2025
Product Catalog

DIGILENT®
Part of the **NI** Product Family

Digilent - A Part of the NI Product Family

Founded in 2000 by two Washington State University electrical engineering professors, Digilent's original mission was to make electrical engineering and design technologies understandable and accessible to educators and students with high-value, industry-relevant educational tools and curriculum. After laying down successful roots in Academia, Digilent — now a part of Emerson — has proven to be an invaluable resource for professional engineers as well. With a diverse offering of multi-instrument PC-based test devices and system boards, Digilent's products empower engineers, researchers, and scientists with the flexibility to design rapidly and test the world around them in either the lab or at home.

Table of Contents

New at Digilent 3
Mixed-Signal Oscilloscopes 5
Modular Test 9
Software-Defined Radio 11
Data Acquisition 12
FPGA Boards 15
Software 17
Product Comparison 18

Connect with Digilent on Social

Maximum Utility, Minimum Footprint.

ANALOG DISCOVERY™ PRO ADP2230

The Analog Discovery Pro (ADP2230)™ is a mixed signal oscilloscope (MSO) designed for professional engineers. It features analog inputs, analog output, and digital I/O, all operating at up to 125 MS/s. Users can both receive and generate analog and digital signals to test and analyze data from various devices while simultaneously powering those systems with its robust power supply. The feature-packed design allows the ADP2230 to perform the functions of several test and measurement devices and can replace a stack of traditional instruments.

With the free WaveForms software, users can view and capture complex data, perform spectral and network analysis, and quickly retrieve large amounts of data. WaveForms leverages the ADP2230's deep buffer memory, allowing hundreds of millions of samples to be stored and streamed back to the host computer. WaveForms' friendly user interface has the feel of traditional benchtop oscilloscopes.

Analog Inputs:

- Two BNC input channels with 14-bit resolution and up to ±25 V input range
- 50+ MHz bandwidth, up to 125 MS/s per channel
- On-device buffering of 64 MS per channel by default, up to 128 MS per channel

Analog Output:

- One BNC output channel with 14-bit resolution, ±5 V output range
- 15 MHz bandwidth, up to 125 MS/s per channel

Digital I/O:

- 16 dynamically configurable 3.3 V CMOS digital input/output channels
- Up to 125 MS/s per channel
- On-device buffering up to 128 MS per channel

Power Supplies:

- Two programmable power supplies (0.5 V to 5 V, -0.5 V to -5 V)
- Up to 1 A or 3 W per channel
- Integrated hardware readback of system temperature, voltage rail outputs, & sourced current

Software Support:

- WaveForms, Digilent's free software application for Windows, Mac, and Linux
- WaveForms SDK for custom applications and scripting through C/C++, Python, C#, Visual Basic
- LabVIEW and MATLAB support

Additional Features:

- Adjustable system clock and external clocking
- USB 3.0 support for rapid data streaming
- Advanced triggering and cross triggering between instruments and devices, including Dual Mode support
- Internal hardware loopbacks allow for both the recapture of analog outputs and the output of filtered and unfiltered analog input signals
- Optional standard waveform generator control over the two programmable power supplies

ANALOG DISCOVERY PRO

5000 SERIES

All-In-One Mixed Signal Oscilloscope, Function Generator, Power Supply, & DMM

Bolster your benchtop with the biggest, baddest, and boldest Analog Discovery yet! **The Analog Discovery Pro 5000 Series devices, the ADP5470 and ADP5490**, are Digilent's most ambitious mixed signal oscilloscopes to date, bringing higher sample rates, wider bandwidth, and more power to your benchtop. Each ADP 5000 Series device sports an integrated CAT II Digital Multimeter, three programmable power supplies, a dedicated trigger line, and arbitrary waveform generator to complement the mixed signal oscilloscope. With 34 digital inputs operating at 1 GS/s working in tandem with the analog system, the rugged 5000 Series devices provide a range of bandwidths and sample rates for analog inputs to fit your needs – from a base of 100 MHz at 1 GS/s, to 350 MHz at 1.5 GS/s, all the way up to 500 MHz at 2 GS/s.

Driven by Digilent's free WaveForms software and with everything included with a one-time purchase of the hardware, the Analog Discovery Pro 5000 Series is more than just a tool – it's analysis uncompromised.

Higher Sample Rate and Bandwidth

Designed to combine a complete set of instruments into a singular device, ADP 5000 Series devices are flexible and programmable mixed-signal oscilloscopes. Each has two or four analog input channels with bandwidth and sample rates ranging from 100 MHz at 1 GS/s up to 500 MHz at 2 GS/s. All devices in the series feature 34 digital channels with 1 GS/s inputs, a tri-output programmable power supply capable of up to 25 V, an external trigger, Waveform Generator, and a built-in DMM.

The Ultimate All-In-One Test System

The Analog Discovery Pro 5000 Series feature a variety of trigger options. Instruments within WaveForms can be cross-triggered by an activated oscilloscope capture based on the start of the Waveform Generator. In addition, external signals can trigger events using the dedicated external trigger input/output. Digilent's free WaveForms software provides these configurable features in the instruments themselves, or for more control or automation in one of the available scripting interfaces.

Note: The ADP 5000 Series devices are Windows® only.

13-In-1: The Analog Discovery Product Family

With lab spaces decreasing and engineering teams becoming more distributed, companies are choosing all-in-one instruments as a supplement to traditional laboratories, creating a need for a portable test and measurement bench that can support all types of designs.

Engineers all over the world use Digilent Test and Measurement devices to decrease their design cycle time and increase their impact by always having an oscilloscope, logic analyzer, waveform generator and more within reach. Our line of Test and Measurement products enables engineers to continue their designs in the library, home office, or even a coffee shop without having to reserve a lab that has all the necessary equipment.

There isn't a more flexible scope solution or cost-effective value in the industry. With up to 13 functions and a range of specifications between them, our WaveForms-powered products like the Analog Discovery 3, Analog Discovery Pro ADP3450, and the Analog Discovery Studio are perfectly capable of acting as an entire stack of lab instruments.

