

LabJack U9 DAQ

14 Analog Inputs (12-16 Bits Depending on Speed)
UE9-Pro Adds 24-bit Low-Speed ADC for 20-Bit Effective Resolution
 ± 5 or 0-5 Volt Maximum Analog Input Range
2 Analog Outputs (12-Bit, 0-5 Volts)
23 Digital I/O
Up to 2 Counters (32-Bits Each)
Up to 6 Timers (Pulse Timing, PWM Output, Quadrature Input, ...)



Features :

- Supports SPI, I2C, and Asynchronous Serial Protocols (Master Only)
- Supports Software or Hardware Timed Acquisition
- Maximum Input Stream Rate of 50+ kHz (Depending on Resolution)
- Capable of Command/Response Times As Low As 1.2 Milliseconds
- Built-In Screw Terminals for Some Signals
- USB 2.0/1.1 Full Speed Interface
- Ethernet 10Base-T Interface
- Dual-Processor Design with 168 MHz of Total Processing Power
- Electrical Isolation Possible with Ethernet Interface
- Wireless DAQ Possible with Ethernet Interface and 802.11 Bridge
- No Power Supply Needed for USB Operation
- Modbus/TCP Supported in Hardware
- Drivers Available for Windows, Linux, Mac and Pocket PC
- Examples Available for C/C++, VB, LabVIEW, Java, and More
- Includes Licensed Copy of DAQFactory Express Software (Win2000+)
- Includes USB and Ethernet Cable, Power Supply, and Screwdriver
- Universal Power Supply with Clips (Australia, Europe, UK, USA)
- Free Firmware Upgrades
- Enclosure Size Approximately 3" x 7" x 1" (75mm x 185mm x 30mm)
- Rated for Industrial Temperature Range (-40 to +85 Degrees C)



I/O Protection:

All I/O lines on the UE9 are protected against minor overvoltages. The AIN lines can withstand continuous overvoltage of ± 15 volts, the FIO lines can withstand up to ± 10 volts, while the EIO/CIO/MIO lines can withstand up to ± 6 volts.

Power Supply:

Power can be provided by the USB cable or an external 5 volt supply (included). When only Ethernet is connected, and an isolated power supply is used (such as the included wall-wart), the entire UE9 is electrically isolated.

High Channel Count Applications:

By using USB hubs or Ethernet switches, many LabJacks can be interfaced to a single PC, providing an inexpensive solution for low-speed high channel count applications.

Modbus:

Modbus is an industry standard command/response protocol for data acquisition and control equipment. The UE9 supports Modbus/TCP in hardware, so any software that supports Modbus/TCP can talk to the UE9 with no further software/drivers required. (More Info)

Wireless Data Acquisition:

Combining the UE9 with a standard 802.11 wireless Ethernet bridge or access point (\$50-\$200 from any computer retailer) provides inexpensive wireless data acquisition. Applications include high-speed continuous wireless data acquisition, long distance remote sensing and control, or PDA based data acquisition. (More Info)



Analog Inputs:

The LabJack UE9 has 14 external analog inputs (AIN0-AIN13). AIN0-AIN3 are available on screw terminals and also on the DB37 connector. All 14 analog inputs are available on the DB37 connector.

Each analog input can be configured individually as unipolar (four ranges from 0-5 volts to 0-0.625 volts) or bipolar (± 5 volts). Analog input resolution is 12-bits at max speed (12 μ s conversion time), increasing up to 16-bits at slower speeds (2.7 ms conversion time).

Command/response (software timed) analog input reads typically take 1.2+ ms depending on number of channels and communication configuration. Hardware timed input streaming has a maximum rate that varies with resolution from 250 samples/s at 16-bits to 50+ ksamples/s at 12-bits.

The UE9-Pro has all the features of the normal UE9 with the addition of an auxiliary low-speed hi-resolution (24-bit) sigma-delta ADC. This converter takes about 125 ms per sample and provides an effective resolution of about 20-bits (18-bits noise free) over the 0-5 or ± 5 volt ranges. Linearity and accuracy are also improved compared to the normal converter.

For more information about the analog inputs see Section 2.7 and Appendix A of the User's Guide. For data rate information see Sections 3.1 and Sections 3.2. The User's Guide can be found on the UE9 Support page.

