

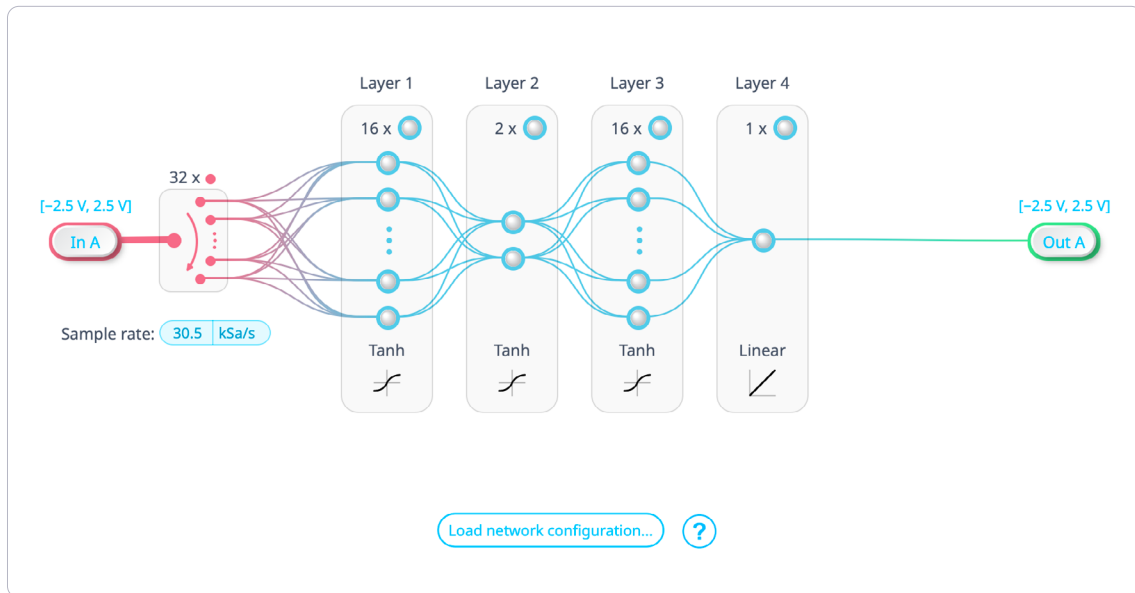


Moku:Go Instrument Datasheet

Neural Network



The Moku:Go Neural Network delivers deterministic performance for real-time applications by running inference directly on the FPGA with sub-millisecond latency and 18-bit fixed-point precision. You can implement control loops, perform on-device sensor conditioning, or run classification and denoising models. The FPGA executes each layer in parallel using your selected activation functions, allowing you to evaluate compact networks of up to five layers and eighty neurons per layer with consistent timing. This capability enables practical deployment of embedded inference workloads, from adaptive filtering to predictive or state-estimation tasks, as part of an integrated Moku test setup.



Max number of layers 5	Max neurons per layer 80	Maximum throughput Up to 30.5 kHz sample rate in all modes and network sizes	Number of inputs 1 or 2 in parallel, 1 to 80 in serial	Number of outputs 1 or 2 in parallel, 1 to 80 in serial	Precision 18-bit fixed-point representation
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Features

- Collect training data on any Moku device or simulate a desired complex process
- Train the Neural Network offline
- Upload the network configuration to a Moku:Go device for real-time performance
- Datalog network outputs with the Moku Data Logger, Oscilloscope, or other instruments

Specifications

- Activation functions:
 - Nonlinear: ReLU, Softsign, Tanh, Sigmoid
 - Linear and (future) arbitrary
- Max neurons per layer
 - 2-slot mode: 80 neurons
 - 3-slot mode: 50 neurons
- Input sampling rate: up to 30.5 kSa/s
- Sub-millisecond latency

Applications

- Adaptive filtering
- Anomaly detection
- Real-time control systems
- Sensor conditioning
- Signal classification
- Signal denoising