

BMD-30 / BMD-35 series



Stand-alone Bluetooth 5 low energy modules

Bluetooth 5 solution

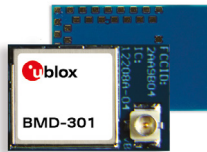
- Powerful, ultra-efficient 64 MHz 32-bit Arm® Cortex®-M4 with FPU, 512 kB Flash, and 64 kB RAM
- Over-the-air updates with Nordic DFU
- Extensive set of country approvals for a world-wide target market
- BMD-300 and BMD-301 are footprint compatible with BMD-330, BMD-360, and BMD-34 series



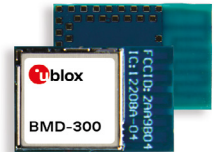
6.4 x 8.65 x 1.5 mm



9.8 x 14.0 x 1.9 mm



9.8 x 14.0 x 1.9 mm



Product description

The BMD-30 / BMD-35 series are powerful, highly flexible, ultra-low power Bluetooth low energy modules based on the nRF52832 SoC from Nordic Semiconductor. With an Arm® Cortex®-M4 with FPU, embedded 2.4G Hz multi-protocol transceiver, and an integrated antenna, the BMD-30 / BMD-35 series modules 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, including the integrated antenna.

Providing full use of the nRF52832's capabilities and peripherals, the BMD-30 / BMD-35 series modules 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-30 series provides class-leading power efficiency, enabling ultra-low power sensitive applications. Carrying FCC, IC, and CE certifications, Bluetooth qualification, and a wide range of other country approvals, the modules are ready to implement right away for a world wide market.

BMD-300 and BMD-301 designs are footprint compatible with the BMD-330, BMD-360 and BMD-34 series modules, thus providing flexibility for tiered product lineups.

	BMD-350	BMD-301	BMD-300
Grade			
Automotive			
Professional			
Standard	•	•	•
Radio			
Chip inside	nRF52832		
Bluetooth qualification	v5.0	v5.0	v5.0
Bluetooth low energy	•	•	•
Thread / Zigbee			
Bluetooth output power EIRP [dBm]	5	9	3
Max range [meters]	190	400	200
NFC	•	•	•
Antenna type (see footnotes)	chip	U.FL	pcb
Application software			
Open CPU for embedded applications	•	•	•
Interfaces			
UART	♦	♦	♦
SPI	♦	♦	♦
I2C	♦	♦	♦
I2S	♦	♦	♦
USB			
PDM and PWM	♦	♦	♦
GPIO pins	32	32	32
AD converters [number of bits]	12	12	12
Features			
MCU (see footnotes)	M4F	M4F	M4F
RAM [kB]	64	64	64
Flash [kB]	512	512	512
Simultaneous GATT server and client	♦	♦	♦
Throughput [Mbit/s]	1.4	1.4	1.4
Maximum Bluetooth connections	20	20	20
Secure boot			
Bluetooth mesh	♦	♦	♦
FOTA	♦	♦	♦

pcb = Internal PCB antenna
 chip = Internal chip antenna
 U.FL = U.FL antenna connector
 M4F = 64 MHz Arm® Cortex®-M4 with FPU

♦ = Feature enabled by HW. The actual support depends on the open CPU application SW.

BMD-30 / BMD-35 series



Features

Bluetooth	v5.0 (Bluetooth low energy)
NFC	NFC-A tag support
Range	BMD-350: 190 m BMD-301: 400 m BMD-300: 200 m
Max. conducted output power	BMD-350: 4 dBm BMD-301: 4 dBm BMD-300: 4 dBm
Conducted sensitivity (Bluetooth mode)	-96 dBm (1 Mbit/s)
Bluetooth address	Unique public Bluetooth address provided (in flash, on label)
Bluetooth operating modes	Simultaneous central and peripheral roles LE 2M PHY (2 Mbps) LE 1M PHY (1 Mbps) Advertising Extensions LE Data Length Extension Channel Selection Algorithm #2
Antenna	BMD-350: Internal chip antenna BMD-301: U.FL antenna connector BMD-300: Internal PCB antenna
Development environment	Nordic SDK (including Bluetooth Mesh HomeKit, AirFuel, IoT) Customers develop and embed their own application on top of the Bluetooth stack in the BMD-30 modules (open CPU concept)
Security	Secure Simple Pairing 128-bit AES encryption Bluetooth low energy secure connections

Interfaces and peripherals*

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

* Not all simultaneously

Further information

For contact information, see www.u-blox.com/contact-us.

For more product details and ordering information, see the product data sheet.

Package

Dimensions	9.8 x 14.0 x 1.9 mm (BMD-300, BMD-301) 6.4 x 8.65 x 1.5 mm (BMD-350)
Weight	< 1.0 g
Mounting	Machine mountable Solder pins

Environmental data, quality & reliability

Operating temperature	-40 °C to +85 °C
Storage temperature	-40 °C to +125 °C
Humidity	RH 5 – 90% non-condensing
RoHS	RoHS 3 compliant

Electrical data

Power supply	1.7 VDC to 3.6 VDC
Power consumption in Bluetooth low energy mode	Active TX @ 0 dBm: 5.3 mA No RAM retention: 0.4 µA at 3 V No RAM retention, wake on RTC: 1.5 µA at 3 V

Certifications and approvals

Type approvals	BMD-350: US (FCC); Canada (IC/ISED); Europe (ETSI RED); Japan (MIC); South Korea (KCC); Australia & New Zealand (RCM); Brazil (ANATEL); Mexico (IFETEL); Eurasia (EAC); China (SRRC) BMD-301: US (FCC); Canada (IC/ISED); Europe (ETSI RED); Japan (MIC); Australia & New Zealand (RCM) BMD-300: US (FCC); Canada (IC/ISED); Europe (ETSI RED); Japan (MIC); South Korea (KCC); Australia & New Zealand (RCM); Brazil (ANATEL); Mexico (IFETEL)
Health and safety	EN 62479, EN 60950-1, IEC 60950-1
Bluetooth qualification	v5.0 (Bluetooth low energy), Bluetooth RF PHY

Support products

BMD-350-Eval	Evaluation kit for BMD-350 with open CPU and internal chip antenna
BMD-301-Eval	Evaluation kit for BMD-301 with open CPU and U.FL antenna connector
BMD-300-Eval	Evaluation kit for BMD-300 with open CPU and internal PCB antenna

Product variants

BMD-350	With internal chip antenna, open CPU
BMD-301	With U.FL connector, open CPU
BMD-300	With internal PCB antenna, open CPU

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