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Wi-Fi Module with MikroBus Interface

Version 0

Part number `BE–MKWI`

Description. The Black Oak Engineering Wi-Fi Module with MikroBus interface (#BE-MKWI) provides IEEE 802.11 b/g/n Wi-Fi in a compact, standardized module. It operates at relatively low power. It is well suited for IOT and general data communications. The antenna is included. It is interoperable with various vendors' Access Points. It uses either SPI or SDIO interface through the MikroBus interface. Black Oak Engineering's (BOE) industry-leading device drivers are included. The complete Wi-Fi stack is integrated. 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-KWIF 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-MKWI specifications

- IEEE 802.11 b/g/n 20 MHz (1 x 1) solution in a MikroBus form factor.
- Utilizes Microchip ATWILC1000-MR110xB link controller module.
- Supports single spatial stream in 2.4 GHz ISM band.
- Integrated Power Amplifier (PA) and Transmit/Receive (T/R) switch.
- Advanced PHY signal processing gives improved sensitivity and range.
- Advanced equalization and channel estimation.
- Advanced carrier and timing synchronization.
- Wi-Fi Direct® and Soft-AP Support.
- Supports IEEE 802.11 WEP, WPA, WPA2 and WPA2-Enterprise Security.
- Superior Medium Access Control (MAC) throughput via hardware accelerated two-level A-MSDU / A-MPDU frame aggregation and block acknowledgement.
- On-chip memory management engine to reduce the host load.
- Integrated 26 MHz clock.
- Power-save modes:
    - <1 µA power-down mode typical.
    - 380 µA doze mode with chip settings preserved (used for beacon monitoring).
    - On-chip low-power sleep oscillator.
    - Fast host wake up from doze mode by a pin or the host I/O transaction.
- Wi-Fi Alliance® certified for connectivity and optimizations
    - ID = **WFA65340**
- Certified globally for RF: FCC Part 15, ISED, KCC, MIC, NCC, RED, SRRC.
- Contact BOE for full list and details of regulatory approvals.
- BOE industry-leading device drivers are included.
- RF shielded.
- 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.
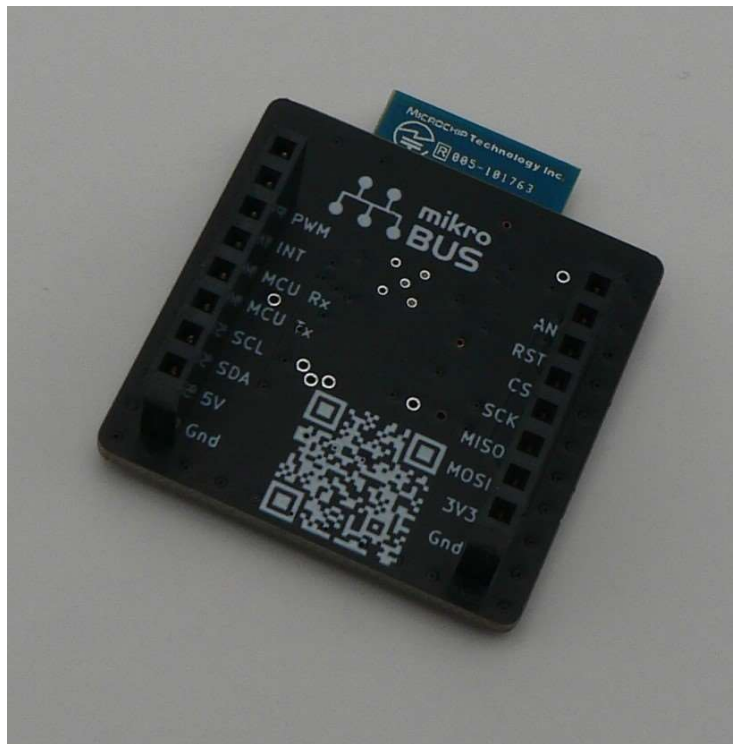
Additional Approvals & Compliance

- 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.