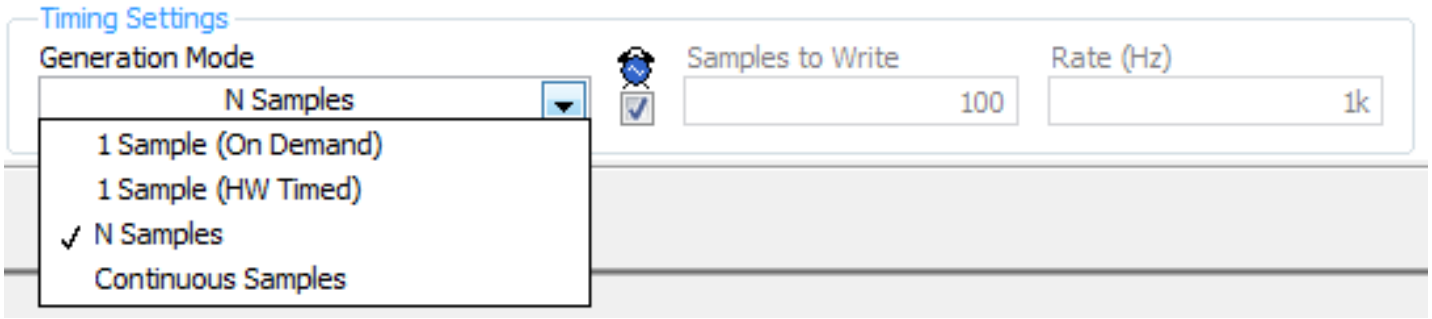


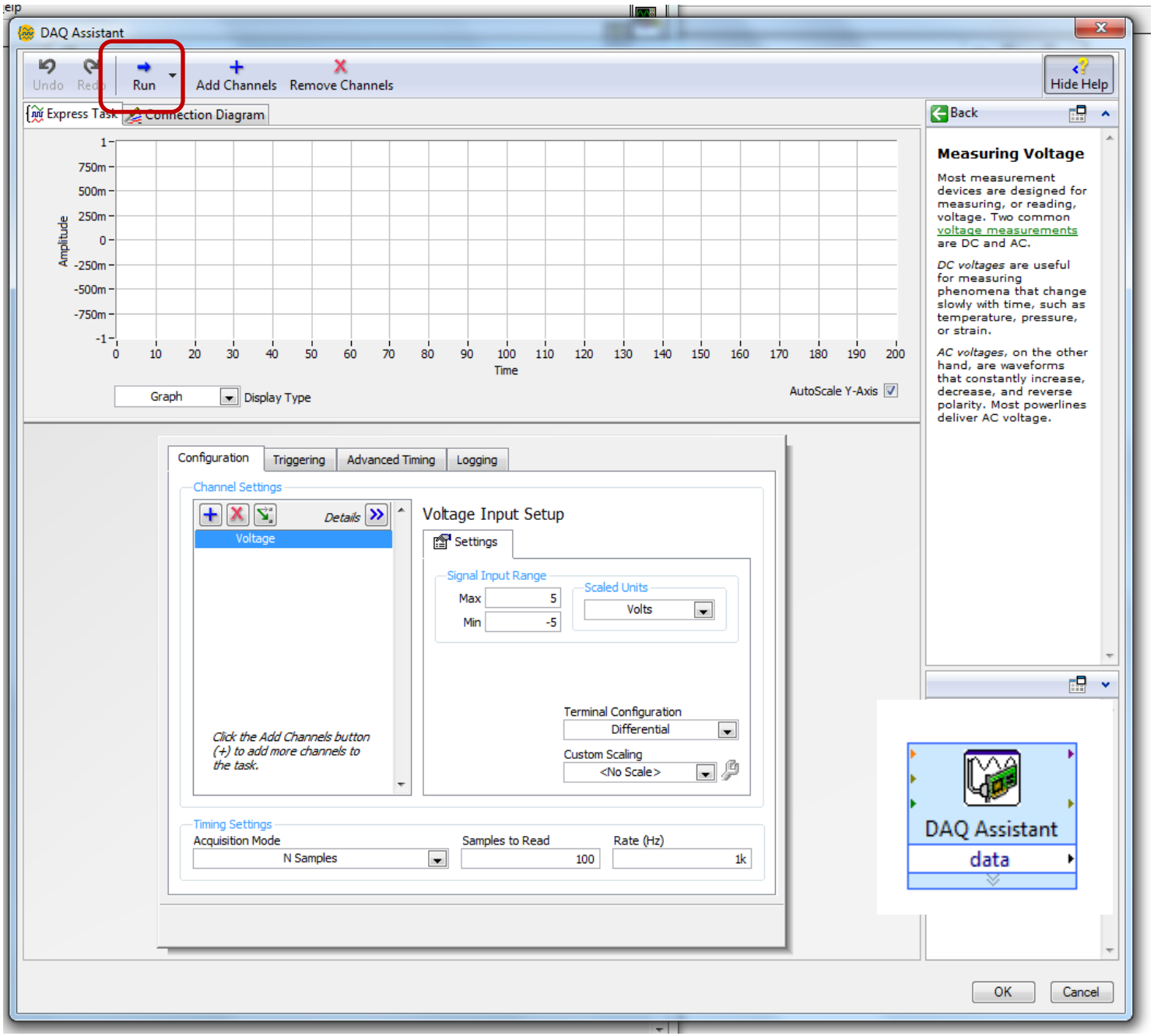
- Terminal configuration
  - Differential:
  - **NRSE:** measurement with respect to AISENSE (AGND)

