

## ANALOG DISCOVERY 2 – NI EDITION OVERVIEW

The Analog Discovery 2 – NI Edition is a pocket-sized device that transforms any PC into an electrical engineering workstation. Driven by the WaveForms™ software front panel, the USB-powered Analog Discovery lets you build and test analog and digital circuits in any environment with the functionality of a stack of lab equipment:

- 2-Channel Oscilloscope
- 2-Channel Waveform Generator
- 16-Channel Logic Analyzer
- 16-Channel Digital Pattern Generator
- Digital I/O
- Voltmeter
- Spectrum Analyzer
- Network Analyzer
- ±5VDC Adjustable Power Supplies

## DETAILED SPECIFICATIONS

### Analog Inputs

- Two fully differential channels; 14-bit converters; 100 MSPS real-time sample rate
- 500uV to 5V/division; 1MΩ, 24pF inputs with 9MHz analog bandwidth (30MHz using BNC Adapter Board)
- Input voltages up to ±25V on each input (±50V differential); protected to ±50V
- Up to 16k samples/channel buffer length
- Advanced triggering modes (edge, pulse, transition types, hysteresis, etc.)
- Trigger in/trigger out allows multiple instruments to be linked
- Selectable channel sampling mode (average, decimate, min/max)
- Mixed signal visualization (analog and digital signals share same view pane)
- Real-time FFTs, XY plots, Histograms and other functions always available
- Multiple math channels support complex functions
- Cursors with advanced data measurements available on all channels
- All captured data files can be exported in standard formats
- Scope configurations can be saved, exported and imported

### Arbitrary Waveform Generator

- Two channels; 14-bit converters; 100 MSPS real-time sample rate
- Single-ended waveforms with offset control and up to ±5 V amplitude
- 9MHz analog bandwidth and up to 16k samples/channel (12MHz using BNC Adapter Board)
- Easily defined standard waveforms (sine, triangle, sawtooth, etc.)
- Easily defined sweeps, envelopes, AM and FM modulation
- User-defined arbitrary waveforms can be defined using standard tools (e.g. Excel)

### Digital Pattern Generator

- 16 signals shared between analyzer, pattern generator, and discrete I/O
- 100 MSPS, with buffers supporting up to 16K transitions per pin
- Algorithmic pattern generator (no memory buffers used)
- Custom pattern editor supports up to 16K transitions per pin
- 3.3V outputs
- Data file import/export using standard formats
- Customized visualization options for signals and busses

### Digital I/O

- 16 signals shared between analyzer, pattern generator, and discrete I/O
- LVCMOS (3.3 V) logic level inputs and outputs
- PC-based virtual I/O devices (buttons, switches & displays) drive physical pins
- Customized visualization options available

### Power Supplies

- Two power supplies that can be powered from USB port or through external power
- ±0.5V to ±5V up to 500mW combined (700mA max) when powered through USB, and up to 2.1W per channel (700mA max) when connected to external power

### Logic Analyzer

- 16 signals shared between analyzer, pattern generator, and discrete I/O
- 100 MSPS, with buffers supporting up to 16K transitions per pin
- LVCMOS logic level inputs
- Multiple trigger options including pin change, bus pattern, etc.
- Trigger in/trigger out allows multiple instruments to be linked
- Interpreter for SPI, I2C, UART, Parallel bus
- Captured signals can be saved and exported in standard file formats

### Spectrum Analyzer

- Performs FFT or CZT algorithm on analog input channels and displays power spectrum
- Frequency range adjustments in center/span or start/stop modes
- Linear or logarithmic frequency scale
- Peak tracking option finds peak power and adjusts display to keep peak in center of display
- Vertical axis supports voltage-peak, voltage-RMS, dBV and dBu display options
- Windowing options include rectangular, triangular, hamming, Cosine, and many others
- Cursors and automatic measurements including noise floor, SFDR, SNR, THD, and many others
- Data file export using standard formats

### Network Analyzer

- Waveform generator drives circuits with swept sine waves up to 10MHz
- Input waveforms settable from 1Hz to 10MHz, with 5 to 1000 steps
- Settable input amplitude and offset
- Analog input records response at each frequency
- Response magnitude and phase delay displayed in Bode, Nichols, or Nyquist formats

### Voltmeters

- Two independent meters (shared with Analog input channels)
- Automatic measurements include DC, AC RMS and True RMS values
- Single-ended and differential measurement capability
- Up to ±25V on each pin (±50V max peak-peak)
- Auto-range feature selects best gain range

### Other features

- Compatible with Windows, Mac, and Linux
- USB powered; all needed cables included
- High-speed USB2 interface for fast data transfer
- Software Development Kit provided for custom applications
- Waveform Generator output can be played on stereo audio jack
- Two external trigger pins can link triggers across multiple devices
- Cross triggering between instruments
- Help screens, including contextual help
- Instruments and workspaces can be individually configured; configurations can be exported

