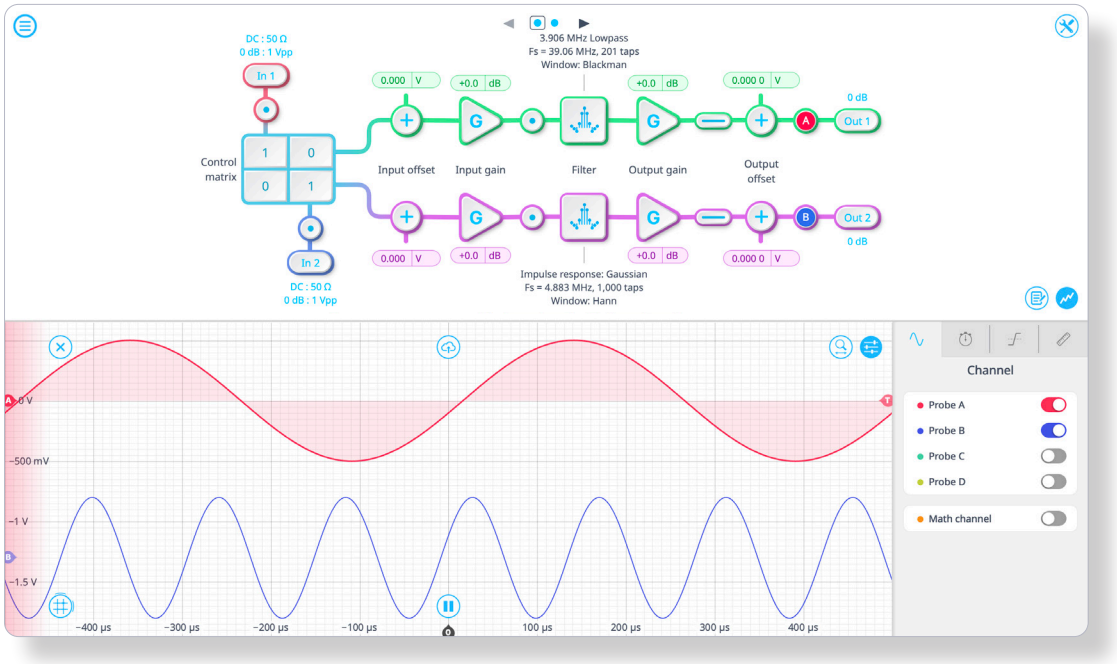
Moku:Delta Instrument Datasheet

FIR Filter Builder

The Moku:Delta FIR Filter Builder enables precision design and real-time implementation of lowpass, highpass, bandpass, and bandstop finite impulse response (FIR) filters across four high-speed analog channels. Users can define filters in either the time or frequency domain, with support for up to 14,819 coefficients via custom uploads or equation-defined impulse responses. The intuitive interface provides dynamic visualization of transfer functions, group delay, and impulse responses. Integrated probe points enable real-time signal monitoring and seamless high-speed data logging to the onboard SSD.



Sampling Rate	Filter Coefficients	Input Range	Output Voltage Range	Integrated Oscilloscope
Up to 39.06 MHz	**Up to 14,819**	**Up to 40 Vpp**	**Up to 10 Vpp (50 Ω)**	**313 MSa/s**

Features

- Visualize your signal and configuration in real-time: design filters in the time domain or in the frequency domain
- Up to 14,819 coefficients, scalable with sampling rate, enabling highly selective and precise filter designs
- Visualize the filter's transfer function, impulse and step response, or group and phase delay
- Block diagram view of the digital signal processing chain with built-in probe points for signal monitoring and logging
- Load your own filter coefficients or enter an equation to create a customized impulse response

Specifications

- Independent channels: 4
- Coefficient count at various sampling rates:
  - 2 to 232 @ 39.06 MHz
  - 2 to 928 @ 9.766 MHz
  - 2 to 7,424 @ 1.221 MHz
  - 2 to 14,819 @ 610.4 kHz
  - 2 to 14,819 @ 305.2 kHz
- Design domains: time (impulse response), frequency (frequency response)
- Impulse response: rectangular, sinc, triangular, equation, custom
- Frequency response: lowpass, highpass, bandpass, bandstop
- Window functions: Blackman, Hamming, Bartlett, Hann, Nuttall, Turkey, Kaiser

Applications

- Impulse response simulation
- DSP system design
- Precision noise filtering in RF and microwave systems
- Signal amplification
- Real-time signal conditioning
- Fractional delay generation