DAQ assistant for data acquisition

- Timing settings
  - Generation Mode
    - 1sample (on demand)
    - N samples
    - Continous Samples
  - Samples to read
    - Number of samples to read
  - Rate (Hz)
    - Sampling rate






DAQ Assistant
Undo
Redo
Run
Add Channels
Remove Channels
Hide Help
Express Task
Connection Diagram
Amplitude
Time
Graph
Display Type
AutoScale Y-Axis
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Signal Input Range
Max
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Min
-5
Scaled Units
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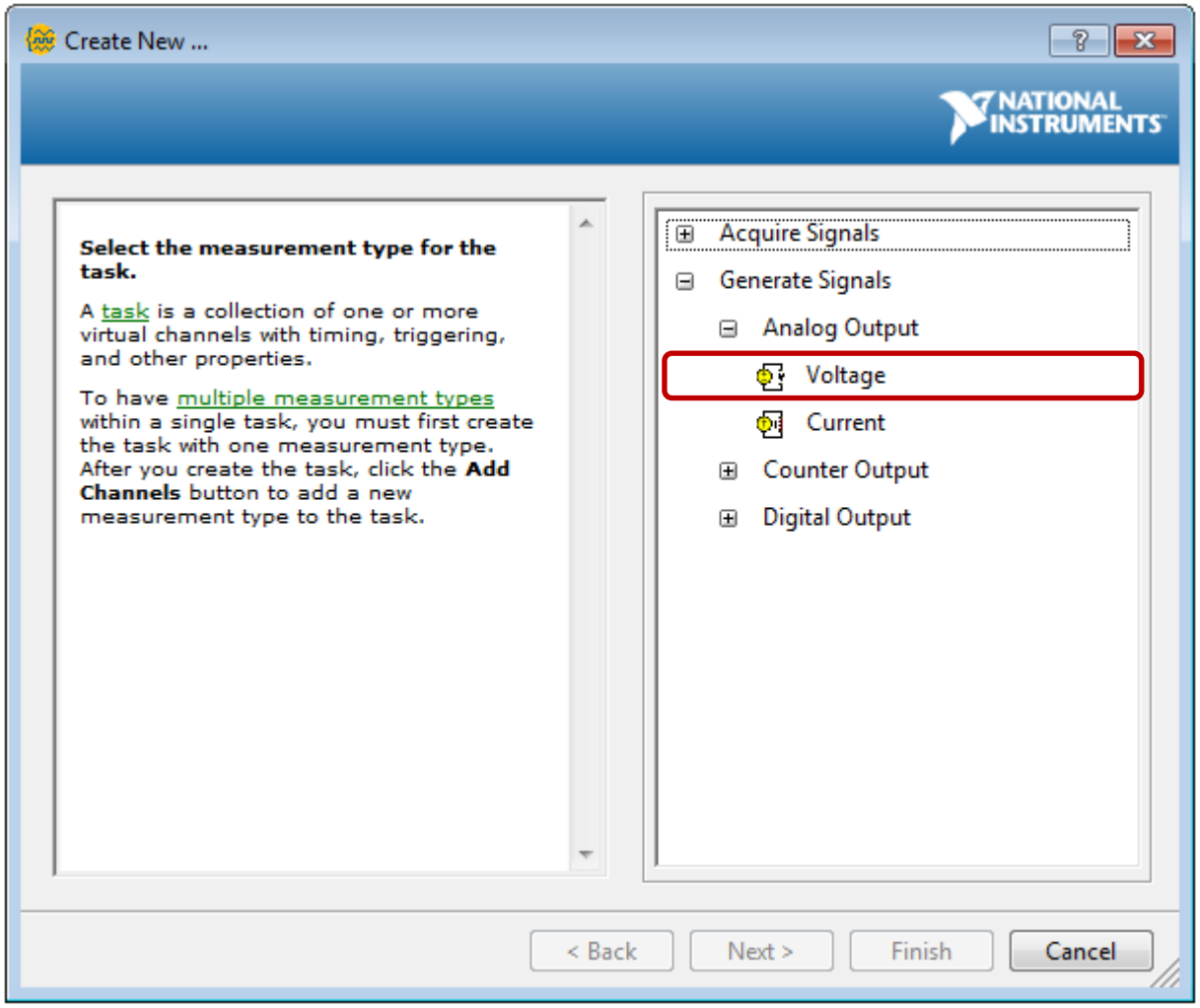
Terminal Configuration
Differential
Custom Scaling
<No Scale>
Timing Settings
Acquisition Mode
N Samples
Samples to Read
100
Rate (Hz)
1k
DAQ Assistant
data
OK
Cancel

