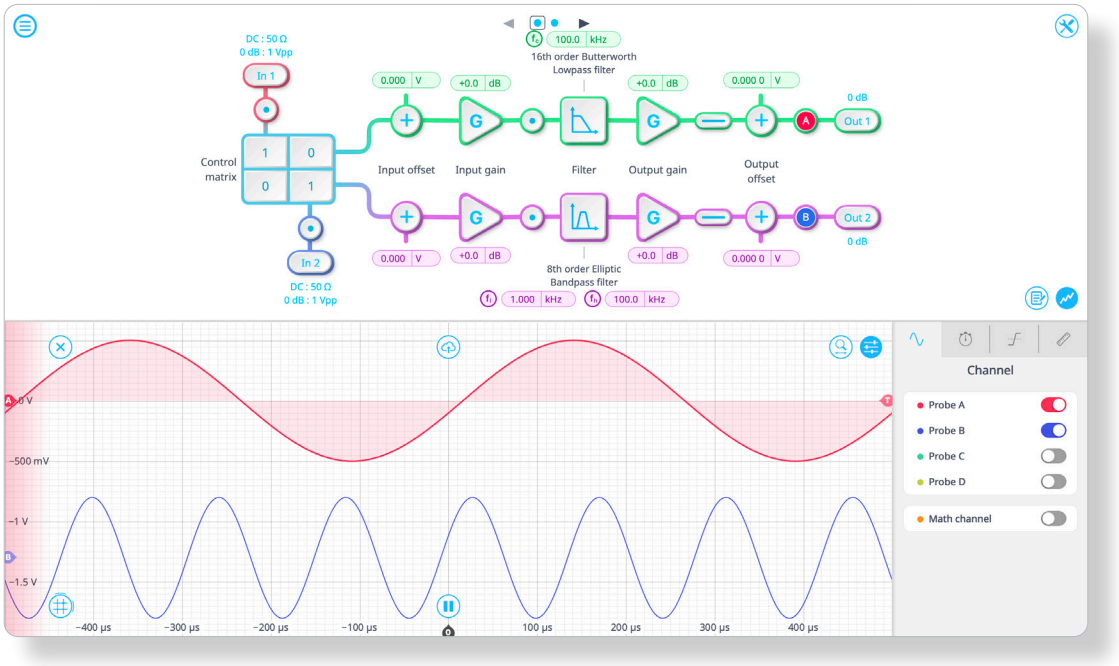
Moku:Delta Instrument Datasheet

Digital Filter Box

The Moku:Delta Digital Filter Box enables real-time design and deployment of IIR filters. It supports lowpass, highpass, bandpass, bandstop, and custom filter shapes, with selectable types including Butterworth, Chebyshev I/II, Elliptic, Bessel, Gaussian, Cascaded, and Legendre. Key parameters such as passband ripple (0.1–10 dB), stopband attenuation (10–100 dB), and filter order are fully configurable. Users can visualize the frequency response using an interactive Bode plot and monitor signal paths with built-in probe points. With sub-microsecond latency, the Digital Filter Box is optimized for closed-loop control, signal conditioning, and advanced system integration.



Sampling Rate	Filter Order	Input Range	Output Voltage Range	Filter Shapes
305.18 kHz, 4.8828 MHz, or 39.063 MHz	**2 to 16**	**up to 40 Vpp**	**10 Vpp into 50 Ω**	**Lowpass, Highpass, Bandpass, Bandstop, Custom**

Features

- Visualize your signal and configuration in real time: design your filter's frequency response using the interactive Bode plot
- Block diagram view of the digital signal processing with built-in probe points for signal monitoring
- Versatile input and output options: 4 input channels, 4 output channels with optional blending for input signal mixing
- Supports custom filter designs
- Built-in Oscilloscope and Data Logger

Specifications

- Filter shapes: lowpass, highpass, bandpass, bandstop
- Filter types: Butterworth, Chebyshev I, Chebyshev II, Elliptic, Cascaded, Bessel, Gaussian, and Legendre
- Corner frequencies: 58.63 mHz – 17.58 MHz
- Input-output latency: sub-microsecond
- Passband ripple: configurable 0.1 – 10 dB
- Stopband attenuation: configurable 10 – 100 dB
- Input and output gain: -40 dB to 40 dB