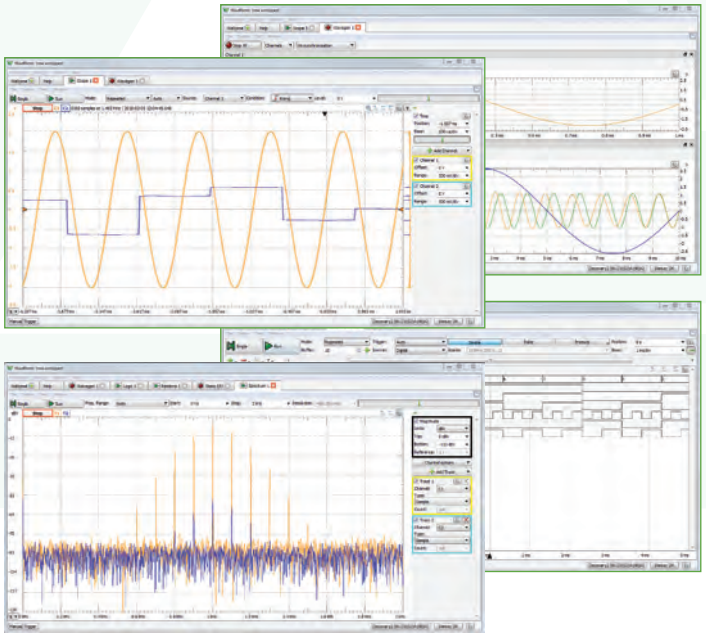
- **Oscilloscope**
- **Arbitrary Waveform Generator**
- **Power Supplies**
- **Voltmeter**
- **Data Logger**
- **Logic Analyzer**
- **Digital Pattern Generator**
- **Virtual I/O**
- **Spectrum Analyzer**
- **Network Analyzer**
- **Impedance Analyzer**
- **Protocol Analyzer**
- **Script Editor**

WaveForms

Supported by Windows, macOS, and Linux

All of our Test and Measurement devices come with the multi-instrument software application, WaveForms. It seamlessly connects our Analog Discovery products and the Digital Discovery with full Windows, macOS, and Linux support.

Designed with a clean, easy-to-use graphical interface for each instrument, WaveForms makes it easy to acquire, visualize, store, analyze, produce and reuse analog and digital signals. And as an added perk, it's FREE for all to download and use.



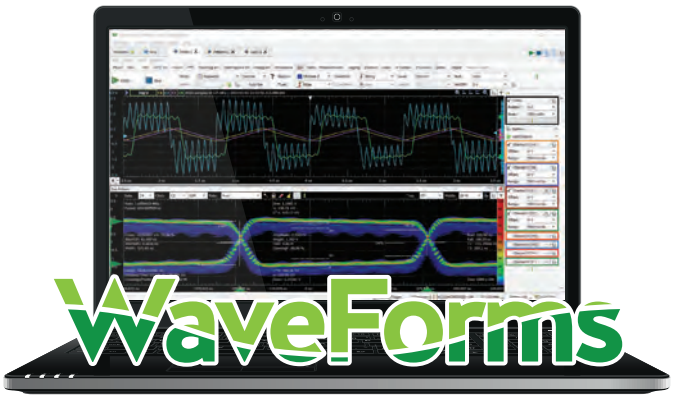
Discover More.

ANALOG DISCOVERY 3

The Analog Discovery 3 is a digital oscilloscope, logic analyzer, waveform generator, pattern generator, and much more. Using the flexible WaveForms software (supported by Windows, Mac, and Linux), the Analog Discovery 3 can be used in the lab, in the field, or even at home - you're no longer tied down to a traditional benchtop and stacks of expensive test instruments.

Mixed-Signal USB Oscilloscope:

- Two differential channels with 14-bit resolution at up to 125 MS/s per channel with a +/-25 V input range, 30+ MHz bandwidth with BNC Adapter
- FFT, Spectrogram, Eye Diagram, XY Plot views, and more



Arbitrary Waveform Generator:

- Two channels with 14-bit resolution at up to 125 MS/s per channel with a +/-5 V output range, 12 MHz bandwidth with BNC Adapter
- Standard waveforms, amplitude and frequency modulated signals, direct playback from analog inputs, custom waveforms, and more

Logic Analyzer and Pattern Generator:

- 16 digital I/O channels at up to 125 MS/s per channel
- SPI, I2C, UART, CAN, JTAG, ROM logic, custom protocols, and more

Programmable Power Supplies

- 0.5 V to 5 V and -0.5 V to -5 V, up to 2.4 W per channel

Additional Features:

- Additional software instruments including Spectrum Analyzer, Network Analyzer, Impedance Analyzer plus many more!
- SDK for hardware control in C, C++, Python, & other languages
- Support for LabVIEW and MATLAB
- Plus more than we can list!

ANALOG DISCOVERY PRO

3000 SERIES

Portable High Resolution Mixed Signal USB Oscilloscopes

FRONT

BACK

What is the Analog Discovery Pro 3000 Series?

Devices in the Analog Discovery Pro 3000 series provide the utility of professional benchtop equipment with the flexibility of a portable instrument. With myriad choices available for test and measurement devices, adding to your benchtop can be a daunting task, especially sorting through which features on your new instrument are included versus what you'll need to pay extra for. With the ADP3450, every listed feature is an included feature, making it an investment that will last — *at a price without surprises.*

Introducing Linux Mode

Linux Mode provides an on-device terminal-based operating system that, when combined with WaveForms SDK, is a flexible starting point for all kinds of custom tests and applications. Running embedded on the device itself or via WaveForms, engineers and measurement enthusiasts alike can take advantage of data streaming via Ethernet, and the on-device storage to capture buffers of millions of samples.

Powered By WaveForms

Key Features

Analog Inputs

- Two (ADP3250) or Four (ADP3450) BNC input channels with 14-bit resolution and up to ±25 V input range
- 55+ MHz bandwidth, 125 MS/s, 0.5 GS/s with oversampling
- On-device shared buffering of 128 MS among analog inputs

Digital Channels

- 16 dynamically configurable digital input/output with LVCMOS 1.2 V to 3.3 V
- On-device buffering up to 64 MS per channel

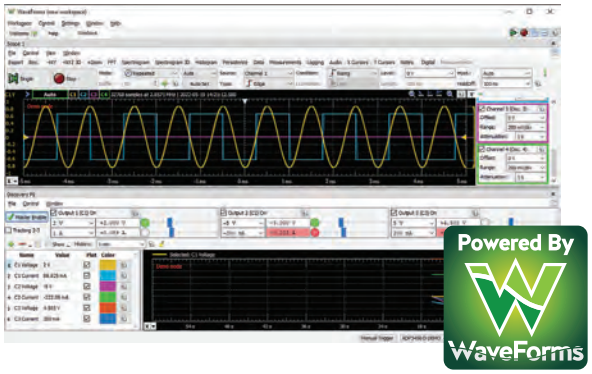
Analog Outputs

- Two BNC output channels with 14-bit resolution and ±5 V output range
- 15 MHz bandwidth @ -3 dB, 125 MS/s

Additional Features

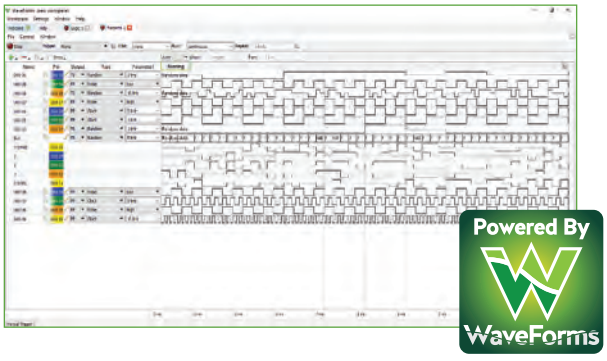
- Embedded Linux Mode
- Flexible USB or Ethernet connectivity

DISCOVERY POWER SUPPLY DPS3340



The Discovery Power Supply is a flexible, programmable, three-channel power supply that can deliver up to ±15 V at 0.5 A and up to 3 A on the +5 V supply. Connection to WaveForms provides the ability to vary the voltage and current manually or automatically by scripts in the application or custom applications built in the WaveForms SDK.

