



### Overview

The BMD-100 is a Bluetooth Smart master/slave/multi-role network processor module targeted for low-power sensors and accessories using the ultralow power BlueNRG-MS chipset from ST Micro. It integrates features required for a Bluetooth Smart application, including Bluetooth radio, software stack, and GATT/ATT-based access. The external host application processor, where the application resides, connects using SPI. This allows the best microcontroller for the application to be chosen and C based Bluetooth Low Energy profiles are available for compiling into your application. An on-module non-volatile Flash memory allows in field Bluetooth low energy stack upgrade.



### Key Features

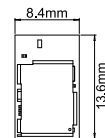
- Bluetooth specification v4.1 compliant central and peripheral; simultaneous multi-role
- Embedded Bluetooth low energy protocol stack: GAP, GATT, SM, L2CAP, LL, RF-PHY
- Ultra-low power consumption and excellent RF link budget (96dB)
- Planned Bluetooth qualification, FCC & IC certifications, & CE compliance

### Quick Specifications

- Supply: 1.7V – 3.6V
- Tx Power: +8 dBm @ 16mA
- Rx Sensitivity: -88 dBm @ 7.3mA
- Interface: HCI or ACI via SPI
- Integrated DC-DC and linear regulators
- Dimensions: 8.4 x 13.6 x 1.8mm
- Operating Temp: -40°C – 85°C

### Applications

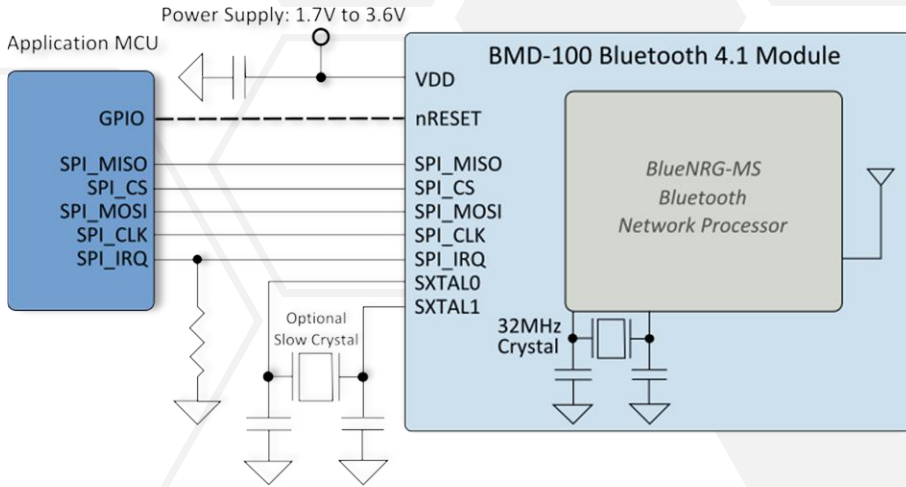
- App-accessories
- iBeacons™ / Proximity
- Low-Power Sensors
- Connected Appliances
- Lighting Products
- Fitness / Sports
- Wearables
- Home Automation



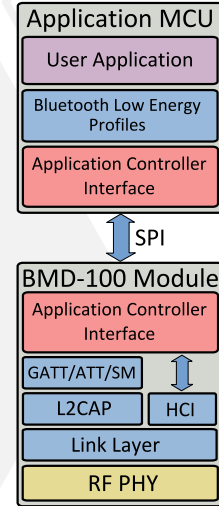
Actual Size



## Hardware Block Diagram



## Software Block Diagram



## Specifications

| General              |   |
|----------------------|---|
| Operating Temp.      | -40°C to 85°C   |
| Storage Temperature  | -40°C to 125°C  |
| Physical Dimensions  | 8.4 x 13.6 x 1.8mm  |
| Operating Supply     | 1.7V to 3.6V  |
| Material             | RoHS compliant  |
| 2.4 GHz Transceiver  |   |
| Bluetooth            | BT 4.1 LE Peripheral / Central / Simultaneous multi-role                      |
| Frequency            | 2.402GHz to 2.480GHz  |
| Modulations          | GFSK at 1 Mbps  |
| Transmit power       | +8 dBm to -18 dBm   |
| Receiver sensitivity | -88 dBm   |
| Antenna              | Integrated ceramic chip   |
| Interface            |   |
| SPI Slave w/ IRQ     | Up to 8 Mbps  |
| Protocol             | Proprietary Application Command Interface (ACI) with HCI command pass-through |

| Power Consumption |  |
|-------------------|--|
| Radio - Tx        | 15.1mA @ +8 dBm, 8.2mA @ 0dBm, 5.8mA @ -18 dBm   |
| Radio - Rx        | 7.7mA/7.3mA in high/low power mode   |
| Active            | 3.3mA w/ CPU, flash and RAM on   |
| Sleep             | 1.7µA w/ 32kHz XO on, 2.8µA w/ 32kHz RO on   |
| Standby           | 1.3µA w/ RAM off   |
| Reset             | 5nA  |
| Approvals         |  |
| FCC               | FCC part 15 modular qualification – FCC ID: 2AA9B02  |
| IC                | Industry Canada RSS-210 modular qualification – IC: 12208A-02  |
| CE                | EN 60950-1: 2011-01 3.1 (a) : Health and Safety of the User<br>EN 301 489-17 V2.2.1 3.1 (b) : Electromagnetic Compatibility<br>EN 300 328 V1.8.1 3.2 : Effective use of spectrum allocated |
| Bluetooth         | Component (Tested) – DID: Planned June 2015  |

## Evaluation Kit

The BMD-100 Evaluation Kit provides a complete development solution for Bluetooth 4.1 LE by combining our BMD-100 Shield with any STM32 Nucleo board featuring an STM32 MCU of your choice.

## Ordering Information

Email [modules@rigado.com](mailto:modules@rigado.com) for quotes and ordering or visit [www.rigado.com/BMD-100](http://www.rigado.com/BMD-100)

| Part Number  | Description           |
|--------------|-----------------------|
| BMD-100-A    | BMD-100 module        |
| BMD-100-NUCL | BMD-100 Nucleo Shield |

## Design Services

Rigado has an experienced team of software, electrical, and mechanical engineers that provide solutions to today's technological challenges. Whether you need a polished prototype for your Kickstarter, a network of industrial sensors, or a complete product ready for mass production; Rigado can turn your ideas into reality.

## BMD-100 Shield

- Shield is Arduino UNO R3 connector compatible
- Supply: 1.7V to 3.6V
- Free development firmware library and examples provided by ST, compatible with STM32Cube firmware
- Current measurement resistor and header