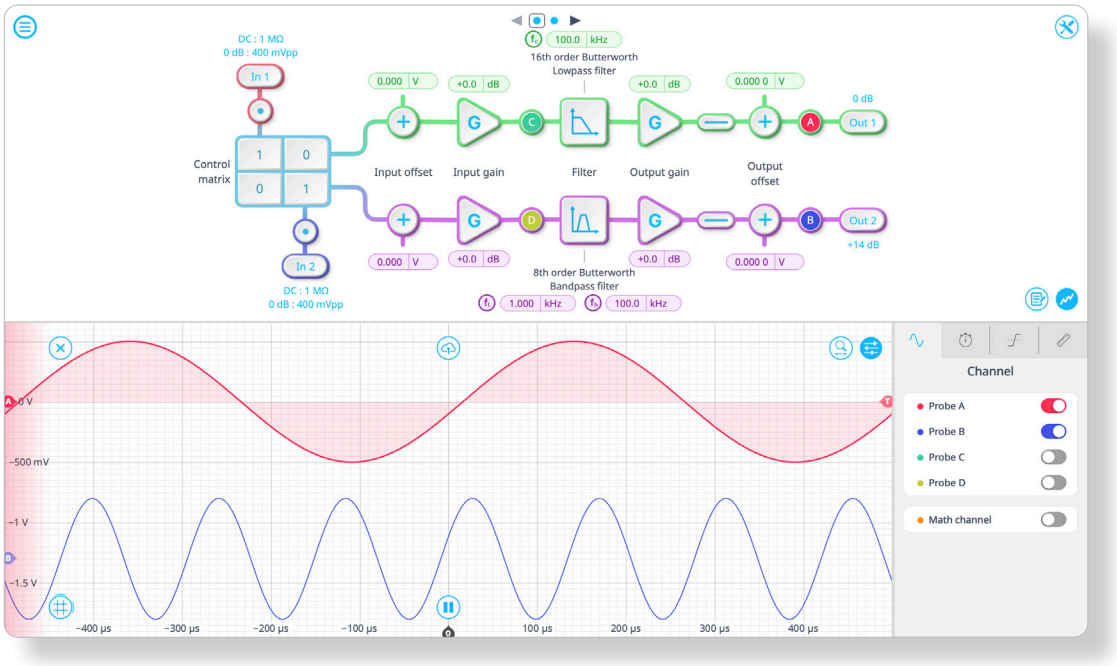
Applications

- System design
- Closed-loop control
- Multi-channel noise suppression
- Signal amplification
- Filter design and evaluation
- Custom signal conditioning pipelines
- Adaptive RF filter emulation
- MIMO system prototyping

Moku:Pro Instrument Datasheet

Digital Filter Box

The Moku:Pro Digital Filter Box lets you interactively design and generate different infinite impulse response filters with sampling rates of 305 kHz, 4.88 MHz, or 39 MHz. Select between lowpass, highpass, bandpass, and bandstop filter shapes with up to eight fully configurable types including Butterworth, Chebyshev, and Elliptic. This instrument can be deployed independently or used as filter components in Multi-instrument Mode.



Sampling Rate	Filter Order	Input Range	Output Voltage Range	Filter Shapes
305.28 kHz, 4.8828 MHz, or 39.063 MHz	**2, 4, 6, 8, 10, 12, 14, 16**	**up to 40 Vpp**	**10 Vpp into 50 Ω**	**Lowpass, Highpass, Bandpass, Bandstop, Custom**

Features

- Visualize your signal and configuration in real time: design your filter's frequency response using the interactive Bode plot
- Block diagram view of the digital signal processing with built-in probe points for signal monitoring
- Versatile input and output options: 4 input channels, 4 output channels with optional blending for input signal mixing
- Supports custom filter designs
- Built-in Oscilloscope and Data Logger

Specifications

- Filter shapes: lowpass, highpass, bandpass, bandstop
- Filter types: Butterworth, Chebyshev I, Chebyshev II, Elliptic, Cascaded, Bessel, Gaussian, and Legendre
- Corner frequencies: 58.63 mHz - 17.58 MHz
- Input-output latency: sub-microsecond
- Passband ripple: configurable 0.1 – 10 dB
- Stopband attenuation: configurable 10 – 100 dB
- Independently adjustable input and output offsets and gains