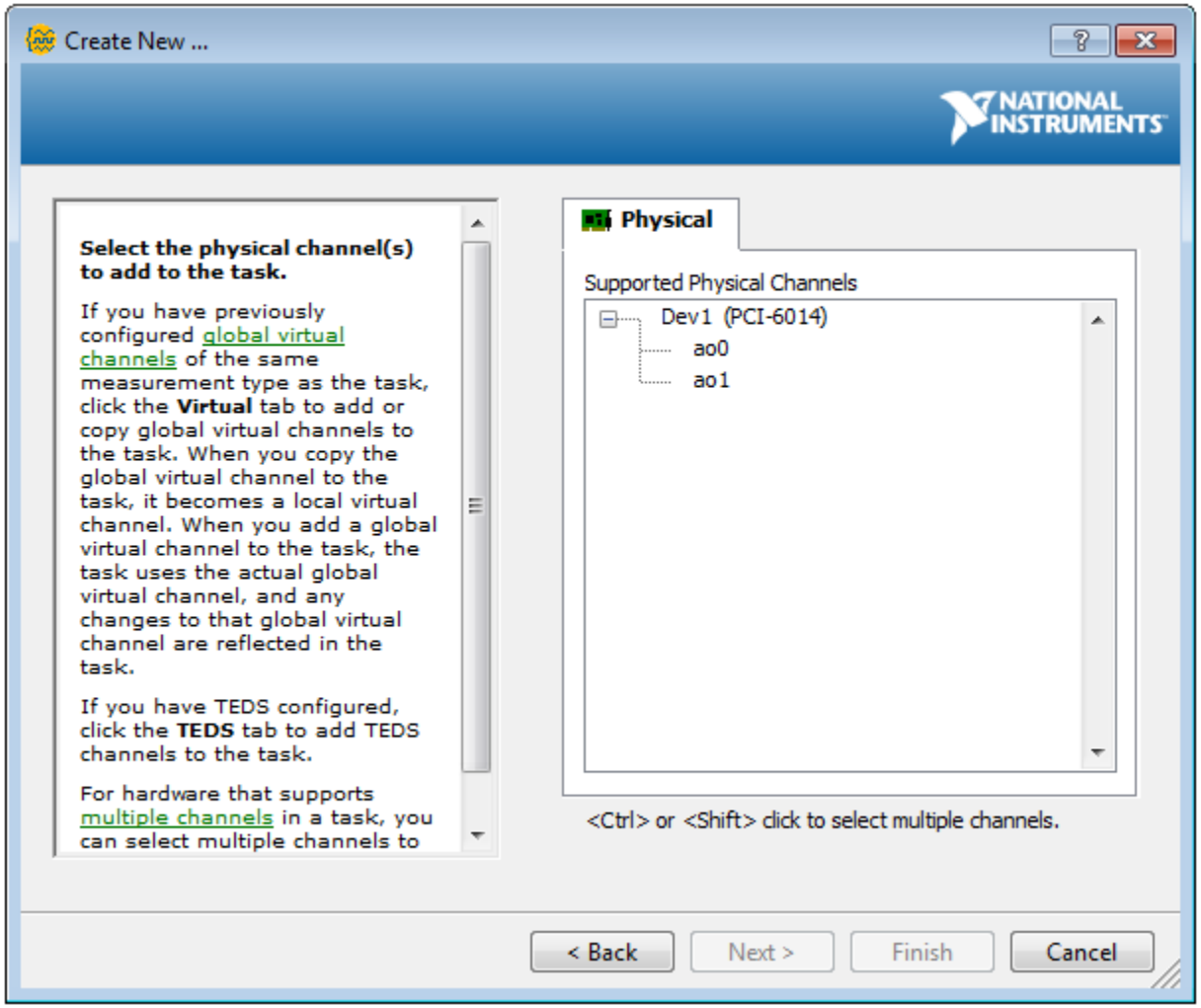
DAQ card

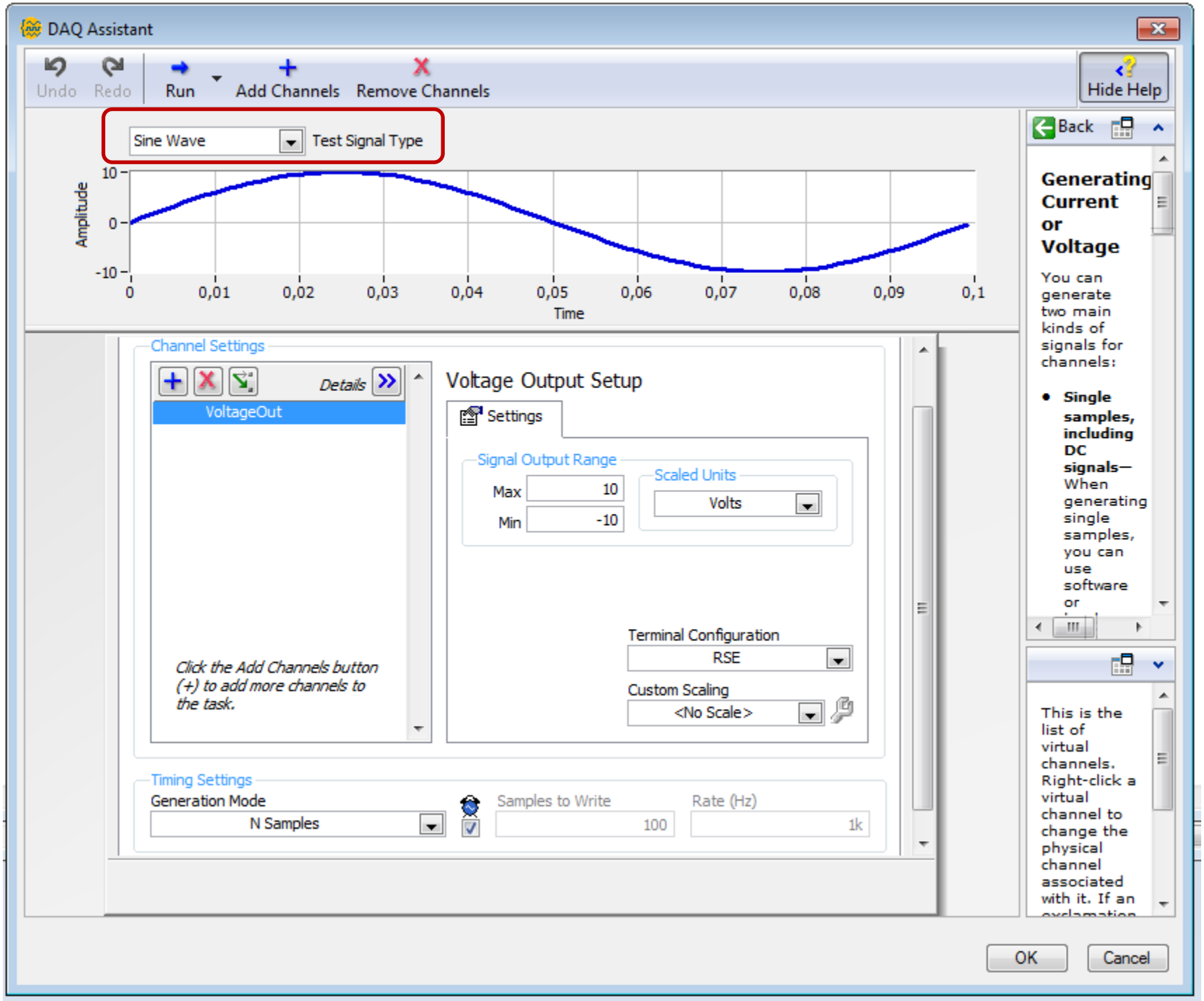
- NI PCI 6014
- DAQ assistant
- DAQ assistant for data acquisition
- **DAQ assistant for signal generation**