DIGITAL DISCOVERY



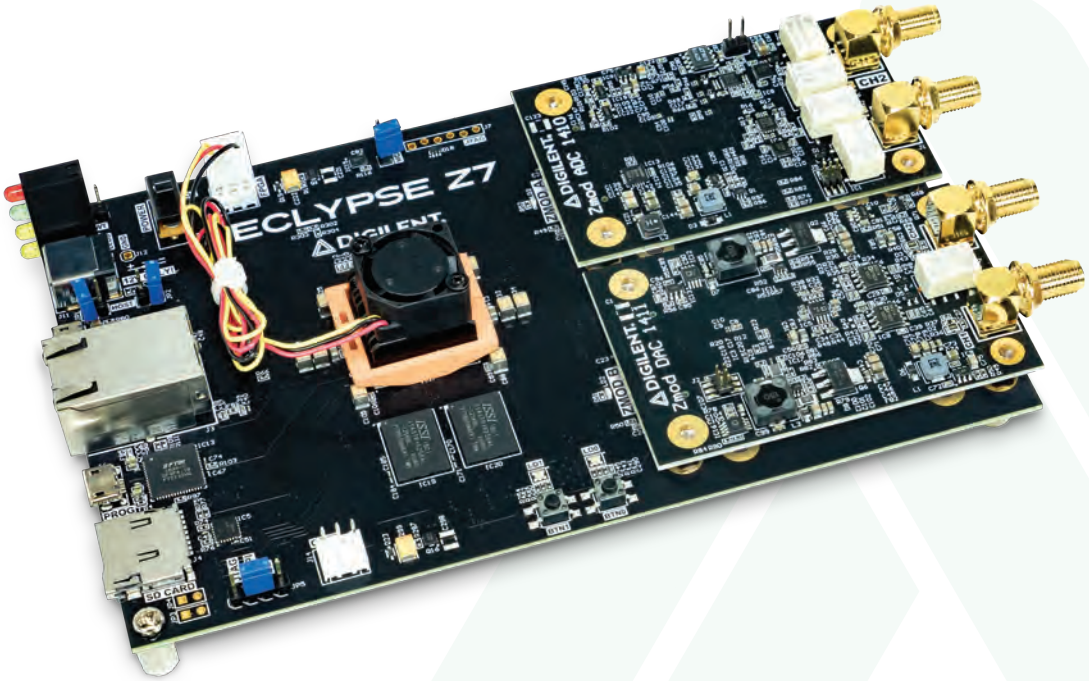
A High-speed, Multi-channel USB Embedded Development Tool for Applications

The Digital Discovery is a combined Logic Analyzer, Protocol Analyzer, and Pattern Generator instrument that was created to be the ultimate embedded development companion. Designed with flexibility in mind, the Digital Discovery has selectable voltage levels, output drive, channel number, and sample rate. One portable device provides access to advanced features to debug, visualize, and simulate digital signals for a wide range of embedded projects. Its digital inputs and outputs can be connected to a circuit using the included MTE cables or breadboard wires.

For designs that require speeds up to 800 MS/s, the High-Speed Adapter and impedance-matched probes can be used to connect the inputs and outputs for more advanced projects. The Digital Discovery is driven by the free WaveForms software and can be configured to any combination of power supplies, logic analyzer, pattern generator, static inputs and outputs, and protocol analyzer.

ECLYPSE Z7

A New Way to Accelerate Design Flow



The Eclypse Z7 is specifically designed to enable the rapid prototyping and development of embedded measurement systems. Featuring high-speed SYZYGY® ports for modular expansion and a Xilinx Zynq®-7020 SoC, the Eclypse Z7 is fast and flexible, reducing the time it takes for engineers and researchers to develop innovative and powerful new high-speed instrumentation, control, and measurement systems for edge-computing, medical, and communications applications.

Powerful Hardware

The Eclypse Z7 is specifically designed to enable the rapid prototyping and development of Embedded Measurement Systems including applications like software-defined radio, ultrasound, other medical devices, and much more. Pick and choose the hardware specs based on the performance requirements of your specific application, or design your own powerful hardware that best suits your specific needs with SYZYGY-compatible Zmod connector boards.

Flexible Software

To create and modify designs for your Eclypse Z7, you can use Xilinx's Vivado Design Suite, PetaLinux, and SDK tools to customize, build, and deploy solutions on the Eclypse's Zynq-7000. For those who want to get started without FPGA experience, Digilent provides several example designs using the Eclypse with C/C++®, including both baremetal and Linux® software applications.

ZYNQ ZMOD SYZYGY

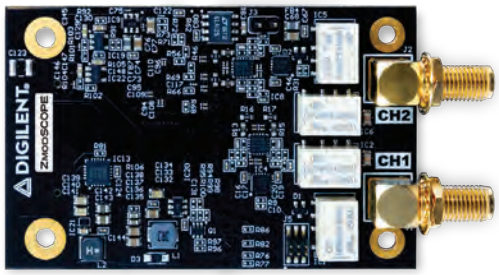
ZMOD

Digilent's Zmods are intended to be included in user-defined data acquisition or signal processing systems. They use Opal Kelly's SYZYGY standard, which fits — in cost, size, and performance — somewhere between our existing Pmod and FPGA Mezzanine Card (FMC) standards.

Although not much larger than Pmods, SYZYGY-compatible modules are capable of high-bandwidth connections to an FPGA (such as the Eclypse Z7), enabling very compact and cost-effective high performance I/O. We recommend them for compact, configurable, and rugged systems, though the high bandwidth and sampling rate (up to 125 MS/s), the flexible input/output range, the high resolution, and the flexibility provided by the FPGA interface make the Zmods an ideal solution for a wide variety of applications.