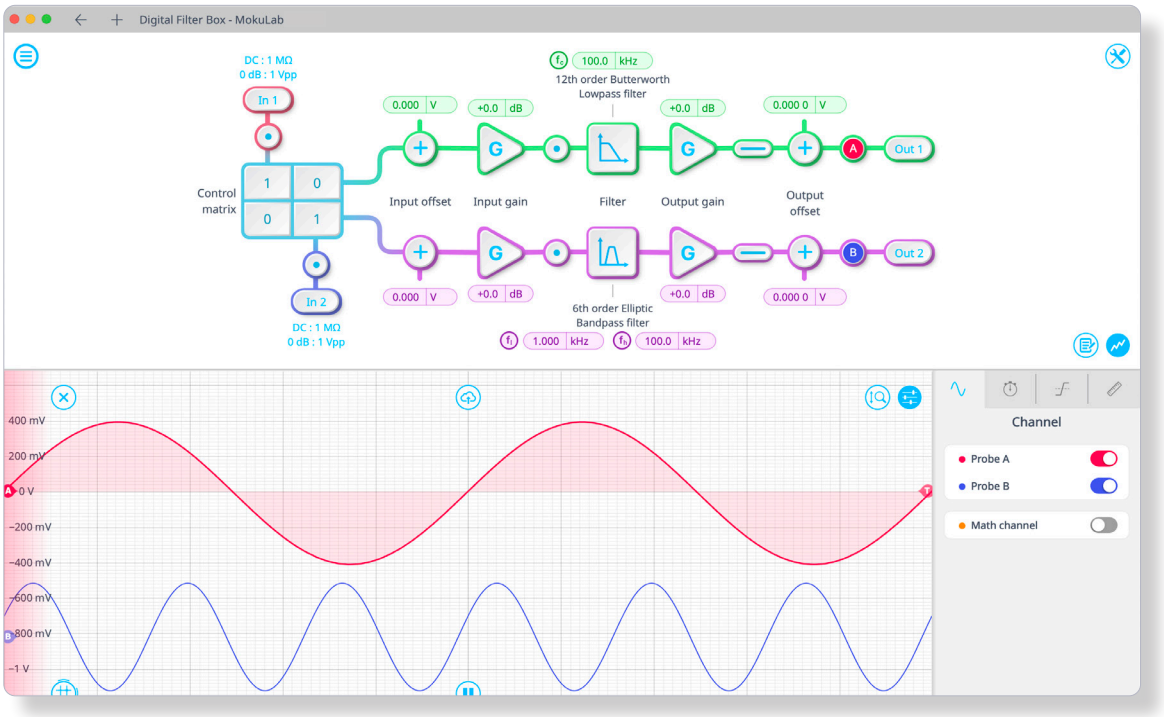
Applications

- System design
- Closed-loop control
- Noise filtering
- Signal amplification
- Filter design and evaluation

Moku:Lab Instrument Datasheet

Digital Filter Box

The Moku:Lab Digital Filter Box lets you interactively design and generate different infinite impulse response filters with sampling rates of 122 kHz, 1.95 MHz, or 15.6 MHz. Select between lowpass, highpass, bandpass, and bandstop filter shapes with up to eight fully configurable types including Butterworth, Chebyshev, and Elliptical. This instrument can be deployed independently or used as filter components in Multi-instrument Mode.



Sampling rate	Filter order	Input range	Output voltage range	Filter shapes
122.07 kHz, 1.9531 MHz, or 15.625 MHz	**2, 4, 6, 8, 10, 12**	**1 Vpp or 10 Vpp**	**2 Vpp into 50 Ω**	**Lowpass, Highpass, Bandpass, Bandstop, Custom**

Features

- Visualize your signal and configuration in real time: design your filter's frequency response using the interactive Bode plot
- Block diagram view of the digital signal processing with built-in probe points for signal monitoring
- Versatile input and output options: 2 input channels, 2 output channels with optional linear combinations for MIMO systems
- Supports custom filter designs
- Built-in Oscilloscope and Data Logger

Specifications

- Filter shapes: lowpass, highpass, bandpass, bandstop
- Filter types: Butterworth, Chebyshev I, Chebyshev II, Elliptic, Bessel, Gaussian, Cascaded, and Legendre
- Corner frequencies: 23 mHz to 7 MHz
- Input-output latency: sub-microsecond
- Passband ripple: configurable 0.1 to 10 dB
- Stopband attenuation: configurable 10 to 100 dB
- Input gain: -40 dB to 40 dB
- Output gain: -40 dB to 40 dB

