

Bluetooth 5**Overview**

Rigado's BMD-300 Series is a powerful, highly flexible, ultra-low power Bluetooth Smart module based on the nRF52832 SoC from Nordic Semiconductor. With an ARM® Cortex™ M4F CPU, embedded 2.4GHz multi-protocol transceiver, and an integrated antenna; the BMD-300 Series provide a complete RF solution allowing faster time-to-market with reduced development costs. The BMD-301 adds antenna flexibility with a U.FL connector while the BMD-350 has the smallest footprint.

Providing full use of the nRF52832's capabilities and peripherals, the BMD-300 Series can power the most demanding applications, all while simplifying designs and reducing BOM costs. With an internal DC-DC converter and intelligent power control the BMD-300 Series provides class-leading power efficiency, enabling ultra-low power sensitive applications. Carrying FCC, IC and CE certifications and Bluetooth qualification, the BMD-300 Series is ready to implement right away.

**Key Features**

- Bluetooth 5
- Powerful & ultra-efficient 64MHz 32-bit ARM® Cortex™ M4F CPU with 512kB Flash & 64kB RAM
- Secure Bootloader (encrypted over-the-air updates) with Nordic DFU
- Transmitter certifications: FCC (USA), IC (Canada), MIC (Japan), others
- Transmitter compliance: CE (Europe), RCM (Australia / New Zealand), others
- Bluetooth qualified
- BMD-300 and BMD-301 share the same footprint (Nordic nRF52832)

Quick Specifications

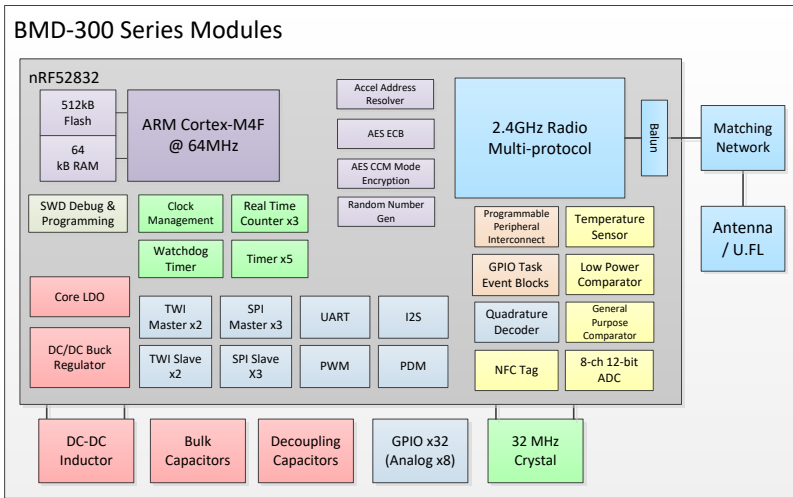
- Supply: 1.7V – 3.6V
- TX Power: 0 dBm @ 5.3mA, +4dBm max
- BLE Rx Sensitivity: -96 dBm @ 5.4mA
- Pins: 32 GPIO (8 Analog)
- Interfaces: UART / I2C / SPI / PWM / I2S PDM / NFC / ADC
- Memory: 512kB Flash / 64kB RAM
- Dimensions: 9.8 x 14.0 x 1.9mm
6.4 x 8.65 x 1.5mm (BMD-350)
- Operating Temp: -40°C to +85°C

Applications

- Climate Control
- Lighting
- Safety and Security
- Home Appliances
- Access Control
- Internet of Things
- Home Health Care
- Advanced Remote Controls
- Smart Energy Management
- Low-Power Sensor Networks
- Key Fobs
- Interactive Entertainment Devices
- Environmental Monitoring
- Hotel Automation
- Office Automation

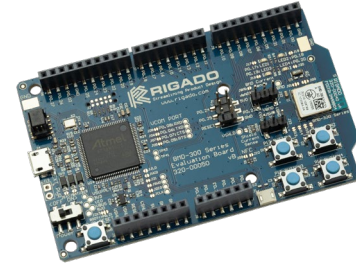


Block Diagram



Evaluation Kit

The BMD-300 Series evaluation kits provide a great starting point for Bluetooth 5 Low Energy projects. It is designed for ease of use while still providing full access to the features of the BMD-300, BMD-301, and BMD-350. The built-in USB programmer allows for easy programming and configuration. All the I/O are accessible and Arduino R3 form factor connectors support plug-and-play accessory shields.