ZMODSCOPE

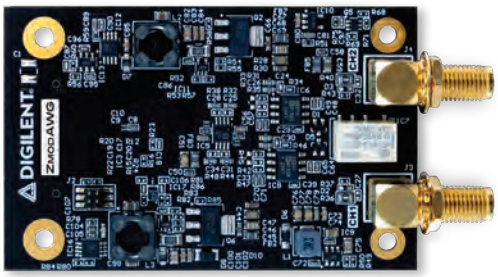
2-channel Oscilloscope Module (available in 10-, 12-, or 14-bit)



- 2 Channels, single-ended, 14-bit resolution
- Input range: ±1 V (High Gain) or ±25 V (Low Gain)
- Absolute Resolution: 3.2 mV (High Gain) or 0.13 mV (Low Gain)
- Sample rate (real time): Ranging from 40 MS/s to 125 MS/s, depending on model
- Input impedance: 1 MΩ || 18 pF
- Analog bandwidth, -40 Models: 20 MHz @ -3 dB, 8 MHz @ -0.5 dB, 4 MHz @ -0.1 dB
- Analog bandwidth, -105 and -125 Models: 70 MHz @ -3 dB, 30 MHz @ -0.5 dB, 20 MHz @ -0.1 dB
- Input protected to: ±50 V

ZMODAWG

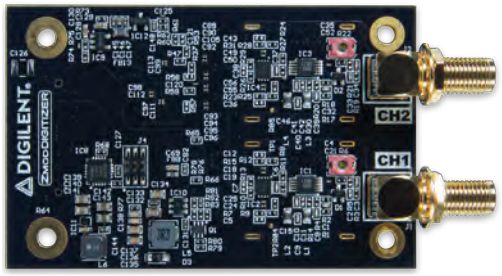
2-channel 14-bit Arbitrary Waveform Generator Module



- 2 Channels, single-ended, 14-bit resolution
- Absolute Resolution (amplitude ≤1.25 V): 167 µV
- Absolute Resolution (amplitude >1.25 V): 665 µV
- Sample rate (real time): 100 MS/s
- Output impedance: 50 Ω
- Analog bandwidth: 40 MHz+ @ -3 dB, 20 MHz @ -0.5 dB, 14 MHZ @ -0.1 dB
- Slew rate (2 V step): 180 V/µs

ZMODDIGITIZER

2-channel 14-bit Analog-to-Digital Converter Module



- 2 Channels, single-ended, 14-bit resolution
- Input range: ±1 V
- Absolute Resolution: 0.13 mV
- Sample rate: 125 MS/s max
- Input impedance: 1 MΩ || 5 pF
- Analog bandwidth: 60+ MHz @ -3 dB, 20 MHz @ -0.5 dB, 8 MHz @ -0.1 dB
- Precision clock generator supporting 122.8 MHz
- Input protected to: ±50 V

Ettus USRP Products

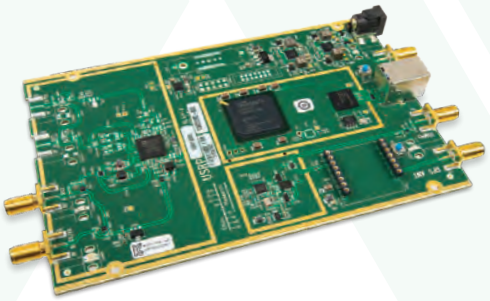
Software-Defined Radio Solutions

By supporting a wide variety of development environments on an expansive portfolio of high-performance RF hardware, the USRP platform is the SDR platform of choice for thousands of engineers, hobbyists, and students worldwide for exploration, prototyping and developing next-generation wireless technologies across a wide variety of applications. This software-defined radio portfolio combines ease of use and a robust open-source software community.

Ettus USRP B205mini-i

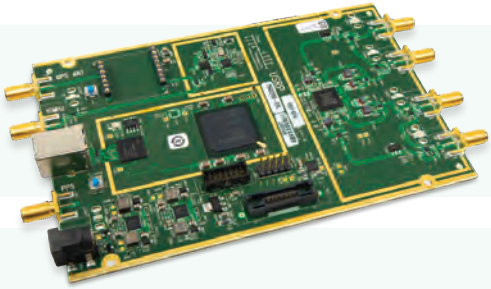
The USRP B205mini-i is a flexible and compact platform that is ideal for both hobbyist and OEM applications. It is designed by Ettus Research™ and provides a wide frequency range (70 MHz to 6 GHz) and a user-programmable, industrial-grade Xilinx Spartan-6 XC6SLX150 FPGA. The similar Ettus USRP B200mini is limited to a narrower operating temperature range and utilizes a smaller FPGA.

Ettus USRP B200



The USRP B200 provides a fully integrated, single board, Universal Software Radio Peripheral platform with continuous frequency coverage from 70 MHz to 6 GHz. Designed for low-cost experimentation, it combines a fully integrated direct conversion transceiver providing up to 56 MHz of real-time bandwidth, an open and reprogrammable Spartan 6 FPGA, and fast and convenient bus-powered SuperSpeed USB 3.0 connectivity. Full support for the UHD (USRP Hardware Driver) software allows you to immediately begin developing with GNU Radio, prototype your own GSM base station with OpenBTS, and seamlessly transition code from the B200 to higher performance, industry ready USRP platforms.

Ettus USRP B210



The USRP B210 provides a fully integrated, single-board, Universal Software Radio Peripheral (USRP™) platform with continuous frequency coverage from 70 MHz – 6 GHz. Designed for low-cost experimentation, it combines the AD9361 RFIC direct-conversion transceiver providing up to 56 MHz of real-time bandwidth, an open and reprogrammable Spartan-6 FPGA, and fast SuperSpeed USB 3.0 connectivity. Full support for the USRP Hardware Driver™ (UHD) software allows you to immediately begin developing with GNU Radio, prototype your own GSM base station with OpenBTS, and seamless transition code from the USRP B210 to higher performance, industry-ready USRP platforms.

What is Data Acquisition?

Data acquisition, or DAQ as it is often referred, is the process of digitizing data from the world around us so it can be displayed, analyzed, and stored in a computer. A simple example is the process of measuring the temperature in a room as a digital value using a sensor such as a thermocouple. Modern data acquisition systems can include the addition of data analysis and reporting software, network connectivity, and remote control and monitoring options.

USB, Ethernet, Temperature, and Remote DAQ

USB-200 Series: These low-cost, multifunction devices are designed for general purpose DAQ applications and feature analog input, analog output, DIO, and one counter input.

MCC multifunction data acquisition devices are available with analog input and output, digital I/O, and counter/timers to suite your various application requirements. Devices are available with up to 64 analog inputs, sample rates up to 2 MS/s, and resolution from 12-24 bits. Signal conditioning for measuring sensors like pressure, strain, and accelerometers is also available.

Ethernet DAQ

Ethernet-based data acquisition devices are ideal for remote measurement and control applications. These devices feature up to eight analog inputs, analog output, and digital I/O.

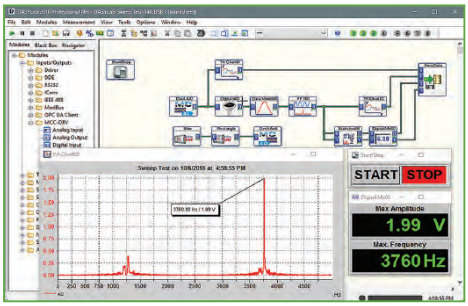
E-1608 Series: These Ethernet devices have built-in 10/100 BASE-T auto-negotiation, high-speed communication port for data transfers over a network.