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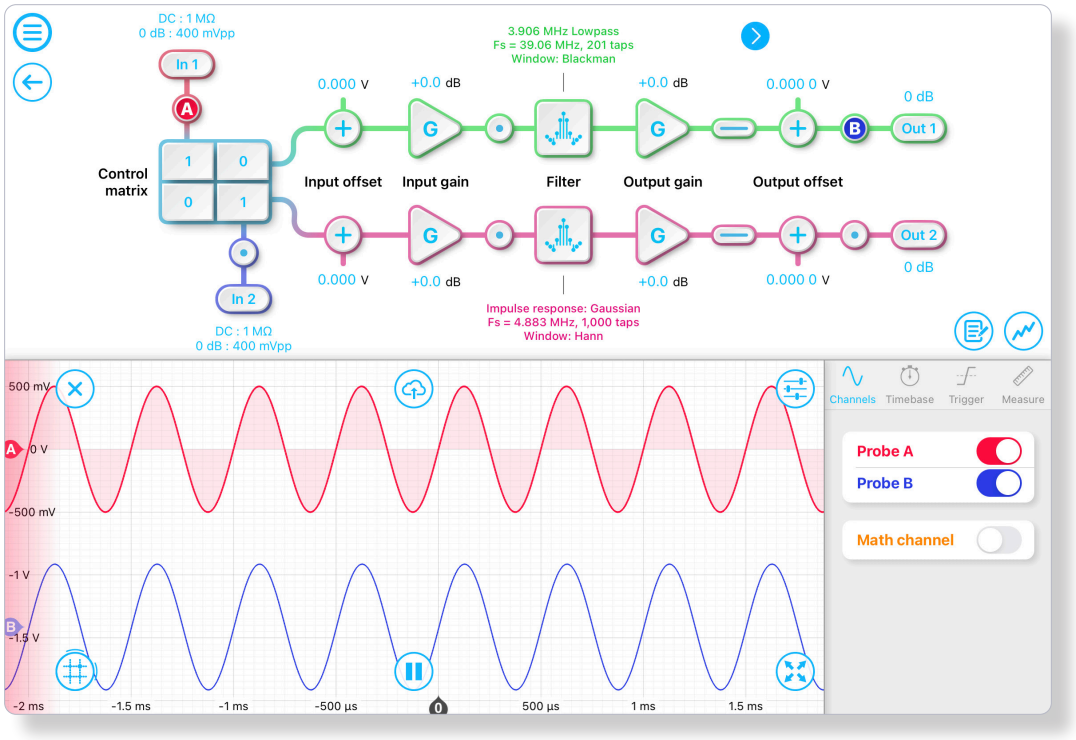
Note: All Moku:Delta specifications are subject to change.

Moku:Pro Instrument Datasheet

FIR Filter Builder

With the Moku:Pro FIR Filter Builder, you can design and implement lowpass, highpass, bandpass, and bandstop finite impulse response (FIR) filters with up to 14,819 coefficients. The Moku:Pro desktop interface allows you to fine-tune your filter's response in the frequency and time domains to suit your specific application. Select between four frequency response shapes, five common impulse responses, and eight window functions.



Sampling Rate	Filter Coefficients	Input Range	Output Voltage Range	Integrated Oscilloscope
Up to 39.06 MHz	**Up to 14,819**	**Up to 40 Vpp**	**Up to 10 Vpp (50 Ω)**	**313 MSa/s**

Features

- Visualize your signal and configuration in real-time: design filters in the time domain or in the frequency domain
- Visualize the filter's transfer function, impulse and step response, or group and phase delay
- Block diagram view of the digital signal processing chain with built-in probe points for signal monitoring and logging
- Load your own filter coefficients or enter an equation to create a customized impulse response

Specifications

- Independent channels: 4
- Coefficient count at various sampling rates:
  - 2 to 232 @ 39.06 MHz
  - 2 to 928 @ 9.766 MHz
  - 2 to 7,424 @ 1.221 MHz
  - 2 to 14,819 @ 610.4 kHz
  - 2 to 14,819 @ 305.2 kHz
- Design domains: time (impulse response), frequency (frequency response)
- Impulse response: rectangular, sinc, equation input, custom, etc.
- Frequency response: lowpass, highpass, bandpass, bandstop
- Window functions: Blackman, Hanning, Barlett, etc.

