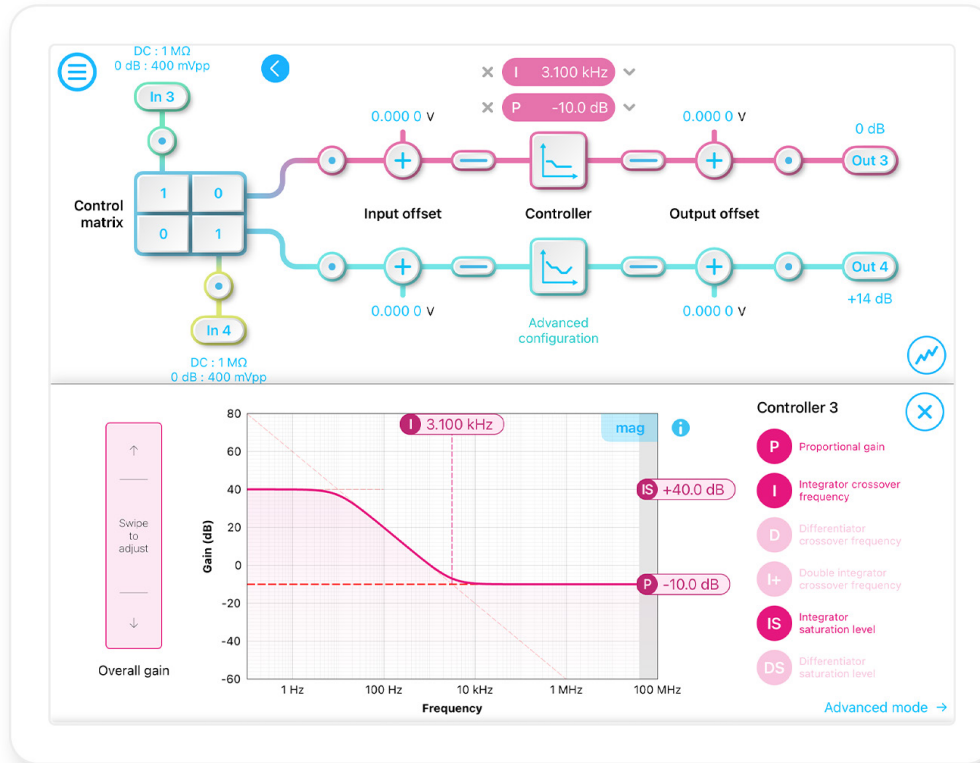Moku:Pro Instrument Datasheet

Multiple-Input Multiple-Output PID Controller

Moku:Pro's PID Controller features four fully configurable PID controllers with sub-microsecond latency. This enables them to be used in applications requiring both low and high feedback bandwidths such as laser temperature and current stabilization. The PID Controller can also be used as a lead-lag compensator by saturating the integral and differential controllers with independent gain settings.

Versatile input	Proportional Gain	DAC resolution	Input-output latency	Gain configuration	Advanced mode
4 inputs with MIMO	**- 60 dB to 60 dB**	**16-bits**	**<1 μs**	**Real-time**	**Multi-section builder**

Features

- 4 input channels, 4 output channels, and 4 independent PID controllers with control matrix for MIMO
- Design your control system's frequency response using the interactive Bode plot in realtime
- Block diagram view of the digital signal processing with built-in probe points in signal processing chain
- Advanced multi-section PID builder with single or double integrators and differentiators with low- and high-frequency gain saturation
- Intergrated probe points for signal monitoring

Specifications

- Control matrix linear gain: ± 0.1 to ± 20
- Input offset range: ± 1 V
- Output offset range: ± 5 V
- Offset precision: 100 μV
- Gain profiles: Proportional (P), integral (I), differential (D), double-integral (I+), integral saturation (IS), differential saturation (DS)
- Proportional gain: -60 dB to 60 dB
- Integrator crossover frequency: 3.125 Hz to 312.5 kHz
- Differentiator crossover frequency: 31.25 Hz to 31.25 MHz

Applications

- Feedback and control systems design
- Laser frequency stabilization
- Temperature regulation
- Scan heads/sample stage positioning
- Pressure, force, flow rate, and other controls