PL3516 PowerLab 16/35

Data Acquisition Systems

Description

The PowerLab 16/35 is a data acquisition and analysis system for use in life science research. The system has 16 bit resolution and is capable of recording at speeds of up to 200 000 samples per second (400 000 samples per second aggregate). Communication is via High Speed USB (2.0). It incorporates sixteen input channels, 4 with both differential Pod and single ended BNC connectors and 12 single ended BNC inputs. It also features 2 built-in analog outputs for stimulation or pulse generation (software controlled) and a trigger input. The PowerLab 16/35 is compatible with instruments, signal conditioners, and transducers sold by ADInstruments, as well as other third party products. It includes LabChart and Scope software.

Software Compatibility

The following versions of ADInstruments software are required to operate a PowerLab 16/35:

WINDOWS	MACINTOSH
◆ LabChart v7.2.1 or later	◆ LabChart v7.2.2 or later
◆ Scope v3.9.2 or later	◆ Scope v4.1.4 or later

PC and Mac Requirements

Please visit our ADInstruments Software System Requirements page at www.adinstruments.com/downloads/ for Windows and Mac operating system compatibility information. For further assistance please contact your ADInstruments representative.

Applications

The PowerLab 16/35 data acquisition system is suitable for research in the fields of human and animal physiology, pharmacology, neurophysiology, biology, zoology, biochemistry and biomedical engineering.

Specifications

(As tested at the time of printing and are subject to change)

Analog Inputs

Number of inputs: 16

Input configuration: 12 dedicated single ended inputs; 4 inputs configuarable as single ended or differential (through Pod port)

Amplification range: ±2 mV to ±10 V full scale in 12 steps:

Range	Resolution	Noise (rms)
±10	313 µV	1 LSB
±5 V	156 µV	1 LSB
±2 V	62.5 µV	1.5 LSB
±1 V	31.3 µV	1 LSB
±0.5 V	15.6 µV	1 LSB
±0.2 V	6.25 µV	1.5 LSB
±0.1 V	3.13 µV	1.5 LSB
±50 mV	1.56 µV	2 LSB
±20 mV	625 nV	2.4 µV
±10 mV	313 nV	2.4 µV
±5 mV	156 nV	2.2 µV
±2 mV	62.5 nV	2.2 µV

Maximum input voltage: ±15 V

Input impedance: ~ 1 MΩ || 100pF

Low-pass filters: 1 Hz to 1 kHz in 2:5:10 steps; 2 kHz, 25 kHz

Input coupling: DC or 0.15 Hz (software-selectable)

Frequency response (–3 dB): 25 kHz on 10 V range

DC drift: Software corrected

CMRR: 100 dB @ 100 Hz (differential mode, 100 mV – 2 mV range)

Input crosstalk: 75 dB minimum

Pod Connectors

General features: Combined power, I^2C and single-ended or differential analog input signals on one connector, supports Pods

Supply voltage: ±5 V regulated

Maximum current: 50 mA per pod port

Communications: 2-wire I^2C

Signal input: Positive and negative analog inputs

Connector type: 8-pin DIN

Sampling

ADC resolution: 16 bit (313 µV resolution on 10 V range)

Linearity error: ±2.5 LSB

Maximum sampling rates: 200 kHz on one or two inputs
100 kHz on 3 or 4 inputs
40 kHz on 5 to 8 inputs
20 kHz on 9 to 16 inputs

Analog Outputs

Number of outputs:	2
Output configuration:	Single-ended (outputs can be used as one differential output)
Output resolution:	16 bit (313 µV resolution on the 10 V range)
Maximum output current:	±50 mA
Output impedance:	0.5 Ω typical
Slew rate:	6 V/µs
Settling time:	10 µs (to 1% of FSR)
Linearity error:	±4 LSB
Output range:	±200 mV to ±10 V full scale in six steps:

Range	Resolution
±10 V	313 µV
±5 V	156 µV
±2 V	62.5 µV
±1 V	31.3 µV
±500 mV	15.6 µV
±200 mV	6.25 µV

External Trigger

Trigger mode:	TTL level or contact closure, software selectable
Trigger threshold:	+1.3 V (rising edge), +1.1 V (falling edge)
Hysteresis:	0.6 V
Input impedance:	50 kΩ
Maximum input voltage:	±12 V
Minimum pulse width:	5 µs

Microprocessor and Data Communication

CPU:	PowerPC 405GPr @ 240 MHz
RAM:	16MB SDRAM
Data communication:	USB 2.0

Expansion ports

I^2C expansion port:	Power and control bus for Front-end units. Supports up to 16 Front-end channels but limited to PowerLab's free inputs. Interface communications rate of up to 10 000 bits/s.
Digital output:	8 independent lines, TTL output level (8 mA maximum load per line)
Digital input:	8 independent lines, TTL input level, threshold 1.2 V, 10 kΩ input impedance, 5V maximum

