A. LabJack U12 Specifications V1.04 (11/5/2002)

Parameter	Conditions	Min	Typical	Max	Units
General					
USB Cable Length				3	meters
User Connection(s) Length	CE compliance			3	meters
Supply Current (1)			20		mA
Operating Temperature		-40		85	°C
Clock Error	~ 25 °C			±30	ppm
	0 to 70 °C			±50	ppm
	-40 to 85 °C			±100	ppm
+5 Volt Power Supply (+5V)					
Voltage (Vs) (2)	Self-Powered	4.5		5.25	volts
	Bus-Powered	4.1		5.25	volts
Output Current (2) (3)	Self-Powered	450		500	mA
	Bus-Powered	50		100	mA
Analog Inputs (AI0 - AI7)					
Input Range For Linear Operation	AIx to GND, SE	-10		10	volts
	Aix to GND, Diff.	-10		20	volts
Maximum Input Range	AIx to GND	-40		40	volts
Input Current (4)	Vin = +10 volts		70.1		µA
	Vin = 0 volts		-11.7		µA
	Vin = -10 volts		-93.5		µA
Resolution (No Missing Codes)	C/R and Stream		12		bits
	Burst Diff. (5)		12		bits
	Burst SE (5)		11		bits
Offset	G = 1 to 20		±1 * G		bits
Absolute Accuracy	SE		±1		% FS
	Diff.		±0.2		% FS
Noise	C/R and Stream		±1		bits
Integral Linearity Error			±1		bits
Differential Linearity Error			±0.5		bits
Repeatability			±1		bits
CAL Accuracy	CAL = 2.5 volts		±0.05	±0.25	%
CAL Current	Source			5	mA
	Sink	20	200		µA
Trigger Latency	Burst	25		50	µs
Trigger Pulse Width	Burst	40			µs
Analog Outputs (AO0 & AO1)					
Maximum Voltage (6)	No Load		Vs		volts
	At 1 mA		0.99 * Vs		volts
	At 5 mA		0.98 * Vs		volts
Output Current	Each AO			30	mA

Parameter	Conditions	Min	Typical	Max	Units
IO					
Low Level Input Voltage				0.8	volts
High Level Input Voltage		3		15	volts
Input Leakage Current			±1		μA
Output Short-Circuit Current (7)	Output High		3.3		mA
Output Voltage (7)	No Load	Vs - 0.4	Vs		volts
	At 1 mA		Vs - 1.5		volts
D					
Low Level Input Voltage (8)	D0 - D12			0.8	volts
	D13 - D15			1	volts
High Level Input Voltage (8)	D0 - D12	2		Vs + 0.3	volts
	D13 - D15	4		Vs + 0.3	volts
Input Leakage Current			±1		μA
Output Current (8)	Per Line			25	mA
	Total D0 - D15			200	mA
Output Low Voltage				0.6	volts
Output High Voltage		Vs - 0.7			volts
CNT					
Low Voltage (9)		GND		1	volts
High Voltage (9)		4		15	volts
Schmitt Trigger Hysteresis			20-100		mV
Input Leakage Current			±1		μA
Minimum High Time				500	ns
Minimum Low Time				500	ns
Maximum Input Frequency		1			MHz

(1) Current drawn by the LabJack through the USB. The status LED is responsible for 4-5 mA of this current.

(2) Self-powered would apply to USB hubs with a power supply, all known desktop computer USB hosts, and some notebook computer USB hosts. Bus-powered would apply to USB hubs without a power supply and some notebook computer USB hosts.

(3) This is the total current that can be sourced by +5V, analog outputs, and digital outputs.

(4) The input current at each analog input is a function of the voltage at that input (Vin) with respect to ground and can be calculated as: (8.181*Vin - 11.67) μA.

(5) Single-ended burst mode only returns even binary codes, and thus has a net resolution of 11 bits. In addition, extra noise in burst mode can reduce the effective resolution.

(6) Maximum analog output voltage is equal to the supply voltage at no load.

(7) The IO lines each have a 1500 ohm series resistor.

(8) These lines have no series resistor. It is up to the user to make sure the maximum voltages and currents are not exceeded.

(9) CNT is a Schmitt Trigger input.