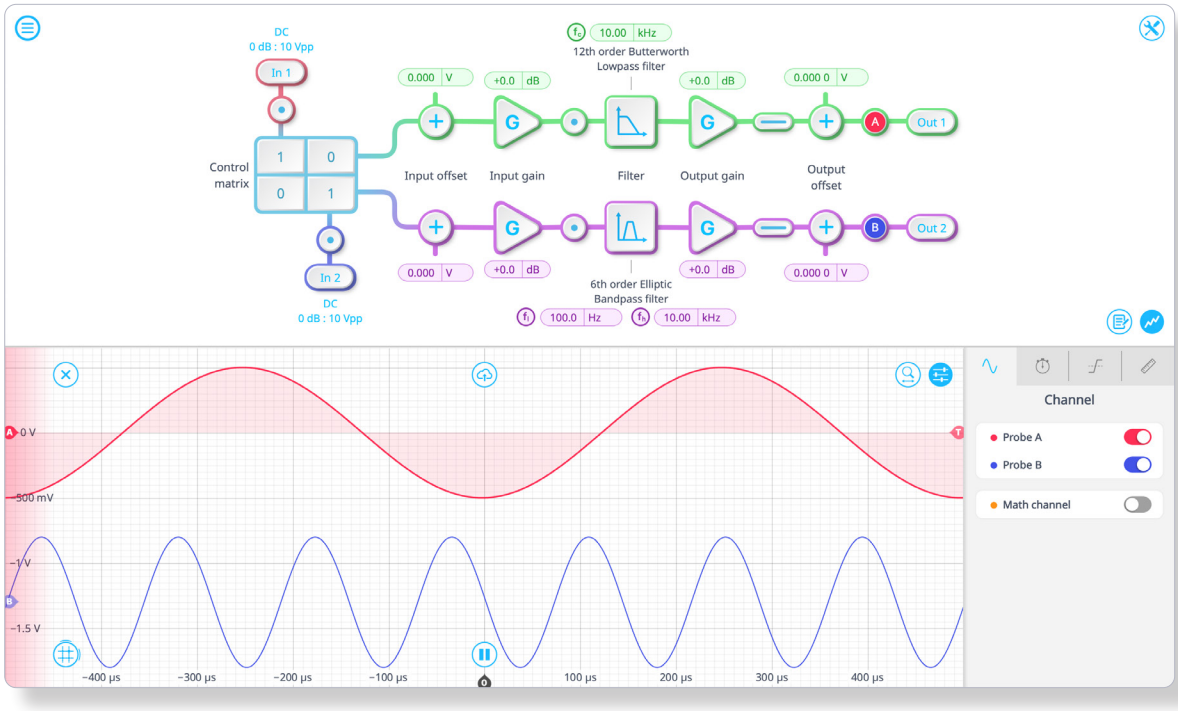
Applications

- System design
- Closed-loop control
- Noise filtering
- Signal amplification
- Filter design and evaluation

Moku:Go Instrument Datasheet

Digital Filter Box

With Moku:Go's Digital Filter Box, you can interactively design and generate different types of infinite impulse response filters with sampling rates of 61 kHz, 488 kHz, and 3.9 MHz. Select between lowpass, highpass, bandpass, and bandstop filter shapes with eight fully configurable types including Butterworth, Chebyshev, and Elliptic. This instrument can be deployed independently or used as filter components in Multi-instrument Mode.



Sampling Rate	Filter Order	Input Range	Output Voltage Range	Filter Shapes
61.035 kHz, 488.28 kHz, or 3.9063 MHz	**2, 4, 6, 8, 10, 12**	**10 Vpp or 50 Vpp**	**10 Vpp into Hi-Z**	**Lowpass, Highpass, Bandpass, Bandstop, Custom**

Features

- Visualize your signal and configuration in real-time: design your filter's frequency response using the interactive Bode plot
- Block diagram view of the digital signal processing with built-in probe points for signal monitoring
- Versatile input and output options: 2 input channels, 2 output channels with optional linear combinations
- Supports custom filter designs

Specifications

- Filter shapes: lowpass, highpass, bandpass, bandstop
- Filter types: Butterworth, Chebyshev I, Chebyshev II, Elliptic, Cascaded, Bessel, Gaussian, and Legendre
- Corner frequencies: 11.73 mHz - 1.758 MHz
- Input-output latency: < 5 µs
- Passband ripple: configurable 0.1 – 10 dB
- Stopband attenuation: configurable 10 – 100 dB
- Adjustability: independently adjustable input and output offsets and gain

Applications

- System design
- Closed-loop control
- Noise filtering
- Signal amplification