Datasheet

Black Oak Engineering

precision electronic instruments

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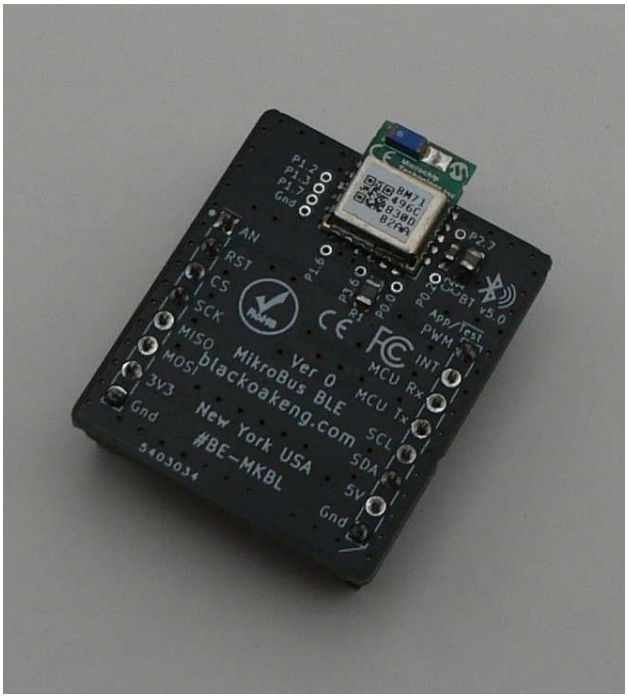
BLE Module
with MikroBus Interface

Part number BE-MKBL
Version 1



Description. The Black Oak Engineering BLE Module with MikroBus interface (#BE-MKBL) provides SIG v5.0 Bluetooth in a compact, standardized module. It has an integrated chip antenna and matching network. Black Oak Engineering's (BOE) industry-leading device drivers are included. The complete BLE stack is integrated, with a simple UART interface. The Module is certified globally with all major regulatory agencies (see list below). It has a wide operating temperature range of -40 to +85 °C (-40 to +185 °F). It lends itself well to the development of systems for data acquisition, user interface, AI/ML/Edge, IOT, automation, and OEM integration.

A Board Support Package (BSP) and a complete set of various tested drivers is available at our GitHub. BOE releases source code and other collateral under an attached MIT license.

MikroBus is a common, convenient interface form factor. The #BE-MKBL requires only the RST, 3V3, Gnd, UART Tx & Rx, and PWM lines. There are two rows of eight sockets, 100-mil (2.54 mm) separation, 900 mil (22.86 mm) row to row. Board is 1.1 x 1.3 inch (28 x 33 mm).

Basic #BE-MKBL specifications

- Bluetooth BLE SIG v5.0 in a MikroBus form factor.
- Integrated chip antenna and matching network.
- BOE industry-leading device drivers are included.
- Complete BLE stack integrated.
- Supports beacon mode.
- Well suited for IOT applications.
- Direct cloud access without a smartphone.
- Certified globally for RF: FCC Part 15, ISED, KCC, MIC, NCC, RED, SRRC.
- Based on IS1871 controller IC.
- UART interface. Transparent UART data service.
- Receive sensitivity: -90 dBm typ.
- Transmit power: 0 dBm typ.
- Received Signal Strength Indicator (RSSI): 1 dB resolution.
- AES128 encryption.
- GAP, GATT, SMP, L2CAP, integrated public profile support.
- Custom GATT services.
- May operate as peripheral / central or as client / server.
- Interoperable with Apple iOS and Android OS.
- Can maintain a low power connection by itself.
- Nominal range: 10 m, open air. (Ask BOE about extended range modules and external antennas.)
- Nominal BLE data rate: 8.6 kbps.
- UART default: 115200 baud, 8N1.
- Current, mean: Tx 3.3 mA, Rx 3.2 mA, at maximum power mode.
- Programmable power modes.
- RF shielded.
- Integrated temperature sensor.

- Temperature operating range: -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.
- The nearby presence of metallic or lossy dielectric structures will attenuate the RF signal.

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

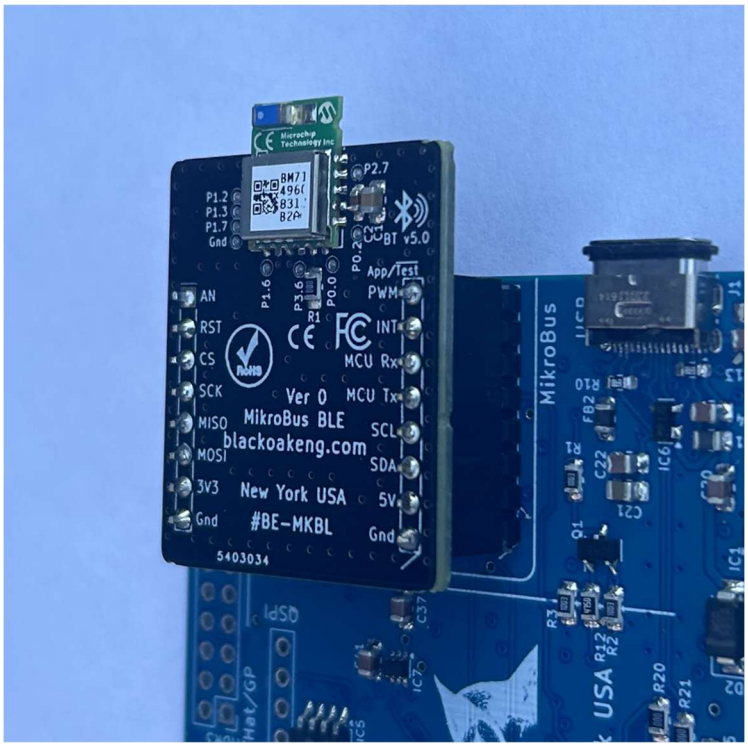


Figure 1 #BE-MKBL on Host board

Additional Approvals & Compliance

- RoHS.
- REACH.
- California Prop 65.

Value Added Design. Want to use the #BE-MKBL BLE module in a new project or OEM application, but need a little assistance? Not a problem. BOE contracts regularly with end users for value added design.

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.