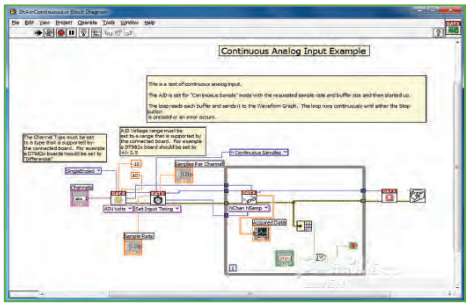
Temperature Measurement

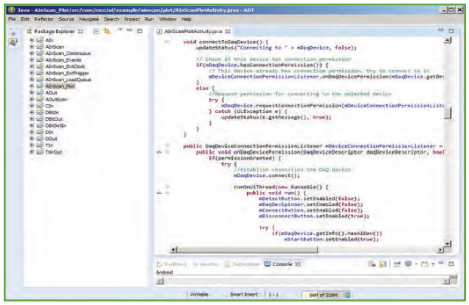
Temperature is one of the most common measurement types in DAQ applications. **These devices** are offered in USB, Ethernet, or stand alone configurations, with the ability to measure 8-64 thermocouples, RTD's, or thermistors. Built-in cold-junction compensation and up to 24-bit resolution provide superior measurement capability.

Data Acquisition Software

Out-of-the-box software provides the ability to log and view data and generate signals. Drivers are also included for the most popular applications and programming languages, including **DASYLab®**, Visual C++®, Visual C#®, Visual Basic®.NET, NI LabVIEW™, MATLAB®, Linux®, and Python™.



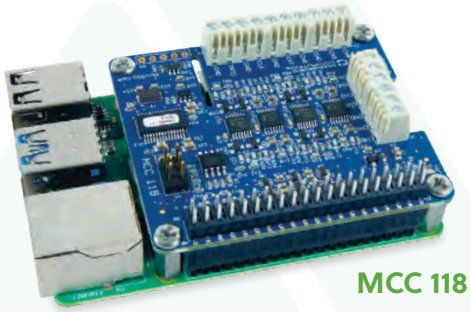




MCC DAQ HAT Series for Raspberry Pi®

Precision Voltage, Thermocouple, and IEPE Measurements, Plus Analog and Digital I/O

	Analog Inputs	Sample Rate	Resolution
MCC 118	8 SE Voltage	100 kS/s	12-bit
MCC 128	8 SE/4 DIFF Voltage	100 kS/s	16-bit
	Analog Inputs	**Update Interval**	**Resolution**
MCC 134	4 Thermocouple	1 Sec	24-bit
	Analog Outputs	**Digital I/O**	**Resolution**
MCC 152	2 Voltage	8	12-bit
	Analog Inputs	**Sample Rate**	**Resolution**
MCC 172	2 IEPE	51.2 kS/s/ch	24-bit



MCC 118

Raspberry Pi is the most popular single-board computer in use today. Many traditional DAQ users are designing systems around it because of its flexibility and low cost. This growing base of Raspberry Pi users, along with open-source software becoming more industry accepted, is driving growth and making single-board computer use more prevalent in professional DAQ applications.

WebDAQ Series

Internet Enabled Data Loggers for the Internet of Things

WebDAQ Series internet data logger devices offer a complete and easy-to-use remote data acquisition solution. With an embedded web server, users can configure and run simple to complex data logging operations, log data, set alarm conditions, and view the data in real-time from anywhere on an internet-enabled device.

	Analog Inputs	Sample Rate	Resolution
WebDAQ 316	16 Thermocouple	75 S/s/ch Max	24-bit
WebDAQ 504	4 IEPE	51 kS/s/ch Max	24-bit
WebDAQ 904	4 Universal	100 S/s/ch Max	24-bit

WebDAQ 504

There are three devices in the WebDAQ Series. Devices are available to log multiple signal types including voltage (up to ±60 V), thermocouples, IEPE-based sensors like accelerometers, current, RTDs, resistance, and bridge-based sensors.

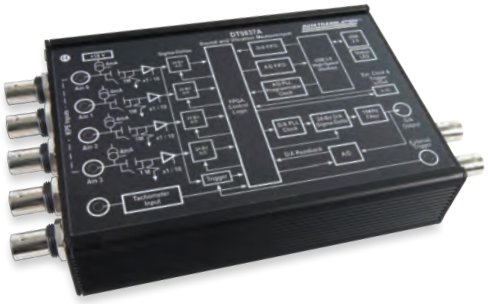
USB DAQ

Multifunction devices with analog input and output, digital I/O, and counter/timers

Whether you are measuring voltage, current, temperature, or digital signals, these products include accompanying software and drivers for a quick and customizable solution for your unique application. Most devices are available in an enclosed or board-only version for embedded and OEM applications.

USB-1608GX-2AO

USB-205



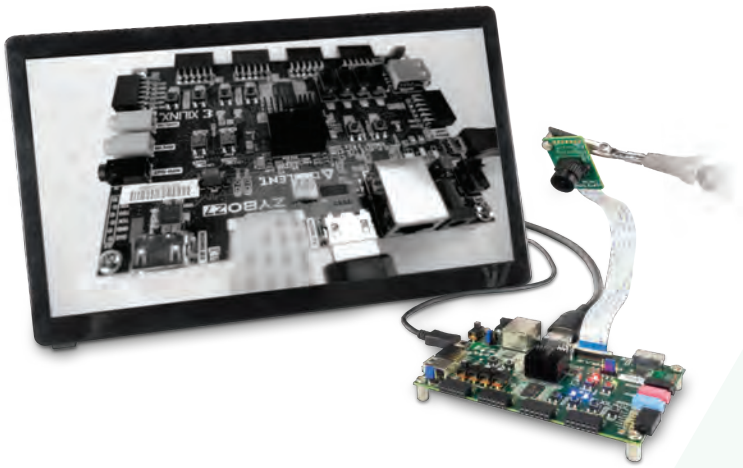
DT9837A

TC-32

	Analog Inputs	Sample Rate	Resolution	Analog Outputs	DIO
USB-205	8 SE	500 kS/s	12-bit	2	8 DIO/1 CTR
USB-234	8 SE/4 DIFF	100 kS/s	16-bit	2	8 DIO/1 CTR
USB-1608GX-2AO	16SE/8 DIFF	500 kS/s	16-bit	2	8 DIO/2 CTR
USB-1808X	8 SE/8 DIFF	200 kS/s/ch	18-bit	2	4 DIO/2 CTR
USB-2637	64 SE	1 MS/s	16-bit	4	24 DIO/4 CTR
USB-Temp	8 Temperature	2 S/s/ch	24-bit		8 DIO
TC-32	Up to 64 Thermocouple	3 S/s/ch	24-bit		Up to 40 DIO
DT9837A	4 IEPE	52.7 kS/s/ch	24-bit	1	1 Tach input

FPGA Boards

Plenty of attention goes into making sure that the **Digilent FPGA boards** you're buying are optimized for both performance and cost. Our proud partnership with AMD means that each of our kits features one of their industry-leading devices. Our FPGA boards range from the accessible Cmod S7 to more powerful system-on-a-chip offerings like the Genesys ZU 5EV, featuring UltraScale+ technology.