DAQ assistant for signal generation



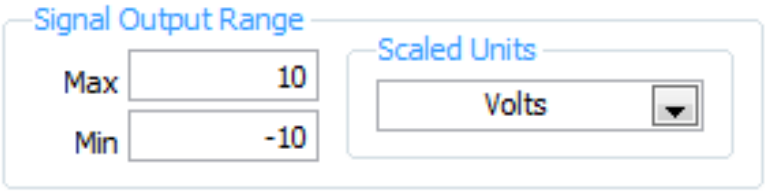
DAQ assistant for signal generation



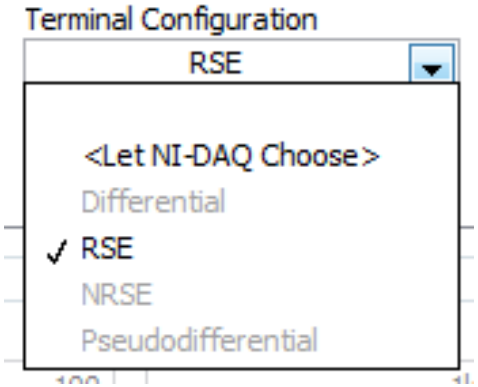

DAQ Assistant
Undo
Redo
Run
Add Channels
Remove Channels
Hide Help
Sine Wave
Test Signal Type
Amplitude
10
0
-10
0
0,01
0,02
0,03
0,04
0,05
0,06
0,07
0,08
0,09
0,1
Time
Channel Settings
Details
VoltageOut
Click the Add Channels button (+) to add more channels to the task.
Voltage Output Setup
Settings
Signal Output Range
Max
10
Min
-10
Scaled Units
Volts
Terminal Configuration
RSE
Custom Scaling
<No Scale>
Timing Settings
Generation Mode
N Samples
Samples to Write
100
Rate (Hz)
1k
Back
Generating Current or Voltage
You can generate two main kinds of signals for channels:
Single samples, including DC signals—When generating single samples, you can use software or
This is the list of virtual channels. Right-click a virtual channel to change the physical channel associated with it. If an
OK
Cancel

