

# Datasheet

## Black Oak Engineering

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### Wren PIC18F Embedded Module

Version 0



Part number BE-WREN



*Description.* The Black Oak Engineering (BOE) Wren PIC18F Embedded Module (#BE-WREN) is a compact computing platform based on the popular Microchip PIC18F47Q84. It has breakouts to add a variety of daughterboards, including boards with a MikroBus interface. It includes a rechargeable lithium polymer battery and a rugged ABS enclosure with side flange mounts. Thus the Wren is ready for many challenging control and data capture applications.

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

### *Basic PIC18F47Q84 specifications*

- RISC, 64 MHz, 64K × 16 Flash, 8K × 8 RAM, 1K × 8 EEPROM.
- XLP Extremely low power modes.
- CAN, DMA, IIC, PWM, SPI, UART.
- 12 bit SAR ADC, 8 bit DAC.
- Easily programmable with Microchip's free [MPLAB XC](#) development environment.

### *Standard features*

- Lithium polymer battery, 140 mA-hr. Recharged via USB.
- Battery has self-check and current monitoring.
- MikroBus Click breakout footprint.
- Serial Flash memory 2Mb.
- USB Device, USB-C connector. CDC mode serial communications (COM port).
- May be jumpered for TTL UART access.
- Real Time Clock.
- IO broken out on 100 mil (2.54 mm) headers. Any standard header pins or sockets may be added.
- 4× dedicated analog low noise inputs.
- Low power design.
- All peripherals have dedicated power switch.
- IIC (TWI).
- 2× SPI channels.
- ICSP.
- Transient protection.
- Diagnostic red & green LEDs.
- Multipurpose tactile switch.

### *Mechanical*

- PCBA is 1.8 × 1.8 inches (4.5 × 4.5 cm).
- Enclosure is black ABS with rough surface, UL94.
- 2.0 × 2.0 inches (5.1 × 5.1 cm) with 0.25 inch (0.64 cm) flanges.
- Height 0.79 inch (2.0 cm).
- .Step available.

### *Environmental*

- Temperature operating ranges:
  - Electronics: -40 to +85 °C (-40 to +185 °F)
  - Lithium polymer battery & enclosure: -20 to +60 °C (-4 to +140 °F)
- Humidity / water exposure: IP54. Mount with USB access on bottom. Dust protected and water splash tolerant.

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.

#### *Approvals & Compliance*

- RoHS.
- REACH.
- California Prop 65.

*Value Added Design.* Want to use the Wren 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.

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