Bluetooth® 4.0 Single Mode Low Energy Programmable Universal Sensor Key Fob

nSensor™ BR-FOB-SEN-LE4.0-S3A

AT HOME. AT WORK. ON THE ROAD. USING BLUETOOTH LOW ENERGY WIRELESS TECHNOLOGY MEANS TOTAL FREEDOM FROM THE CONSTRAINTS AND CLUTTER OF WIRES IN YOUR LIFE.

- FCC, IC, CE, RoHS, and Bluetooth® 4.0 Certified ISM 2.4GHz module.
- Utilizes the BR-LE4.0-S3A Single Mode Module with 256K Flash, 8K RAM.
- Over 100 meter (330 ft) line of site (LOS) distance with integrated antenna.
- Multiple sensor applications in one device: Acceleration, vibration, motion, light sensing, temperature sensing, remote control, panic alarm, pedometer, proximity, virtual leash, water detection.
- Compatibility with Bluetooth Low Energy Single & Dual mode devices.
- Small and convenient: can be placed on a key ring or clip on button for convenient use.
- Custom build options to populate only required features to reduce overall cost.
- Embedded Bluetooth Stack Protocols and Services include: GAP, GATT, SMP, ATT, L2CAP, BAS, DIS, IAS, LLS, TPS. As well as custom profiles for accelerometer, light, temperature, and over the air updates.

FEATURES

- 3-Axis, 12-bit accelerometer with selectable range of ±2,4,8,16g
- 16-bit light sensor with selectable resolution and range of 1k,4k,16k,64k
- 13-bit temperature sensor with range of -55°C to +150°C (±0.5°C)
- 1 12-bit ADC channel available on a test point
- 2 push buttons and 2 LEDs (green and blue)
- CR2032 coin battery holder
- Software adjustable transmitter power (-23dBm to 0dBm) for short to long range applications.
- Ultra low power consumption: 18.2mA 0dB TX, RX down to 17.9mA, 1uA sleep w/timer, and 0.5uA deep sleep.
- Available AT.e SDK for custom embedded applications on the module with approximately 130kB Flash and 2.5kB RAM available to the client application. Header with UART and CC Debugger signals for development.
- Firmware updates Over-the-Air (OTA).
- Free Apple iPhone and Android libraries and applications.
FIRMWARE OPTIONS

1. Default sensor bug firmware.
2. AT.e SDK for custom embedded applications, which requires the IAR Systems Compiler. Purchasers of nBlue products are qualified to receive IAR Systems 8051 compiler for only $1K. MSRP is $3K.

SPECIFICATIONS SUMMARY

**Physical Specifications Summary**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>56.769mm X 34.036mm X 11.430mm</td>
</tr>
<tr>
<td>Weight</td>
<td>16gm (0.5 oz.)</td>
</tr>
<tr>
<td>Enclosure Construction</td>
<td>ABS translucent plastic with rubber buttons</td>
</tr>
</tbody>
</table>

**Operating Conditions Summary**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage (VDD)</td>
<td>2.0-3.6 V</td>
</tr>
<tr>
<td>VDD ripple</td>
<td>100 mV Max</td>
</tr>
<tr>
<td>Max voltage on any pin</td>
<td>VDD + .3 V (Not 5V Tolerant)</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>-20 – 60 °C</td>
</tr>
</tbody>
</table>

**RF Specifications Summary**

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>2402 – 2480 MHz in 2 MHz steps</td>
</tr>
<tr>
<td>Data Rate and Modulation</td>
<td>1 Mbps, GFSK</td>
</tr>
<tr>
<td>Number of Channels</td>
<td>40: 37 data / 3 advertising (0,12,39)</td>
</tr>
<tr>
<td>Receive Sensitivity (w/chip antenna)</td>
<td>-96/-90 dBm</td>
</tr>
<tr>
<td>Output Power</td>
<td>-23 to 0 dBm</td>
</tr>
<tr>
<td>Link Budget</td>
<td>Up to 96dB</td>
</tr>
<tr>
<td>RX/TX Turnaround</td>
<td>150 us</td>
</tr>
</tbody>
</table>

BR-IND-LE4.0-S3A (Industrial packaged version)

Main circuit board electronics and battery fits into industrial ABS black or white plastic box below:

52.832 mm X 32.512mm X 11.430mm (2.080” X 1.280” X 0.450”)
ORDERING INFORMATION

OEM Pricing and ordering information can be found at:
http://www.blueradios.com/orderinfo_new.htm

Consumers purchase through Amazon.

PART NUMBER
BR-FOB-SEN-LE4.0-S3A “KeyFob”
BR-IND-SEN-LE4.0-S3A “Black Box”
BR-IND-BUTTON-S3A “Black Box SensorBug”

100 piece minimum.

Bulk Packaging

CUSTOM Firmware
Firmware can be modified for high volume customers and custom embedded software development is available upon
OEM volume request.

ADDITIONAL DOCUMENTATION
Complete OEM documentation can be found at: http://www.blueradios.com/forum.