DAQ assistant for signal generation

- Signal output range
  - Set the max and minimum value

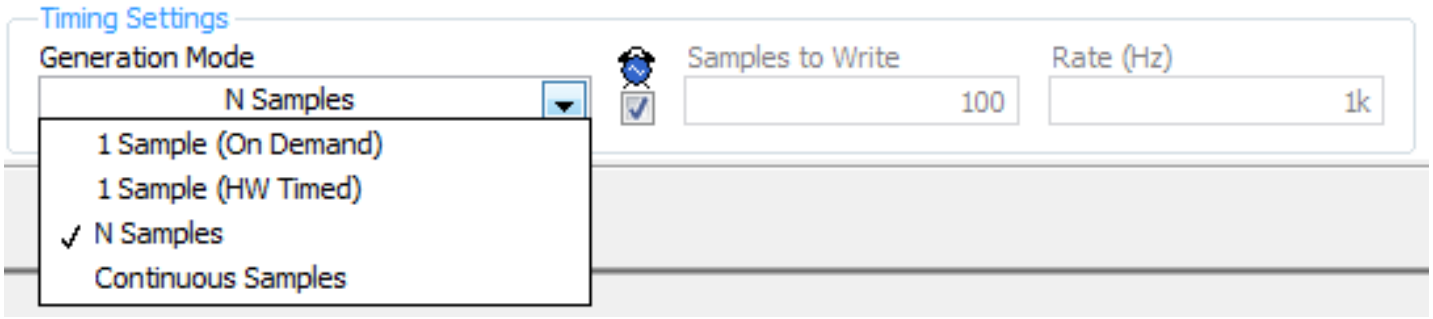


- Terminal configuration
  - RSE: measurement with respect to ground (AGND)



DAQ assistant for signal generation

- Timing settings
  - Generation Mode
    - 1sample (on demand)
    - N samples
    - Continous Samples



DAQ for signal generation

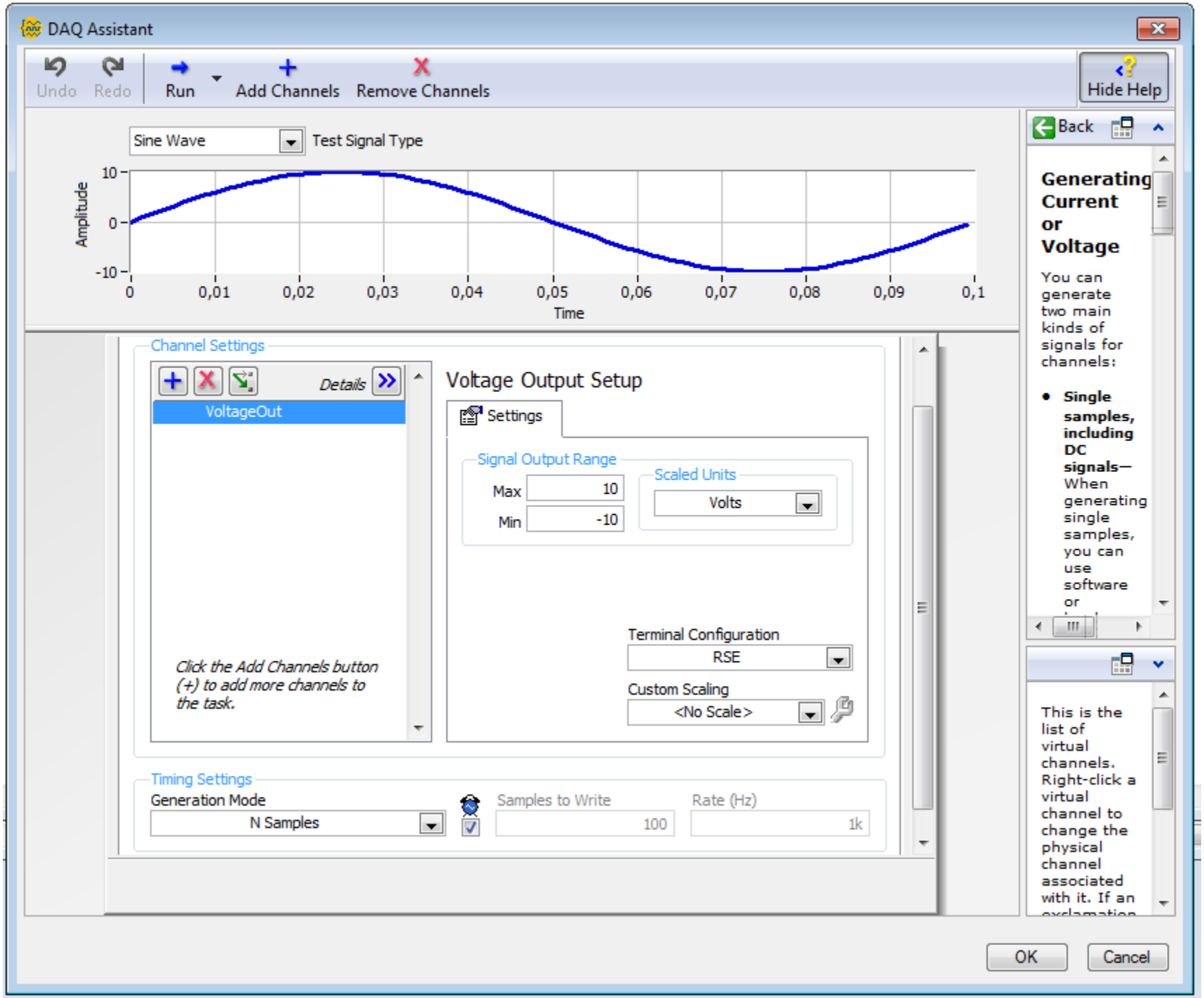
- Timing settings
  - Samples to write and Rate (Hz)
    - Use to define the frequency (f) of the signal