Applications

- Impulse response simulation
- DSP system design
- Noise filtering
- Signal amplification
- Fractional delay generation

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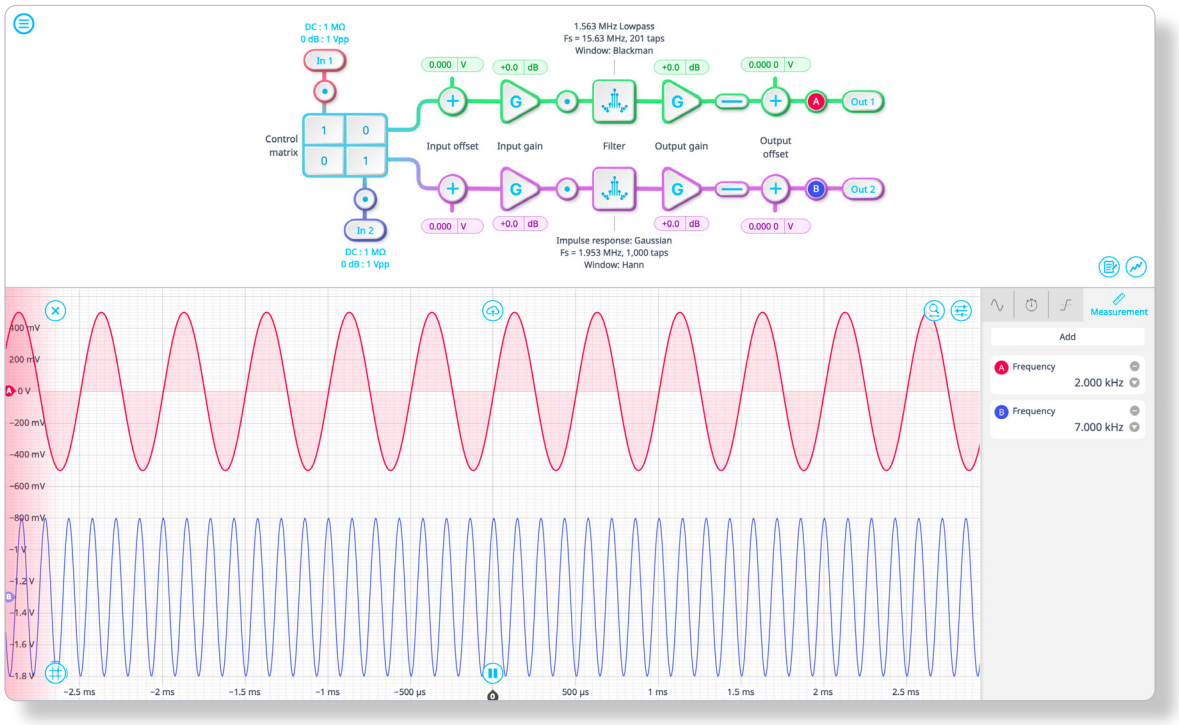
Moku:Lab Instrument Datasheet

FIR Filter Builder

With the Moku:Lab FIR Filter Builder, you can design and implement lowpass, highpass, bandpass, and bandstop finite impulse response (FIR) filters with up to 14,819 coefficients. The Moku interface allows you to fine-tune your filter's response in the frequency and time domains to suit your specific application. Select between four frequency response shapes, four common impulse responses, and eight different window functions.



Sampling Rate	Filter Coefficients	Input Range	Output Voltage Range	Integrated Oscilloscope
Up to 15.625 MHz	**Up to 14,819**	**1 Vpp or 10 Vpp**	**2 Vpp into 50 Ω**	**500 MSa/s**

Features

- Visualize your signal and configuration in real time: design filters in the time domain or in the frequency domain
- Visualize the filter's transfer function, impulse and step response, or group and phase delay
- Block diagram view of the digital signal processing with built-in probe points for signal monitoring
- Load your own filter coefficients or enter an equation to create a customized impulse response

Specifications

- Independent channels: 2
- Coefficient count at various sampling rates:
  - 2 to 232 @ 15.63 MHz
  - 2 to 928 @ 3.906 MHz
  - 2 to 3712 @ 976.6 kHz
  - 2 to 14819 @ 244.1 kHz
- Filter coefficient precision: up to 24 bits
- Design domains: time (impulse response), frequency (frequency response)
- Impulse response: rectangular, sinc, triangular, gaussian, equation input, custom
- Frequency response: lowpass, highpass, bandpass, bandstop

Applications

- Impulse response simulation
- DSP system design
- Noise filtering
- Signal amplification
- Fractional delay generation

