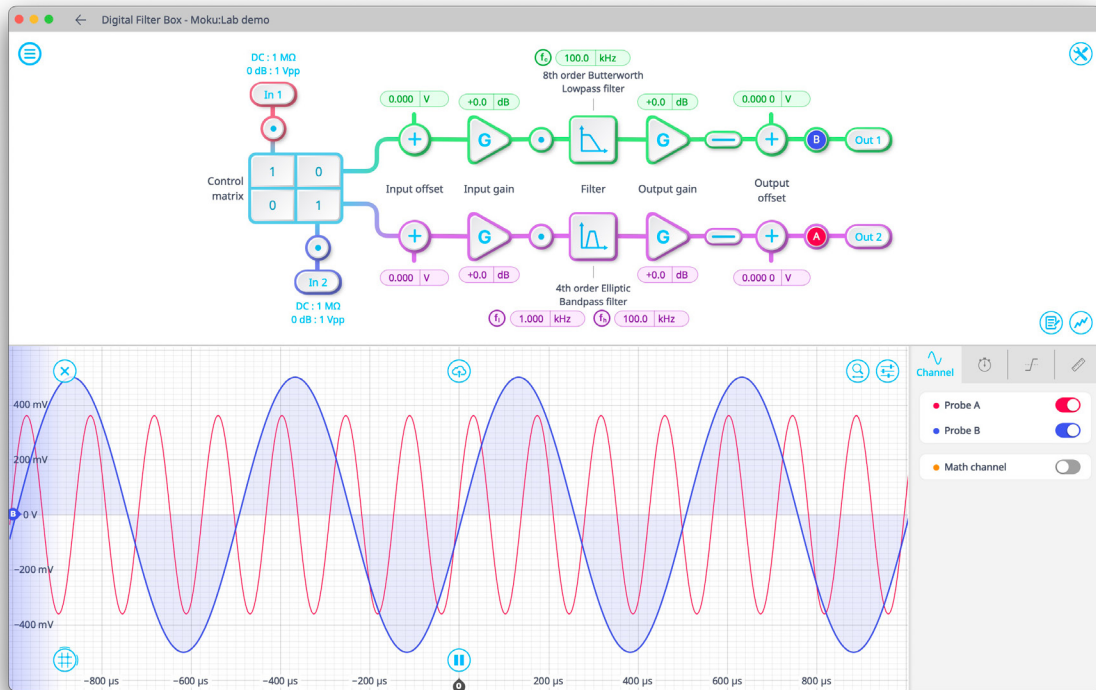# Digital Filter Box

With the Moku:Lab Digital Filter Box, you can interactively design and generate different types of infinite impulse response filters with sampling rates of 122 kHz, 1.953 MHz, or 15.625 MHz. Select between lowpass, highpass, bandpass, and bandstop filter shapes with up to eight fully configurable types including Butterworth, Chebyshev, and Elliptical.

Sampling rate	Filter order	Input range	Output voltage range	Filter shapes
122 kHz. 1.953 MHz, or 15.625 MHz	2, 4, 6, 8	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