Why FPGAs?

- **PARALLEL:** FPGAs can be programmed as parallel processing devices, whereas CPUs execute operations in a sequential manner.
- **ACCURACY:** FPGAs can perform consistent time critical processing.
- **FLEXIBILITY:** FPGAs can be configured for a specific application, and then changed again after installation.
- **POWER:** FPGAs have high performance per watt.
- **EFFICIENT:** No overhead of an Operating System, such as you would have with a CPU.
- **CUSTOMIZABLE:** The programmer decides what is accomplished with each clock cycle.

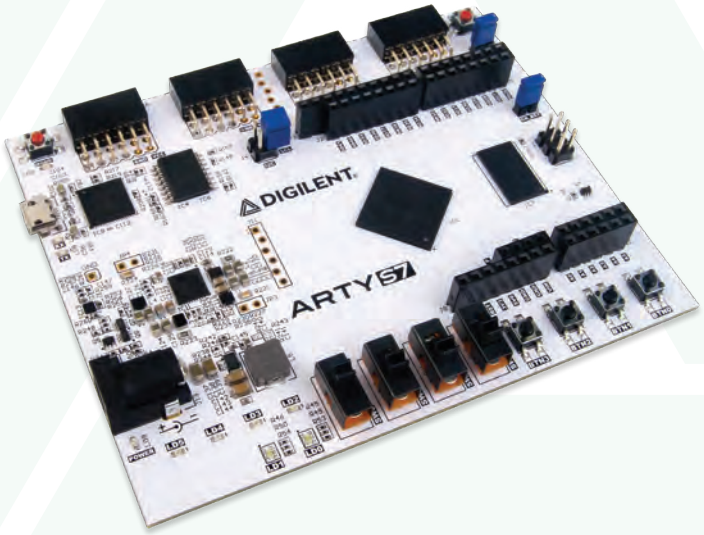
ARTY S7

Spartan-7 FPGA Development Board

The Arty family of Digilent FPGA/SoC boards was designed with versatility and flexibility in mind. With universally popular Arduino™ headers and multiple Pmod™ ports, an Arty will be the most adaptable FPGA/SoC board in your toolbox.

The Arty S7 is an affordable, ready to use development platform designed around the Xilinx Spartan®-7 FPGA family. With the Spartan-7 devices, the Arty S7 board offers best-in-class performance-per-watt, along with small form-factor packaging to meet the most stringent requirements. With the MicroBlaze Soft Processor Core from Xilinx, you can create embedded applications with a variety of peripherals, memory, and interfaces.

The Arty S7 is supported by AMD's Vivado Design Suite, including the free Vivado ML Edition. You can also leverage the Vitis Core Development Kit or Xilinx Software Development Kit to start developing for the MicroBlaze processor with no prior FPGA experience.



Key Features

- **Internal clock speeds exceeding 450 MHz**
- **On-chip analog-to-digital converter (XADC)**
- **Programmable over JTAG and Quad-SPI Flash**
- **256 MB DDR3L with a 16-bit bus @ 650 MHz**
- **128 Mbits Quad-SPI Flash**
- **100 MHz External Clock**

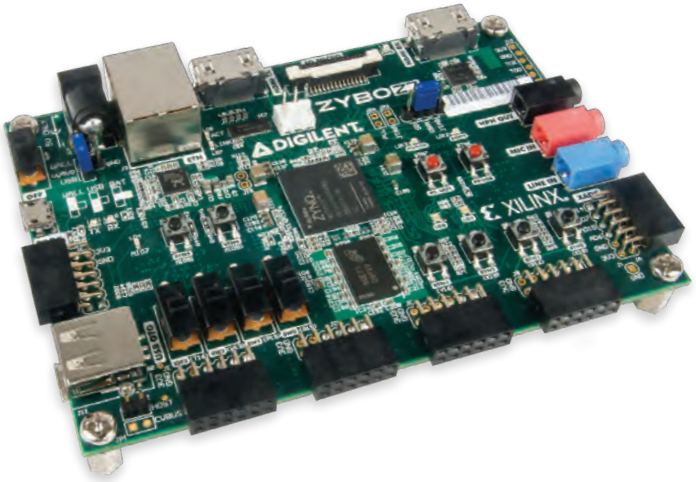
ZYBO Z7

Zynq-7000 ARM/FPGA SoC Development Board

The Zybo Z7 is a ready-to-use embedded software and digital circuit development board built around the Xilinx Zynq™-7000 family. The Zynq-7000 tightly integrates a dual-core ARM Cortex-A9 processor with Xilinx 7-series Field Programmable Gate Array (FPGA) logic.

A rich set of multimedia and connectivity peripherals make the Zybo Z7 a formidable single-board computer. A MIPI CSI-2 compatible Pcam connector, HDMI input, HDMI output, and high DDR3L bandwidth establish the Zybo Z7 as an affordable, yet capable, solution for high-end embedded vision applications. Attaching additional hardware is made easy by the Zybo Z7's Pmod connectors, allowing access to Digilent's catalog of over 60 Pmod peripheral boards, including motor controllers, sensors, displays, and more.

The Zybo Z7 is supported by Xilinx's Vivado Design Suite, including the free Vivado ML Edition. You can also interact with the processing system (PS) with Xilinx's Vitis Unified Software Platform and PetaLinux Tools.



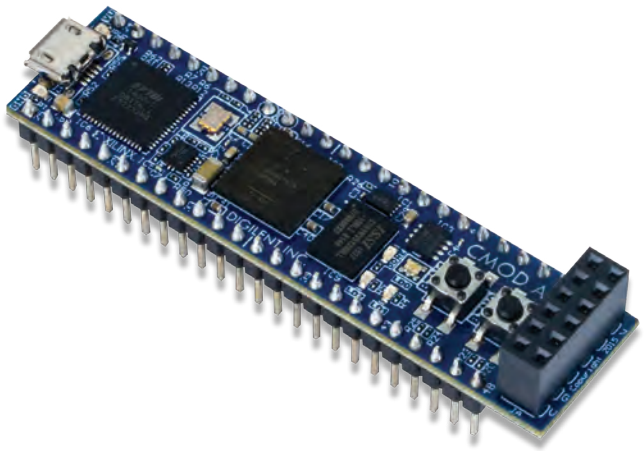
CMOD A7™

Artix-7 Power in a 48Pin DIP Package

The Digilent Cmod A7 is a small, 48-pin DIP form factor board built around a Xilinx® Artix®-7 FPGA that brings FPGA power and prototyping to a solderless breadboard.

