DIGILENT //REFERENCE

Professional Electronics, without the constraints of a lab.

Which Test and Measurement Device is right for you?

All devices in the Analog Discovery families provide the utility of professional benchtop equipment with the flexibility of a portable instrument. The series includes mixed signal oscilloscope and programmable power supply instruments that give engineers the ability to tap into the efficiency of the WaveForms software. Products within the Analog Discovery Pro family take the extensive feature set within the Essentials family and expand it further to include deep memory, higher bandwidth, networking capability, USB 3.0, and more.

Digilent offers two different lines of Test and Measurement devices; click on each one to jump down and see the specifications for each device within the family:

- Analog Discovery Pro Family
- Analog Discovery Essentials Family

Analog Discovery Pro Family

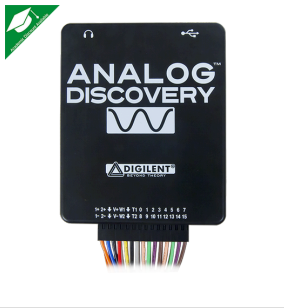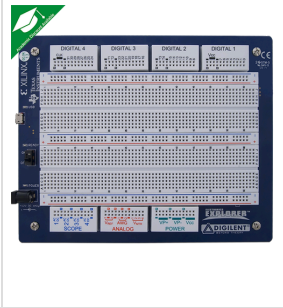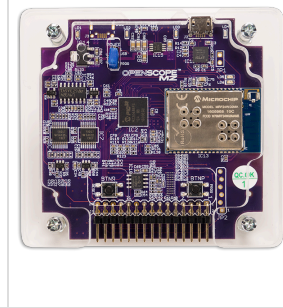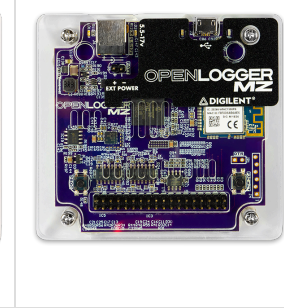|	**Analog Discovery Pro (ADP5250)** (https://digilent.com/reference/test-and-measurement/analog-discovery-pro-5250/start)	**Analog Discovery Pro (ADP3450/ADP3250)** (https://digilent.com/reference/test-and-measurement/analog-discovery-pro-3x50/start)	**Analog Discovery Pro (ADP2230)** (https://digilent.com/reference/test-and-measurement/analog-discovery-pro-2230/start)	**Discovery USB Programmable Power Supply (DPS3340)** (https://digilent.com/reference/test-and-measurement/discovery-power-supply-3340/start)
WaveForms Compatibility	Windows only with WaveForms	Mac, Windows, Linux with WaveForms	Mac, Windows, Linux with WaveForms	Mac, Windows, Linux with WaveForms Directly usable with other T&M devices
Oscilloscope	2 channel, 8-bit, 1 GS/s () (0.5 GS/s () in dual channel mode), 40 V peak to peak, single-ended, non-isolated, 100 MHz () bandwidth, BNC connector	4 channel / 2 channel, 14-bit, 125 MS/s () (0.5 GS/s () with oversampling), ±25 V, single-ended, 55 MHz ()+ bandwidth, BNC connector	2 channel, 14-bit, 125 MS/s (), ±25 V, single-ended, 50+ MHz () bandwidth, BNC connector	N/A
Waveform Generator	1 channel, 14-bit, 125 MS/s, 15 MHz+ bandwidth, ±12 V (Hi-Z), BNC connector	2 channel, 14-bit, 125 MS/s, 15 MHz+ bandwidth, ±5 V, BNC connector	1 channel, 14-bit, 125 MS/s, 15+ MHz bandwidth, ±5 V, BNC connector	N/A
Spectrum Analyzer	FFT, CZT, noise floor, SFDR, SNR, THD, Harmonic measurements and more supported for each analog input channel			N/A
Network Analyzer	Up to 10001 samples per decade, Bode, FFT, Nichols, Nyquist, and other plots supported for each analog input channel			N/A
Impedance Analyzer	Up to 10001 samples per decade, voltage, current, impedance, admittance, capacitance, and other measurements supported for each analog input channel			N/A
Voltmeter	N/A	±25 V, DC, AC RMS, and True RMS measurements for each analog input channel		N/A
Data Logger	N/A	DC, True RMS, AC RMS, and math functions, up to 24 hours of data logged at 1 Hz () sample rate for each analog input channel		N/A
Logic Analyzer	32 channel, 1 GS/s (), 0 V to 5 V. Interpreters for SPI, I2C, UART, CAN, I2S, 1Wire, HDMI CEC, Manchester, and more	16 channel, 125 MS/s, 1.2 V to 3.3 V CMOS, 5 V tolerant. Interpreters for SPI, I2C, UART, CAN, I2S, 1Wire, HDMI CEC, Manchester, and more	16 channel, 125 MS/s, 3.3 V CMOS, 5 V tolerant. Interpreters for SPI, I2C, UART, CAN, I2S, 1Wire, HDMI CEC, Manchester, and more	N/A
Pattern Generator	N/A	16 channel, 125 MS/s, 1.2 V to 3.3 V CMOS, user defined patterns and data file import supported	16 channel, 125 MS/s, 3.3 V CMOS, user defined patterns and data file import supported	N/A
Static IO	8 channel, virtual buttons, switches, LEDs, 7-segment display, progress bar, slider	16 channel, virtual buttons, switches, LEDs, 7-segment display, progress bar, slider		N/A