$$N = 100 \qquad f_s = 1KHz$$

$$T_s = 0.001\ s$$

$$T = N\,Ts = 100 * 0.001 = 0.1s$$

$$f = 1/T = 10Hz$$


DAQ Assistant
Undo
Redo
Run
Add Channels
Remove Channels
Hide Help
Sine Wave
Test Signal Type
Amplitude
10
0
-10
0
0,01
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0,05
0,06
0,07
0,08
0,09
0,1
Time
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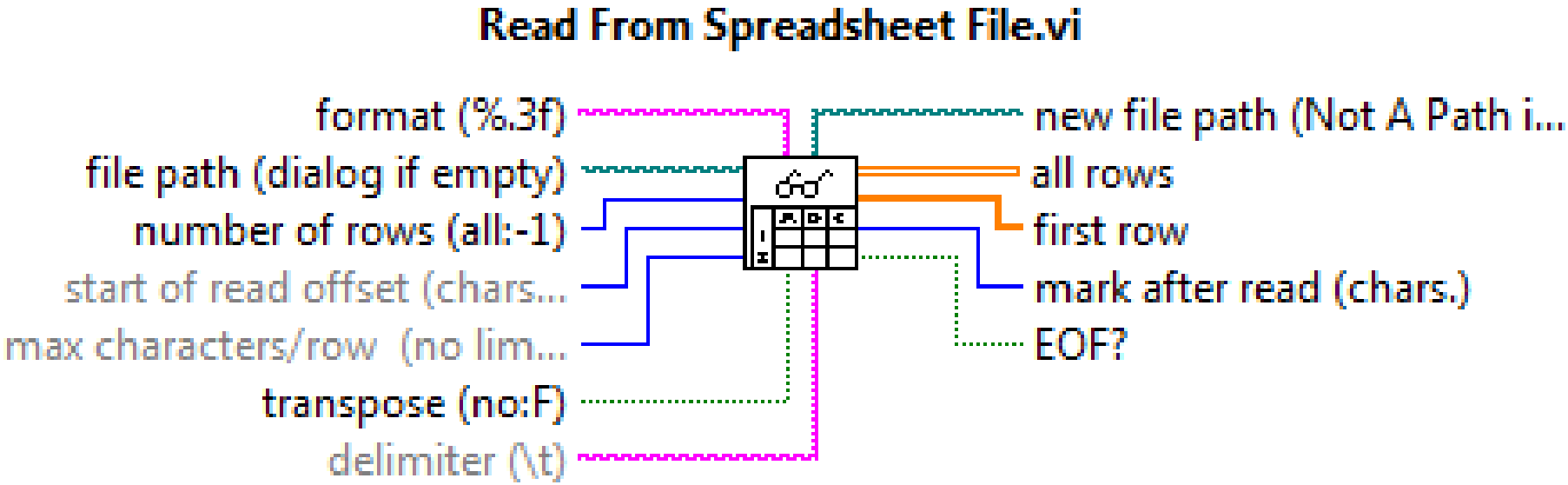
Min
-10
Scaled Units
Volts
Terminal Configuration
RSE
Custom Scaling
<No Scale>
This is the list of virtual channels. Right-click a virtual channel to change the physical channel associated with it. If an
Timing Settings
Generation Mode
N Samples
Samples to Write
100
Rate (Hz)
1k
OK
Cancel