The Cmod A7 board includes a Quad-SPI flash for programming, as well as a USB-JTAG programming circuit and USB-UART bridge. The Cmod A7 also features a clock source, Pmod port, and onboard I/O with LEDs and pushbuttons. There are 44 FPGA I/O signals that are routed to 100-mil-spaced through-hole pins, making the Cmod A7 compatible with solderless breadboards. This form factor makes the Cmod A7 a great option for flexible and affordable prototyping, or learning FPGA and digital logic circuits. At just .7" by 2.75", it can also be loaded in a standard socket and used in embedded systems.

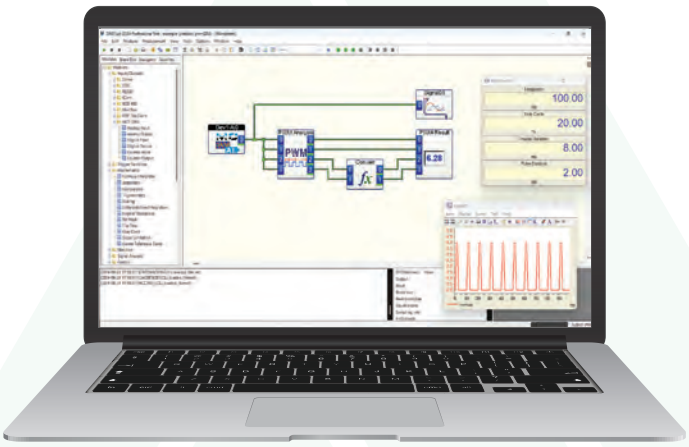
The Artix®-7 FPGA on the Cmod A7 provides the highest performance-per-watt fabric, transceiver line rates, DSP processing, and AMS integration for a cost-optimized FPGA. With the MicroBlaze Soft Processor Core from Xilinx, you can create embedded applications with a variety of peripherals, memory, and interfaces.



Intuitive Software

Engineer and Collaborate From Your Computer

DASYLab
Data Acquisition System Laboratory

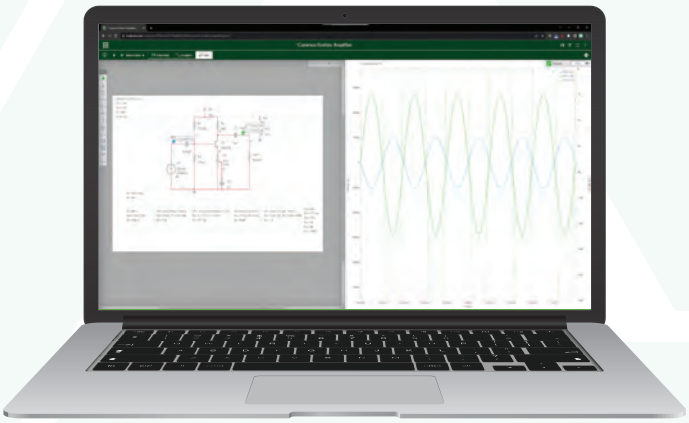


Rapidly changing measurement, control and regulation tasks require flexible systems. With the Windows-based DASYLab software, you can easily develop and deploy a wide range of applications in a very short time.

Use DASYLab to interactively develop Windows-based data acquisition applications by simply connecting functional icons. DASYLab offers real-time analysis and control, and the ability to create custom GUIs.

Unlike other graphical programming environments which can require weeks of training to master, DASYLab has a very short learning curve. Many applications can be configured in a few minutes, rather than days or weeks.

MultisimLive



Multisim Live, an innovative browser-based circuit simulation software, is now offered by Digilent as part of its suite of electronic design tools and instrumentation. With the addition of Multisim Live, Digilent now provides a comprehensive platform for circuit simulation, prototyping and testing.

- **Easy In-Browser Circuit Design:** Design circuits easily in your web browser with Multisim Live. Drag-and-drop components, from basic resistors to advanced ICs, for analog and digital circuits. Access a vast library of real and virtual components without any installation required. Start designing anytime, anywhere, on any computer.
- **Accurate SPICE Simulation for Deep Analysis:** Multisim Live utilizes advanced SPICE simulation for accurate modeling of circuits. Simulate designs to visualize currents, voltages, and logic states interactively. This empowers a test-before-you-build approach with powerful plotting tools for detailed signal analysis.
- **Community Collaboration and Knowledge Sharing:** Explore public circuits published by other users to discover new techniques and copy any design to experiment with modifications.

Product Comparison

Mixed-Signal Oscilloscopes

Product	Analog Input	Analog Output	Digital Channels	Power Supplies
Analog Discovery 3	2 Ch, 14-bit, ±25 V, 125 MS/s, 30 MHz BW with BNC	2 Ch, 14-bit, 12 MHz BW, ±5 V	16 I/O channels, 125 MS/s, 3.3 V CMOS	-5 V and +5 V variable, 600 mW over USB, 2.4 W via external power
Analog Discovery Studio	2 Ch, 14-bit, ±25 V, 100 MS/s, 30 MHz BW with BNC	2 Ch, 14-bit, 8 MHz BW, ±5 V	16 I/O channels, 125 MS/s, 3.3 V CMOS	-5 V and +5 V variable at 2.1 W, ±12 V at 0.2 A, 5 V and 3.3 V at 1 A
Analog Discovery Pro 2230	2 Ch, 14-bit, ±25 V, 125 MS/s, 50 MHz BW *	1 Ch, 14-bit, 15 MHz BW, ±5 V	16 I/O channels, 125 MS/s, 3.3 V CMOS	-5 V and +5 V variable at 3 W
Analog Discovery Pro 3450 / Analog Discovery Pro 3250	4 / 2 Ch, 14-bit, ±25 V, 125 MS/s, 55 MHz BW *	2 Ch, 14-bit, 15 MHz BW, ±5 V	16 I/O channels, 125 MS/s, 1.2 V to 3.3 V CMOS	1.2 V to 3.3 V at 300 mA digital supply
Analog Discovery Pro 5470 / Analog Discovery Pro 5490	4 Ch, 8-bit, ±20 V, 1.5 / 2 GS/s, 350 / 500 MHz BW *	1 Ch, 14-bit, 20 / 40 MHz BW, ±12 V	34 input channels, 1 GS/s, 0 V to 5 V input	6 V variable at 3 A -25 V and +25 V variable at 1 A
Digital Discovery			24 input channels at up to 800 MS/s input, 16 I/O channels at 100 MS/s, 1.2 V to 3.3 V CMOS, 5 V tolerant	1.2 V to 3.3 V at 100 mA digital supply
Eclypse Z7 *(as a four-channel Oscilloscope)*	4 Ch, 14-bit, ±25 V, 125 MS/s, 70 MHz BW *		16 Pmod I/O channels, 125 MS/s, 3.3 V CMOS	3.3 V Pmod supply
Eclypse Z7 *(as a four-channel Oscilloscope)*	2 Ch, 14-bit, ±25 V, 125 MS/s, 70 MHz BW *	2 Ch, 14-bit, 40 MHz BW, ±5 V	16 Pmod I/O channels, 125 MS/s, 3.3 V CMOS	3.3 V Pmod supply