Power Supplies	Three variable power supplies available: - One 0 V to 6 V supply with up to 1 A output - One 0 V to 25 V with up to 500 mA output - One 0 V to -25 V - 0 A to 500 mA	One variable digital supply available on two pins, 1.2 V to 3.3 V output, up to 300 mA current total	Two variable power supplies available: - One -0.5 V to -5 V supply with up to 1 A output - One 0.5 V to 5 V supply with up to 1 A output - Integrated voltage and source current readback of all channels	Three variable power supplies available: - One 1 V to 5 V supply with up to 3 A output - One -1 V to -15 V supply with up to 500 mA draw - One 1 V to +15 V supply with up to 500 mA output - Integrated voltage and current readback of all channels
Digital Multimeter (DMM)	5½ digits, Input protection, DC voltage, AC voltage, DC current, AC current, resistance, diode, and continuity measurements supported	N/A		
Protocol Analyzer	SPI and I2C generation supported	UART, SPI, I2C, CAN, and AVR generation and interpretation supported. Additional protocol interpretation is supported in the Logic Analyzer		N/A
Dedicated External Triggers	One digital input/output on BNC connector, 3.3 V CMOS, 5 V tolerant	Two digital input/outputs on BNC connectors, 3.3 V CMOS, 5 V tolerant	Two digital input/outputs on MTE connectors, 3.3 V CMOS, 5 V tolerant	N/A
Script Editor	Simultaneous control of all instruments through an in-application JavaScript interface, automatable GUI () actions, custom data analysis, and manipulation features			
Software Customization	WaveForms SDK available for Custom Applications			