Analog Outputs:

The LabJack UE9 has 2 analog outputs (DAC0 and DAC1) that are available both on screw terminals and the DB37 connector. Each analog output can be set to a voltage between 0 and 4.9 volts with 12-bits of resolution. The analog outputs are based on a true voltage reference.

The analog outputs are updated in command/response mode, with a typical update time of 1.2-4.0 ms depending on communication configuration.

For more information about the analog outputs see Section 2.8 and Appendix A of the User's Guide. For data rate information see Section 3.1. The User's Guide can be found on the UE9 Support page.

Digital I/O:

The LabJack UE9 has 23 digital I/O channels which can be individually configured as input, output-high, or output-low. 8 of these lines are called flexible digital I/O (FIO) and can be software configured as up to 6 timers and 2 counters.

The first 4 FIO are available on screw terminals and the DB37 connector. All 8 FIO and 3 MIO are available on the DB37 connector, and 8 EIO and 3 CIO are available on the DB15 connector.

Command/response (software timed) reads/writes typically take 1.2-4.0 ms depending on communication configuration. The digital inputs can also be read in a hardware timed input stream where up to 16 inputs count as a single stream channel.

For more information about the digital I/O see Section 2.9 and Appendix A of the User's Guide. For data rate information see Sections 3.1 and 3.2. The User's Guide can be found on the UE9 Support page.

Timers:

Up to 6 FIO can be configured as timers. The timers are very flexible, providing options such as PWM output, pulse timing, pulse counting, and quadrature input.

For more information about the timers see Section 2.10 and Appendix A of the User's Guide. The User's Guide can be found on the UE9 Support page.



Optional Accessories:

The CB15 is a simple screw terminal breakout for the DB15 connector.

The CB37 (Rev. 2.1) is a simple screw terminal breakout for the DB37 connector. The CB37 (Rev. 1.2) is also available.

The EB37 experiment board also provides screw terminals for the DB37 connector, and in addition provides a solderless breadboard and useful power supplies.

The RB12 provides a convenient interface for the UE9 to industry standard digital I/O modules, allowing electricians, engineers, and other qualified individuals, to interface a LabJack with high voltages/currents. The RB12 relay board connects to the DB15 connector on the LabJack, using the 12 EIO/CIO lines to control up to 12 I/O modules. Output or input types of digital I/O modules can be used. The RB12 is designed to accept G4 series digital I/O modules from Opto22, and compatible modules from other manufacturers such as the G5 series from Grayhill. Output modules are available with voltage ratings up to 200 VDC or 280 VAC, and current ratings up to 3.5 amps.

The LJTick-Divider (LJTD) signal-conditioning module is designed to divide 2 single-ended higher voltage analog signals down to 0-2.5 volt signals.

The LJTick-DAC (LJTDAC) provides a pair of 14-bit analog outputs with a range of ± 10 volts. Plugs into any digital I/O block, and thus up to 10 of these can be used per UE9 to add 20 analog outputs.

The LJTick-InAmp (LJTIA) signal-conditioning module provides two instrumentation amplifiers ideal for low-level signals such as bridge circuits (e.g. strain gauges) and thermocouples. Each amplifier converts a differential input to single-ended.

The LJTick-RelayDriver (LJTRD) allows 2 digital I/O lines on a UE9 to each control a relay or other moderate load up to 50V/200mA.

The LJTick-CurrentShunt (LJTCS) signal-conditioning module is designed to convert a 4-20 mA current loop input signal into a 0.47-2.36 volt signal.

The LJTick-Proto (LJTP) consists of an 8x8 grid of holes for prototyping custom signal-conditioning ticks for the LabJack UE9.

Satisfaction Guaranteed:

Everything we sell has a 30-day money back guarantee. If, for any reason, you are not satisfied with a product, contact us to arrange your choice of a refund or replacement. In addition, the LabJack UE9 is covered by a 1-year limited warranty.

Technical Support:

All LabJacks include lifetime technical support. Support resources include forum, FAQs, email, and telephone.

Drivers and Examples:

The UE9 Software page has drivers and sample code. We have drivers for the three major operating systems, and examples for most common programming languages.

Need more information?:

The User's Guide on UE9 Support page has all the specifics for working with the UE9. You'll also find the quick start guides, and any other literature we've published on the UE9.

Firmware:

Be sure to keep an eye on firmware.labjack.com/ue9 for the latest UE9 firmware.