

LabJack U6 DAQ

14 Analog Inputs (16-18+ Bits Depending on Speed)
U6-Pro Adds 24-bit Low-Speed ADC for 22-Bit Effective Resolution
Single-Ended Inputs (14) or Differential Inputs (7)
Instrumentation Amplifier Inputs
Software Programmable Gains of x1, x10, and x100
Analog Input Ranges of ± 10 , ± 1 , and ± 0.1 Volts
Built-In CJC Temperature Sensor
2 Fixed Current Outputs (200/10 μ A)
2 Analog Outputs (12-Bit, $\sim 0-5$ Volts)
20 Digital I/O
Up to 2 Counters (32 Bits Each)
Up to 4 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 Less Than 1 Millisecond
- Built-In Screw Terminals for Some Signals
- USB 2.0/1.1 Full Speed Interface
- Powered by USB Cable
- Drivers Available for Windows, Linux and Mac.
- Examples Available for C/C++, VB, LabVIEW, Python, and More
- Includes Licensed Copy of DAQFactory Express Software (Win2000+)
- Includes USB Cable and Screwdriver
- 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 U6 are protected against minor overvoltages. The AIN lines can withstand continuous overvoltage of $\pm??$ volts, the FIO lines can withstand up to ± 10 volts, while the EIO/CIO/MIO lines can withstand up to ± 6 volts.

High Channel Count Applications:

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

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 U6 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 U6 is covered by a 1-year limited warranty.

Technical Support

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



Analog Inputs:

The LabJack U6 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.

The maximum input range is ± 10 volts, with software selectable gains of x1, x10, and x100. Each analog input can be measured single-ended, or differentially in even/odd pairs. Analog input resolution is 16 bits at max speed (?? conversion time), increasing to 18 bits at slower speeds (?? ms conversion time). Input impedance is at least 1 G Ω , with typical input bias currents of only 20 nA.

Command/response (software timed) analog input reads typically take 1-4 ms depending on number of channels and communication configuration. Hardware timed input streaming has a maximum rate that varies with resolution from 4 ksamples/s at 18 bits to 50 ksamples/s at 16 bits.

The U6-Pro has all the features of the normal U6 with the addition of an auxiliary low-speed high-resolution (24-bit) sigma-delta ADC. Analog input resolution varies from 19.5 bits (RMS or Effective) at max speed (??? ms conversion time), to 22 bits at slower speeds (??? ms conversion time).

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 U6 Support page.

Temperature Sensor:

The LabJack U6 has a temperature sensor located very close to the AIN0-AIN3 screw-terminals. Accuracy is ± 2 degrees C (max). This sensor is particularly useful for thermocouple cold junction compensation (CJC).

Fixed Current Outputs:

The LabJack U6 has 2 fixed current outputs of 10 μ A and 200 μ A. These are useful for measuring resistance.

Analog Outputs:

The LabJack U6 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 about 0 and 5 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 1-4 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 U6 Support page.

Digital I/O:

The LabJack U6 has 20 digital I/O channels which can be individually configured as input, output-high, or output-low.

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 4 CIO are available on the DB15 connector. Note that on the U6, CIO0-CIO2 are the same as MIO0-MIO2.

Command/response (software timed) reads/writes typically take 1-4 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 U6 Support page.



Drivers and Examples:

The U6 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 U6 Support page has all the specifics for working with the U6. You'll also find the quick start guides, and any other literature we've published on the U6.

Firmware:

Be sure to keep an eye on firmware.labjack.com/u6 for the latest U6 firmware.