Specifications

General	
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +125°C
Physical Dimensions	9.8 x 14.0 x 1.9 mm (BMD-300, BMD-301) 6.4 x 8.65 x 1.5mm (BMD-350)
Operating Supply	1.7V to 5.5V
Material	RoHS compliant
MAC Address	Unique MAC address provided (in flash & on label)
2.4 GHz Transceiver	
SoftDevices	Bluetooth 5 LE Concurrent Peripheral / Central (S132) ANT (S212), Combined BLE/ANT (S332)
Frequency	2.360GHz to 2.500GHz
Modulations	GFSK at 1 Mbps (BLE mode), 2 Mbps data rates
Transmit power	+4 dBm to -20 dBm (4 dB steps), -40 dBm whisper mode
Receiver sensitivity	-96 dBm (BLE mode)
RSSI	1 dB resolution
Antenna	Integrated antenna
SoftDevices	BT 4.2 LE Concurrent Peripheral / Central (S132) ANT (S212), Combined BLE/ANT (S332)
Frequency	2.360GHz to 2.500GHz
Agency Approvals	
BMD-300	USA (FCC), Canada (IC/ISED), Europe (CE), Japan (MIC), Australia / New Zealand (RCM), South Korea (KCC), Brazil (ANATEL), Mexico (IFETEL), Bluetooth RF PHY
BMD-301	USA (FCC), Canada (IC/ISED), Europe (CE), Japan (MIC), Australia / New Zealand (RCM), Bluetooth RF PHY
BMD-350	USA (FCC), Canada (IC/ISED), Europe (CE), Japan (MIC), Australia / New Zealand (RCM), Brazil (ANATEL), Mexico (IFETEL), Eurasia (EAC), China (SRRC), Bluetooth RF PHY

Power Consumption	
Radio - Tx	7.5mA @ +4dBm, 5.3mA @ 0dBm
Radio - Rx	5.4mA @ 1Mbps (BLE mode)
CPU - running	58µA/MHz running from flash, 3.7mA @ 64MHz 52µA/MHz running from RAM, 3.3mA @ 64MHz 1.3µA in ON mode, with RTC
CPU - off/idle	1.2µA in ON mode, all blocks IDLE 0.7µA in OFF mode, +20nA per 4kB RAM retention

Peripherals	
UART	1 block. 1200 baud to 1M baud, parity, CTS & RTS support
SPI Master	3 blocks. 125kHz to 8MHz clock rates
SPI Slave	3 blocks. 125kHz to 8MHz clock rates
TWI (I2C) Master	2 blocks. 100kHz to 400kHz clock rates
TWI (I2C) Slave	2 blocks. 100kHz to 400kHz clock rates
NFC	NFC-A, 13.56MHz, 106kpbs, wake-on-field
PDM	1 block. 2 microphones (left/right) 16kHz sample rate, 16-bit
I2S	1 block. Master and Slave, bidirectional.
ADC	8-ch, 12-bit @ 200ksps
PWM	3 blocks, 4 channels each.
LP Comparator	8-ch, VDD, int & ext ref, 15 levels
GP Comparator	8-ch, VDD & internal ref, 64 levels
Temp. Sensor	Internal, -40°C to 85°C, +/- 4°C, 0.25°C resolution
GPIO	Input High: 0.7 x VDD, Input Low: 0.3 x VDD, 13kΩ pull-up/pull-down
Timers	5 x 32-bit & three 24-bit RTC with 12-bit prescaler, watchdog
UART	1 block. 1200 baud to 1M baud, parity, CTS & RTS support
SPI Master	3 blocks. 125kHz to 8MHz clock rates

Ordering Information

- [Contact Us](#) for pricing and ordering info

Availability Information

- Current Status: Active

Part Number	Description
BMD-300-A-R	BMD-300 module, Rev A, Tape & Reel, 1000-piece multiples
BMD-300-EVAL	BMD-300 Evaluation Kit w/ SEGGER J-Link-OB programmer
BMD-301-A-R	BMD-301 module, Rev A, Tape & Reel, 1000-piece multiples
BMD-301-EVAL	BMD-301 Evaluation Kit w/ SEGGER J-Link-OB programmer
BMD-350-A-R	BMD-350 module, Rev A, Tape & Reel, 1000-piece multiples
BMD-350-EVAL	BMD-350 Evaluation Kit w/ SEGGER J-Link-OB programmer