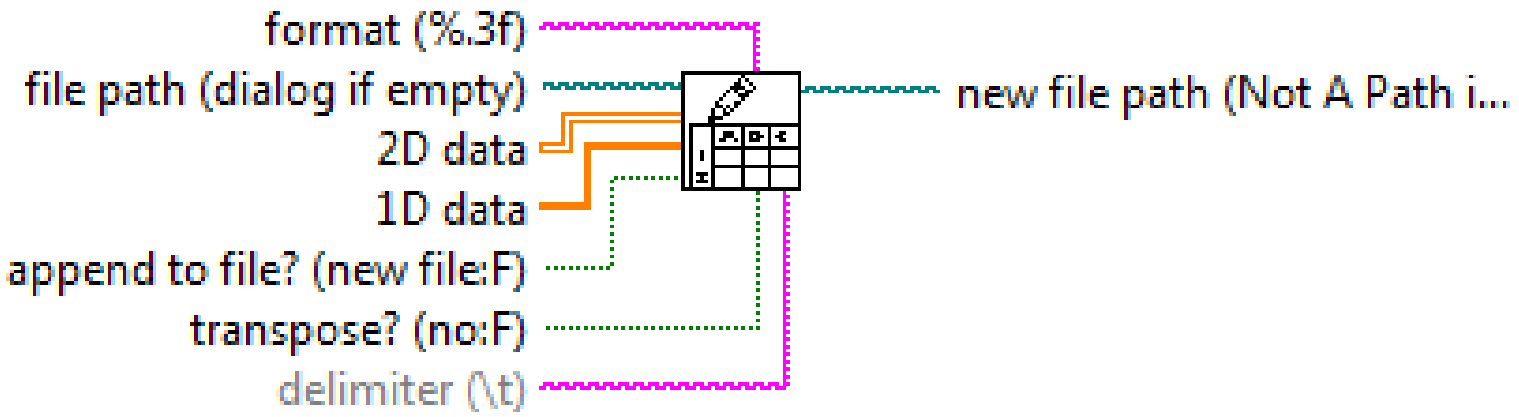
File storage



Reads a specified number of lines or rows from a numeric text file beginning at a specified character offset and converts the data to a 2D, double-precision array of numbers, strings, or integers. You must manually select the polymorphic instance you want to use.

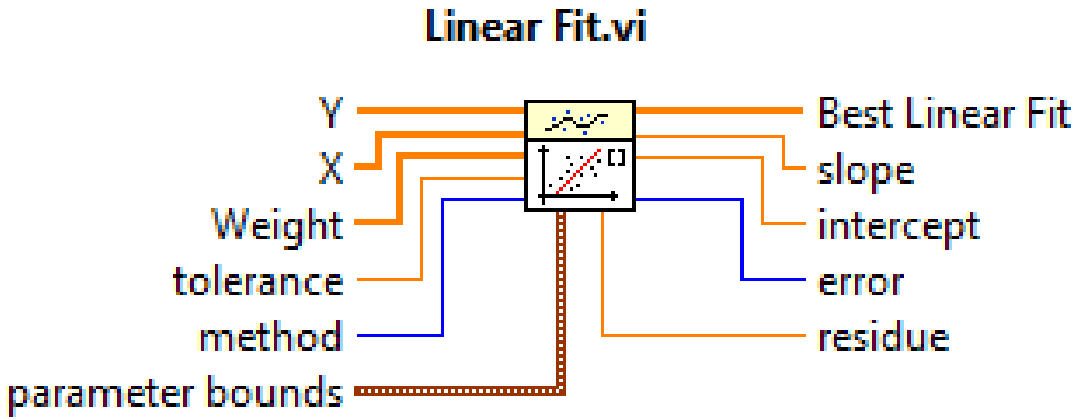
File storage

C:\...ents\LabVIEW 2011\vi.lib\Utility\file.llb\Write To Spreadsheet File.vi



Converts a 2D or 1D array of strings, signed integers, or double-precision numbers to a text string and writes the string to a new byte stream file or appends the string to an existing file. Wire data to the **2D data** input or **1D data** input to determine the polymorphic instance to use or manually select the instance.

Linear Fit



- Returns the linear fit of a data set (**X**, **Y**) using the Least Square, Least Absolute Residual, or Bisquare method.

$$\boldsymbol{Y} = a\boldsymbol{X} + b$$ Linear Equation

- a is the slope
- b is the intercept