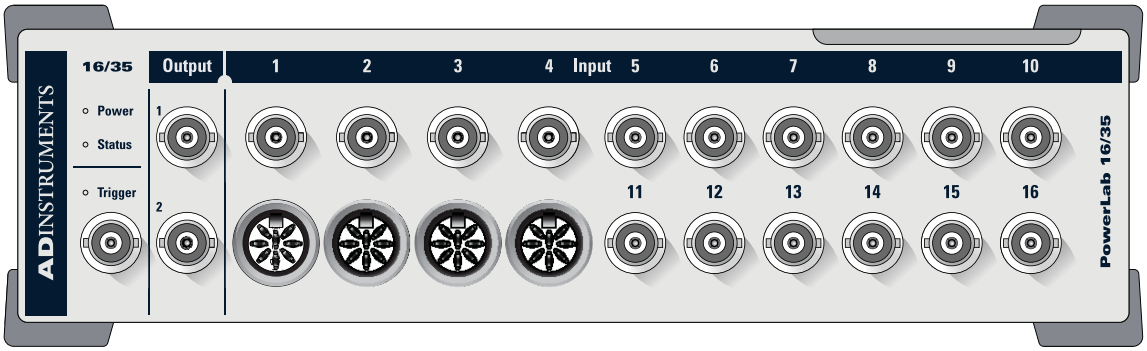
Physical Configuration

Dimensions (h x w x d):	70 x 240 x 260 mm (2.7″ x 9.4″ x 10.2″)
Weight:	2.7 kg (5 lb 9 oz)
Operating voltage:	90-250 V (automatic)
Maximum power needs:	90 VA (full complement of Front-ends and Pods)
Operating temperature:	5 – 35 °C, 0 – 90% humidity (non-condensing)

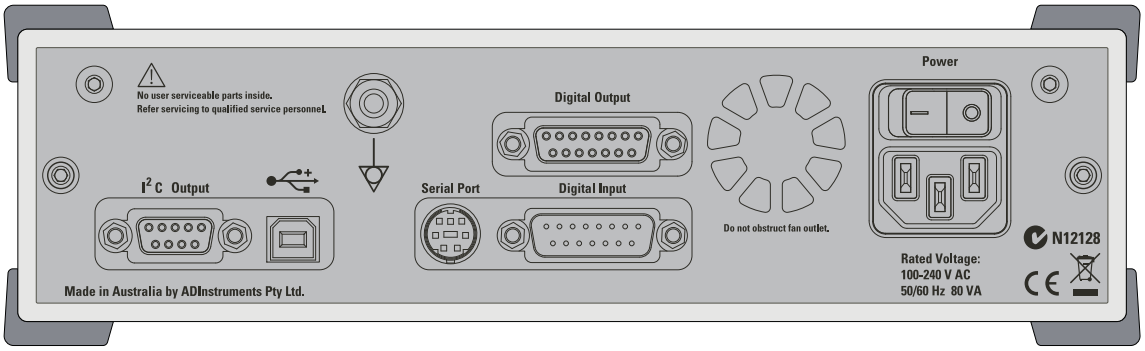
Caution

Read "Statement of Intended Use" on our website or in "Getting Started with PowerLab" before use.

PowerLab 16/35 Diagrams



Front panel



Rear panel

Ordering Information

PL3516 PowerLab 16/35

Includes: PowerLab 16/35 16-Channel Data Acquisition System
LabChart & Scope Software Installer CD
Cable Kit including Power Cord, BNC to BNC test cable, USB Cable
Getting Started with PowerLab Manual
Finger Pulse Transducer

PL3516-DC-11A

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ADINSTRUMENTS.com ISO 9001:2008 Certified Quality Management System

North America
Tel: +1 888 965 6040
Fax: +1 719 576 3971
info@adinstruments.com

United Kingdom
Tel: +44 1865 332 050
Fax: +44 1865 332 051
info.uk@adinstruments.com

Germany
Tel: +49 6226 970105
Fax: +49 6226 970106
info.de@adinstruments.com

North Asia
Tel: +86 21 5830 5639
Fax: +86 21 5830 5640
info.cn@adinstruments.com

South East Asia
Tel: +60 3 8024 5296
Fax: +60 3 8023 6307
info.sea@adinstruments.com

Japan
Tel: +81 52 932 6462
Fax: +81 52 932 6755
info.jp@adinstruments.com

South America
Tel: +56 2 356 6749
Fax: +56 2 356 6786
info.cl@adinstruments.com

Brazil
Tel: +55 11 3266 2393
Fax: +55 11 9266 2392
info.br@adinstruments.com

Indian Subcontinent
Tel: +91 11 4306 5615
Fax: +91 11 4306 5614
info.in@adinstruments.com

Australia
Tel: +61 2 8818 3400
Fax: +61 2 8818 3499
info.au@adinstruments.com

New Zealand
Tel: +64 3 477 4646
Fax: +64 3 477 4346
info.nz@adinstruments.com

International
Tel: +61 2 8818 3400
Fax: +61 2 8818 3499
info.au@adinstruments.com