* *features deep buffer memory*

FPGA Boards

Product	FPGA Part	Expansion Connectors	Highlighted Features
Arty A7	Artix-7 (XC7A100T/XC7A35T)	4x Pmod, Shield Connector	80+ GPIOs
Arty S7	Spartan-7 (XC7S50/XC7S25)	4x Pmod, Shield Connector	80+ GPIOs
Arty Z7	Zynq-7000 (XC7Z020/XC7Z010)	2x Pmod, Shield Connector	60+ GPIOs, HDMI, Ethernet
Basys 3	Artix-7 (XC7A35T)	4x Pmod	Easy-to-learn interfaces like switches, LEDs, 7-seg display
Cmod A7 / S7	Artix-7 (XC7A35T), Spartan-7 (XC7S25)	1x Pmod	48-pin DIP form factor for breadboarding
Cora Z7	Zynq-7000 (XC7Z07S)	2x Pmod, Shield Connector	Ethernet, 60+ GPIOs
Eclypse Z7	Zynq-7000 (XC7Z020)	2x SYZYGY connectors, 2x Pmods	SYZYGY-based Zmod ecosystem for modular test
Genesys ZU	Zynq UltraScale+ (XCZU5EV/XCZU3EG)	FMC, SYZYGY, dual-slot miniPCIe, 4x Pmods	Variety of video and camera interfaces, audio, ethernet
Nexys A7	Artix-7 (XC7A100T)	5x Pmod	DDR memory & easy-to-learn interfaces like switches, LEDs, 7-seg display
Nexys Video	Artix-7 (XC7A200T)	4x Pmod, 1x FMC LPC	HDMI in, HDMI out, audio codec
Zybo Z7	Zynq-7000 (XC7Z020/XC7Z010)	6x/5x Pmod	HDMI in, HDMI out, MIPI camera connector, audio codec

Product Comparison

DAQ: USB

Product	Analog Inputs	Analog Outputs	Digital I/O	Counters	Timers
USB-200 Series	8 SE, Up to 500 kS/s, 12-bit	2x, Up to 250 S/s, 12-bit	8	1	
USB-230 Series	8 SE / 4 DIFF, Up to 100 kS/s, 16-bit	2x, 5 kS/s/ch, 16-bit	8	1	
USB-1208FS-Plus / 1408FS-Plus Series	8 SE / 4 DIFF, Up to 50 kS/s, 14-bit	2x, 50 kS/s, 12-bit	16	1	
USB-1608FS-Plus	8 SE, 100 kS/s/ch, 16-bit		8	1	
USB-1208HS-4AO	8 SE / 4 DIFF, 1 MS/s, 13-bit	4x, 1 MS/s, 12-bit	16	2	1
USB-1608G Series	16 SE / 8 DIFF, Up to 500 kS/s, 16-bit	Up to 2, Up to 500 kS/s, 16-bit	8	2	1
USB-1808X Series	8 SE / 8 DIFF, 200 kS/s/ch, 18-bit	2x, Up to 500 kS/s, 16-bit	4	2 (+2 quad inputs)	2
USB-2408-2AO	16 SE / 8 DIFF, 1 kS/s, 24-bit	2x, 1 kS/s, 16-bit	8	2	
USB-2416-4AO	32 SE / 16 DIFF (Expandable to 64 SE / 32 DIFF), 1 kS/s, 24-bit	4x, 1 kS/s, 16-bit	8	2	
USB-2600 Series	16 or 64 SE, 1 MS/s, 16-bit	4x, Up to 1 MS/s, 16-bit	24	4	4
USB-3100 Series		4/8/16, 100 S/s, 16-bit	8	1	
USB-CTR Series			8	4/8	4
USB-DIO24 Series			24	1	
USB-DIO32HS			32		
USB-DIO96H			96	1	
USB-QUAD08			8	8 quad inputs	
USB-TEMP & TC Series	8 Thermocouple, RTD, or Voltage, 2 S/s/ch, 24-bit		8	1	
TC-32	32 Thermocouple (Expandable to 64), 3 S/s/ch, 24-bit		40 (Expandable to 80)		
DT9837A Series	4 IEPE, 52.7 kS/s/ch, 24-bit	1x, 52.7 kS/s/ch, 24-bit		1 tach	
DT9857E Series	16 IEPE, 105.4 kS/s/ch, 24-bit		16	3 (+1 tach)	1

DAQ HATs

Product	Analog Inputs	Analog Outputs	Digital I/O	Sample Rate	Update Interval	Resolution
MCC 118	8 SE Voltage			100 kS/s		12-bit
MCC 128	8 SE/4 Diff Voltage			100 kS/s		16-bit
MCC 134	4 Thermocouple				1 Sec	24-bit
MCC 152		2 Voltage	8			12-bit
MCC 172	2 IEPE			51.2 kS/s/ch		24-bit

Product Comparison

DAQ: Ethernet

Product	Analog Inputs	Analog Outputs	Digital I/O	Counters
E-1608	8 SE / 4 DIFF, 250 kS/s, 16-bit	2 x 500 S/s, 16-bit	8	1
E-DIO24			24	1
E-TC	8 Thermocouple, 4 S/s/ch, 24-bit		8	1
TC-32	32 Thermocouple (Expandable to 64), 3 S/s/ch, 24-bit		40 (Expandable to 80)	

WebDAQ

Product	Analog Inputs	Sample Rate	Resolution
WebDAQ 316	16 Thermocouple	75 S/s/ch Max	24-bit
WebDAQ 504	4 IEPE	51 kS/s/ch Max	24-bit
WebDAQ 904	4 Universal	100 S/s/ch Max	24-bit

Software-Defined Radio

Product	Channels	Frequency Range	Highlighted Features
USRP B200	1 TX & 1 RX	70 MHz - 6 GHz	
USRP B200mini	1 TX & 1 RX	70 MHz - 6 GHz	Small form factor
USRP B205mini-i	1 TX & 1 RX	70 MHz - 6 GHz	Small form factor, industrial-grade Spartan-6 FPGA
USRP B210	2 TX & 2 RX	70 MHz - 6 GHz	Full-duplex, MIMO
Eclypse Z7 with Zmod SDR	2 RX	35 kHz - 470 MHz analog bandwidth	Modular test ecosystem