Analog Discovery Essentials Family

	Analog Discovery 3 (https://digilent.com/reference/test-and-measurement/analog-discovery-3/start)	Analog Discovery Studio (https://digilent.com/reference/test-and-measurement/analog-discovery-studio/start)	Analog Discovery 2 (https://digilent.com/reference/test-and-measurement/analog-discovery-2/start)	Digital Discovery (https://digilent.com/reference/test-and-measurement/digital-discovery/start)
WaveForms Compatibility	Mac, Windows, Linux with WaveForms			
Oscilloscope	2 channel, 14-bit, 125 MS/s (), ±25 V, single-ended 30 MHz ()+ bandwidth with BNC Adapter (differential 9 MHz ()+ with MTE connector)	2 channel, 14-bit, 100 MS/s (), ±25 V, single-ended 30 MHz ()+ bandwidth with BNC connector (differential 9 MHz ()+ bandwidth with MTE connector)	2 channel, 14-bit, 100 MS/s (), ±25 V, single-ended 30 MHz ()+ bandwidth with BNC Adapter (differential 9 MHz ()+ with MTE connector)	N/A
Waveform Generator	2 channel, 14-bit, 125 MS/s, ±5 V, 12 MHz+ bandwidth with BNC Adapter (9 MHz+ with MTE connector)	2 channel, 14-bit, 100 MS/s, ±5 V, 8 MHz+ bandwidth with BNC connector (8 MHz+ with MTE connector)	2 channel, 14-bit, 100 MS/s, ±5 V, 12 MHz+ bandwidth with BNC Adapter (9 MHz+ with MTE connector)	N/A
Spectrum Analyzer	FFT, CZT, noise floor, SFDR, SNR, THD, Harmonic measurements and more supported for each analog input channel			N/A
Network Analyzer	Up to 10001 samples per decade, Bode, FFT, Nichols, Nyquist, and other plots supported for each analog input channel			N/A
Impedance Analyzer	Up to 10001 samples per decade, voltage, current, impedance, admittance, capacitance, and other measurements supported for each analog input			N/A
Voltmeter	±25 V, DC, AC RMS, and True RMS measurements for each analog input			N/A
Data Logger	DC, True RMS, AC RMS, and math functions, up to 24 hours of data logged at 1 Hz () sample rate for each analog input channel			N/A

Logic Analyzer	16 channel, 125 MS/s, 3.3 V CMOS, 5 V tolerant. Interpreters for SPI, I2C, UART, CAN, I2S, 1Wire, HDMI CEC, Manchester, and more	16 channel, 100 MS/s, 3.3 V CMOS, 5 V tolerant. Interpreters for SPI, I2C, UART, CAN, I2S, 1Wire, HDMI CEC, Manchester, and more		32 channel maximum, 800 MS/s maximum, 1.2 V to 3.3 V CMOS, 5 V tolerant. Interpreters for SPI, I2C, UART, CAN, I2S, 1Wire, HDMI CEC, Manchester, and more
Pattern Generator	16 channel, 125 MS/s, 3.3 V CMOS, user defined patterns and data file import supported	16 channel, 100 MS/s, 3.3 V CMOS, user defined patterns and data file import supported		16 channel, 100 MS/s, 1.2 V to 3.3 V CMOS, user defined patterns and data file import supported
Static IO	16 channel, virtual buttons, switches, LEDs, 7-segment display, progress bar, slider			
Power Supplies	Two variable power supplies available: - One -0.5 V to -5 V supply with up to 800 mA output - One 0.5 V to 5 V supply with up to 800 mA output - 500 mW total via USB - Integrated voltage readback of all channels	Two variable and four fixed power supplies available: - One -0.5 V to -5 V supply with up to 700 mA output - One 0.5 V to 5 V supply with up to 700 mA output Fixed supplies: - ±12 V (200 mA each), 5 V (1 A), and 3.3 V (1 A)	Two variable power supplies available: - One -0.5 V to -5 V supply with up to 700 mA output - One 0.5 V to 5 V supply with up to 700 mA output - 500 mW total via USB	One variable digital supply available on two banks of two pins, 1.2 V to 3.3 V output, up to 100 mA current per bank
Protocol Analyzer	UART, SPI, I2C, CAN, and AVR generation and interpretation supported. Additional protocol interpretation is supported in the Logic Analyzer			
Dedicated External Triggers	Two digital input/outputs on MTE connectors, 3.3 V CMOS, 5 V tolerant			N/A
Script Editor	Simultaneous control of all instruments through an in-application JavaScript interface, automatable GUI () actions, custom data analysis, and manipulation features			
Software Customization	WaveForms SDK available for Custom Applications			

