Datasheet

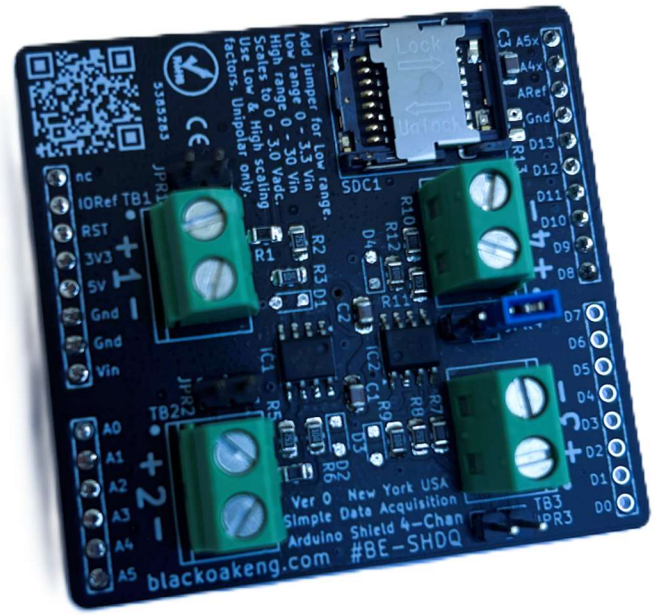
Black Oak Engineering

precision electronic instruments

New York · USA · blackoakeng.com · (347) 467-0912

Simple Data Acquisition Shield

Part number BE-SHDQ
Version 1.0



Description. The Black Oak Engineering (BOE) Simple Data Acquisition (*SimpleDaq*) has a standard Arduino Uno R3 Shield pinout. The board is smaller than an Arduino Uno. It will work with any host that supports the standard interface. It provides four channels of analog input, each with two input ranges. These are

buffered by an op amp and then connected to the four standard analog pins (A3:A0). The ADC on the host may then convert these signals. Note, since most ADCs have a fluctuating input impedance due to their basic operation, they cannot generally be fed 'raw', unbuffered signals; the fluctuation will combine with the output impedance of the source to create noise. The *SimpleDaq* also has a micro SD card holder for recording data.

Basic SimpleDaq specifications

- Four unipolar channels each with two ranges.
- High range
  - 0.00 to 31.8 V.
  - Input resistance 1.1 MΩ
  - Gain factor **A = 10.605**. E.g., if a channel ADC reads 1.00 V, the input is 10.605 V.
- Low range, jumper selected.
  - 0.00 to 5.00 V.
  - Input resistance 175 kΩ
  - Gain factor **A = 1.7471**. E.g., if a channel ADC reads 1.00 V, the input is 1.7471 V.
- Outputs trimmed for 0.00 to 3.00 V ADC.
- CMOS op amp
  - UGBW = 1.4 MHz
  - Bias current = 2 fA
  - Offset voltage = 3 mV
  - Total current = 1.6 mA.
- Low power design.
- Zener diode transient protection.
- Basic accuracy = 0.17%.
- Linearity > 0.99.
- 2.2 × 2.0 inches (5.6 × 5.1 cm).
- Inputs to 5 mm terminal blocks, 16 to 30 AWG.
- Any reasonable combination of 100-mil headers or sockets may be used to connect to host.
- Note, while the *SimpleDaq* has Zener input protection, please exercise caution with any analog inputs. Fast transients in excess of the absolute limits may damage the *SimpleDaq* or the host. ESD precautions must also be observed.

Power

- SimpleDaq uses the standard Arduino Uno +5V and +3.3V power pins.

BOE is continuously improving. We also strive to keep one step ahead of procurement volatility. We will deliver to you the latest hardware version possible. In some cases specifications will change.

Environmental

- Temperature. -40 to +85 °C (-40 to +185 °F).
- Humidity / water exposure. The PCBA does not include a protective enclosure. Nor is it conformally coated. Condensing humidity and water exposure must be completely avoided.

Approvals & Compliance

- RoHS.
- REACH.
- California Prop 65.

Warranty Policy. Any instrument ordered from BOE may be returned for full refund, less shipping costs, within 30 days of delivery, provided that the instrument has not, in the opinion of BOE been damaged or misused. An RMA number is required in all cases. See our *Standard Terms & Conditions - Instruments* for more details.

BOE reserves the right to make changes to these specifications as it deems necessary. All technical information contained herein is as accurate as possible; however BOE shall not be held responsible for any errors or for product use, nor for any infringements upon the rights of others which may result from its use. BOE products are not to be used in life support or safety critical applications.

All BOE products are designed and manufactured in the USA.

Rev Dec 21