One device, fully configurable

Every Moku combines precision analog hardware with digital signal processing for a fully reconfigurable architecture. Deploy any of 16 built-in instruments or build your own custom capabilities, then run them simultaneously on a single hardware platform. Developed for demanding measurement applications, Moku is engineered to provide the flexibility and performance your projects require.

Moku:Delta

Moku:Pro

Moku:Go

How to get started

01 Choose hardware

One device covers the bandwidth, channel count, and noise floor your application needs — from 30 MHz on Moku:Go to 2 GHz on Moku:Delta.

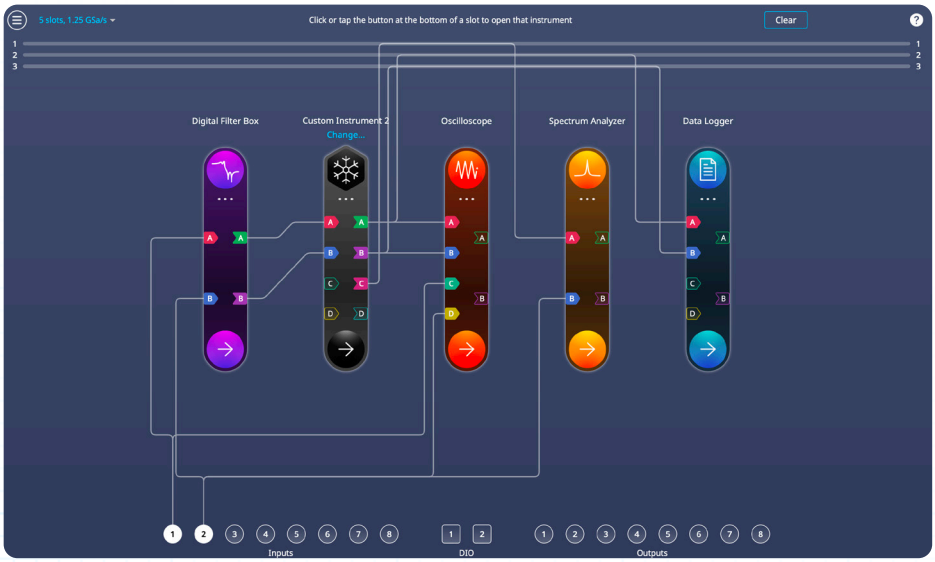
02 Deploy instruments

Pick from the built-in instrument library or build your own (see options for customization below). Run several at once in parallel slots and route signals between them inside the integrated FPGA.

03 Reconfigure anytime

Reconfigure measurements without touching a cable. Programmatically recable, swap instruments, and iterate on designs remotely.

Build complete test setups on a single device



Run multiple instruments simultaneously to build custom test setups and advanced signal processing pipelines. Instruments and signal processing execute in parallel on the FPGA for real-time operation.

Combine integrated instruments and custom logic into a reconfigurable signal chain, with routing handled internally. What once required multiple standalone instruments, external cabling, and complex synchronization can now be integrated within a single platform. Spend less time connecting, configuring, and troubleshooting your setup, and more time running measurements, iterating on designs, and getting results.

Instruments, ready to deploy

Each instrument is engineered for its specific measurement task, combining precision signal processing with an integrated user interface for configuration, control, and visualization. Automate instrument control and integrate Moku into existing test setups through standard Python, MATLAB, and LabVIEW APIs.

Signal analysis

Oscilloscope
Multi-channel time-domain measurements

Spectrum Analyzer
Frequency-domain analysis from DC to GHz

Phasemeter
Built for precise phase detection for NASA gravitational wave research

Lock-in Amplifier
Dual-phase, ultra-low-noise demodulation to DC

Frequency Response Analyzer
Real-time Bode analysis

Time & Frequency Analyzer
Event counting and timestamping, all displayed on live histograms

Logic Analyzer / Pattern Generator
SPI, UART, I^2C, I^2S, and CAN

Data Logger
Lossless, embedded logging to memory, disk, or SD card

Gigabit Streamer
Wideband, high-speed streaming over SFP and QSFP

Signal control & conditioning

PID Controller
Tune loops on an interactive Bode plot for real-time feedback

Laser Lock Box
Lock a laser frequency to a cavity or atomic transition

Digital Filter Box
Adjust bandwidth just by clicking and dragging corner frequencies

FIR Filter Builder
Tune finite impulse response filters in the time and frequency domain

Neural Network
Your models, ran with real-time inference on the FPGA

Signal generation

Waveform Generator
Critical waveform shapes and modulation types

Arbitrary Waveform Generator
Custom waveforms across multiple independent channels

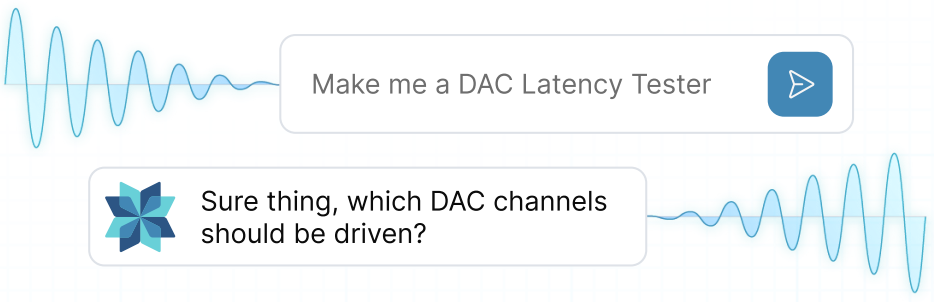
Customization without the developmental overhead

GenInst Studio

Custom instruments in minutes, not months.

Describe the instrument you need in plain language. GenInst Studio generates the design, validates it against a built-in suite of tests, and deploys it to any Moku.

No FPGA expertise required.



Moku Compile

Prefer to write it yourself? Author your own VHDL or Verilog, compile it in the cloud without the need for a local toolchain, and deploy the bitstream to any Moku device alongside the built-in instruments.

Where Moku fits

The same architecture serves very different labs, because test equipment should adapt to the project at hand, not the other way around.

Optics & Photonics

Lock lasers, characterize optical systems, and implement precision feedback loops, with locking, filtering, and sensor readout in one device.

Quantum Information Technologies

Characterize quantum hardware, stabilize lasers, and keep measurement and control synchronized on a shared clock. Develop custom instruments for niche experiments with no FPGA development required.

Aerospace & Defense

Generate, analyze, and process wideband signals for EW, radar, navigation, and systems test on your most demanding missions. Rapidly deploy niche instruments to Moku without waiting for procurement.

Semiconductor Test

Validate devices in parallel while automating a sequence of measurements, all without changing a single cable. Adapt Moku to changes in test plan without rebuilding the entire rack.

What changes in the lab

A rack of single-purpose boxes		One reconfigurable Moku
A separate procurement cycle for every measurement	→	One box on the bench, reconfigured in software for the measurement at hand
Analog cabling between boxes, wired by hand for each new test, adding loss and drift at every connection	→	Signal chains routed digitally inside the FPGA in seconds, for fewer physical connections and less degradation between stages
Channels clocked independently, so timing has to be reconciled after the fact	→	Every instrument shares one clock with precision timing references, so measurements are coherent and inherently synchronized

See it on your own bench

Moku is engineered by research scientists for the measurements they wanted to make. Explore instrument specs or talk with one of our application engineers to see how Moku adapts to your test setup.

Explore specs	Talk with an engineer	See Moku in practice
Product documentation	Contact us	Browse case studies