Legacy Test and Measurement Devices

	Analog Discovery (https://digilent.com/reference/test-and-measurement/analog-discovery/start)	**Electronics Explorer Board** (https://digilent.com/reference/test-and-measurement/electronics-explorer/start)	**OpenScope MZ** (https://digilent.com/reference/test-and-measurement/openscope-mz/start)	**OpenLogger** (https://digilent.com/reference/test-and-measurement/openlogger/start)
WaveForms Compatibility	Mac, Windows, Linux with WaveForms	Mac, Windows, Linux with WaveForms	Chrome, Safari, and Firefox Browsers with WaveForms Live	Chrome, Safari, and Firefox Browsers with WaveForms Live
Capabilities				
Oscilloscope	2 channel, 14-bit, 100 MS/s (), 5 MHz () Bandwidth, ±25 V differential	4 channel, 10-bit, 40 MS/s (), 100 MHz (), ±20 V	2 channel, 12-bit, 6.25 MS/s (), 2 MHz (), ±20 V	N/A
Waveform Generator	1 Hz () to 10 MHz (), Bode, Nyquist, and Nichols plots	1 mHz to 4 MHz (), Bode, Nyquist, and Nichols plots	N/A	N/A
Spectrum Analyzer	2 channel, FFT, CZT, noise floor, SFDR, SNR, THD, Harmonic measurements and more	4 channel, FFT, CZT, noise floor, SFDR, SNR, THD, Harmonic measurements and more	N/A	N/A
Network Analyzer	2 channel, 0 uHz to 10 MHz () up to 10001 samples, FFT, Nichols, Nyquist, and other plots supported	4 channel, 0 uHz to 10 MHz () up to 10001 samples, FFT, Nichols, Nyquist, and other plots supported	N/A	N/A
Impedance Analyzer	1 mHz to 10 MHz (), 10k samples per decade, selectable external compensation circuits, voltage, current, impedance, admittance, capacitance, and other measurements supported	1 mHz to 10 MHz (), 10k samples per decade, selectable external compensation circuits, voltage, current, impedance, admittance, capacitance, and other measurements supported	N/A	N/A

Voltmeter	2 channel, ±25 V	4 channel, ±20 V	N/A	N/A
Data Logger	Logging DC, True RMS, DC RMS, and math functions	Logging DC, True RMS, DC RMS, and math functions	N/A	8 Channel, 16-bit, 500 kS/s () aggregate, 50 kHz (), ± 10 V, Logging DC, True RMS, and math functions
Logic Analyzer	16 channel, 100 MS/s (), 3.3 V CMOS	32 channels, 100 MS/s (), 3.3 V CMOS	10 channel, 50 MS/s (), 3.3 V CMOS	N/A
Pattern Generator	16 channel, 100 MS/s (), 3.3 V CMOS	32 channels, 100 MS/s (), 3.3 V CMOS	N/A	N/A
Static IO	16 channel, virtual buttons, switches, LEDs, 7-seg, progress bar, Slider	32 channels, virtual buttons, switches, LEDs, 7-seg, progress bar, slider	10 channel, shared with LA, 4 LEDs, 1 BTN	8 channels
Power Supplies	(-) channel 0 to -5 V, (+) channel 0 to 5 V, at 50 mA	2 reference voltage supplies with 10 mA, 1 3.3/5 V up to 2 A supply, (+) channel 0 to 9 V at 1.5 A, (-) channel 0 to -9 V at 1.5 A	2 channel ±4 V, 50 mA per channel	2 channel, ±4 V, 50 mA per channel
Protocol Analyzer	UART, SPI, I2C, CAN, and AVR supported, more protocols in the Logic Analyzer	UART, SPI, I2C, more protocols in the Logic Analyzer	N/A	N/A
Script Editor	Simultaneous control of all instruments through JavaScript Interface, automatable GUI () actions, custom data analysis and manipulation features	JavaScript Interface	TypeScript API ()	TypeScript API ()
Triggers	2	4	N/A	N/A
Customization	WaveForms SDK available for Custom Applications	WaveForms SDK available for Custom Applications	Open source Hardware, Firmware, and Software	Open source Hardware, Firmware, and Software