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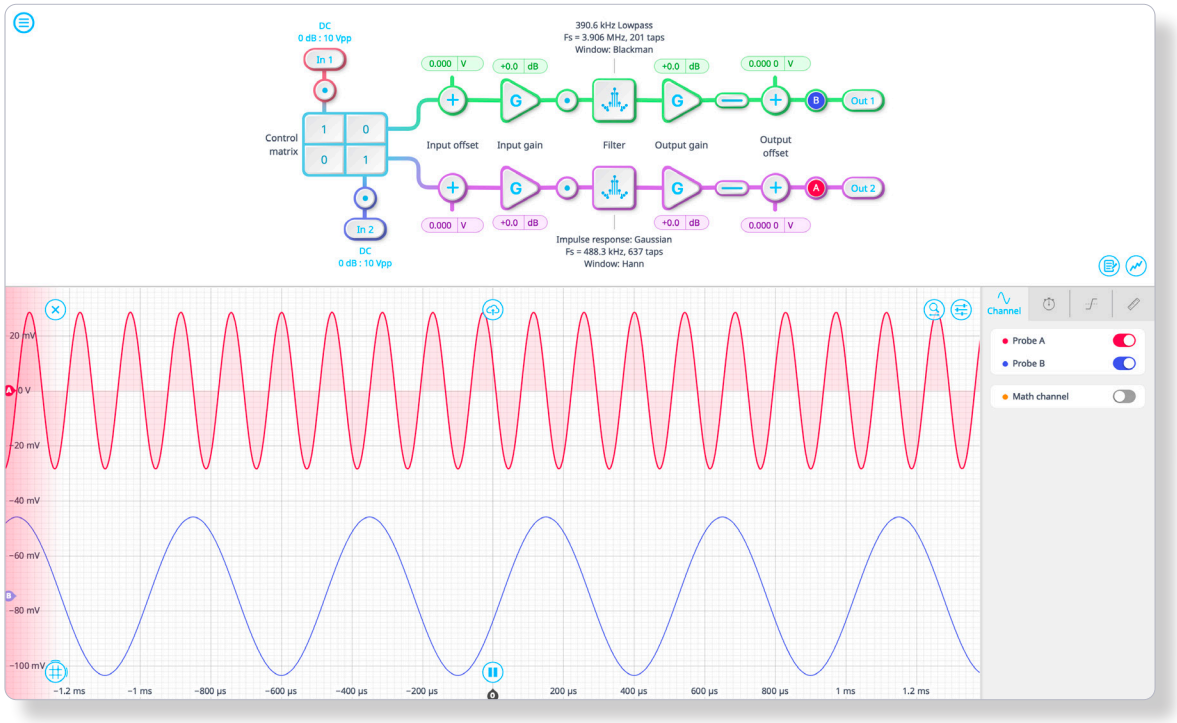
Moku:Go Instrument Datasheet

FIR Filter Builder

With the Moku:Go FIR Filter Builder, you can design and implement lowpass, highpass, bandpass, and bandstop finite impulse response (FIR) filters with up to 14,819 coefficients. The desktop interface allows you to fine-tune your filter's response in the frequency and time domains to suit your specific application. Select between four frequency response shapes, five common impulse responses, and eight window functions.



Sampling Rate	Filter Coefficients	Input Range	Output Voltage Range	Integrated Oscilloscope
Up to 3.906 MHz	**Up to 14,819**	**± 5 V or ± 25 V**	**± 5 V into high-z**	**125 MSa/s**

Features

- Visualize your signal and configuration in real-time: design filters in the time domain or in the frequency domain
- Visualize the filter's transfer function, impulse and step response, or group and phase delay
- Block diagram view of the digital signal processing chain with built-in probe points for signal monitoring and logging
- Load your own filter coefficients or enter an equation to create a customized impulse response

Specifications

- Independent channels: 2
- Coefficient count at various sampling rates:
  - 2 to 232 @ 3.906 MHz
  - 2 to 928 @ 976.6 kHz
  - 2 to 7,424 @ 244.1 kHz
  - 2 to 14,819 @ 61.04 kHz
  - 2 to 14,819 @ 30.52 kHz
- Design domains: time (impulse response), frequency (frequency response)
- Impulse response: rectangular, sinc, equation input, custom, etc.
- Frequency response: lowpass, highpass, bandpass, bandstop
- Window functions: Blackman, Hanning, Barlett, etc.

Applications

- Impulse response simulation
- DSP system design
- Noise filtering
- Signal amplification
- Fractional delay generation

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