

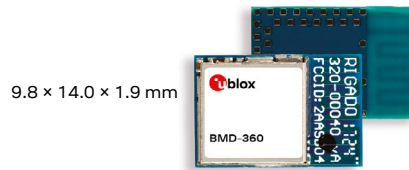
# BMD-360 module



## Stand-alone Bluetooth 5.1 low energy module

### Cost efficient Bluetooth 5.1 including long range and direction finding

- Bluetooth v5.1 with direction finding (AoA/AoD) for location tags
- Bluetooth long range support (Coded PHY) for extended range and coverage
- 802.15.4, Thread, and Zigbee
- Powerful, ultra-efficient 64 MHz 32-bit Arm® Cortex®-M4 CPU with 192 kB Flash and 24 kB RAM
- Footprint compatible with BMD-300/301 and BMD-330 modules



### Product description

The BMD-360 module is a highly flexible, ultra-low power multiprotocol module supporting Bluetooth 5.1, including Bluetooth direction finding and the Bluetooth long range feature. The module is based on the Nordic Semiconductor nRF52811, providing an interface set and memory size optimized for cost-sensitive applications.

Together with the integrated 64 MHz 32-bit ARM® Cortex™-M4 CPU and the integrated antenna, the BMD-360 is an ideal solution for the tag side of designs that require Bluetooth 5.1 direction finding solutions (AoA - Angle of Arrival and AoD - Angle of Departure), or long range beacon designs.

In addition to Bluetooth, the BMD-360 also concurrently supports 802.15.4 such as Thread and Zigbee. The module provides a complete RF solution allowing for faster time-to-market with reduced development cost, and the module certifications for Europe, US, Canada and Australia/New Zealand further simplifies the integration. BMD-360 designs are footprint compatible with a range of other BMD-modules, thus providing full flexibility for tiered product lineups.

	BMD-360
<b>Grade</b>	
Automotive	
Professional	
Standard	•
<b>Radio</b>	
Chip inside	nRF52811
Bluetooth qualification	v5.1
Bluetooth low energy	•
Thread / Zigbee	•
Bluetooth output power EIRP [dBm]	3
Max range [meters]	200
NFC	
Antenna type (see footnotes)	pcb
<b>Application software</b>	
Open CPU for embedded applications	•
<b>Interfaces</b>	
UART	◆
SPI	◆
I2C	◆
I2S	
USB	
PDM and PWM	◆
GPIO pins	32
AD converters [number of bits]	12
<b>Features</b>	
MCU (see footnotes)	M4
RAM [kB]	24
Flash [kB]	192
Simultaneous GATT server and client	◆
Throughput [Mbit/s]	1.4
Maximum Bluetooth connections	4
Secure boot	
Bluetooth mesh	
FOTA	◆

pcb = Internal PCB antenna    ◆ = Feature enabled by HW. The actual support depends on the open CPU application SW.  
M4 = 64 MHz Arm® Cortex®-M4

# BMD-360 module



## Features

Bluetooth	v5.1 (Bluetooth low energy)
Range	200 m
Max. radiated output power (EIRP)	3 dBm
Conducted sensitivity (Bluetooth mode)	-97 dBm (1 Mbit/s) -104 dBm (125 Kbit/s)
MAC address	Unique MAC address provided (in flash, on label)
Bluetooth operating modes	Direction finding support for tag side Simultaneous central and peripheral roles LE 2M PHY (2 Mbps) LE 1M PHY (1 Mbps) Coded PHY 500 kbps (long range) Coded PHY 125 kbps (long range) Advertising Extensions LE Data Length Extension Channel Selection Algorithm #2
Antenna	Integrated PCB antenna
Development environment	Nordic SDK Customers develop and embed their own application on top of the Bluetooth stack in the BMD-360 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	2 blocks. 125 kHz to 8 Mhz clock rates
I2C (TWI) master/slave	1 block. 100 kHz to 400 kHz clock rates
PDM	1 block. 2 microphones (left/right) 16 kHz sample rate, 16-bit
ADC	8-ch, 12-bit @ 200 ksps
PWM	1 block, 4 channels
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 - Input High: 0.7 x VCC; Input Low: 0.3 x VCC; 13 kΩ pull-up/pull-down
Timers	3 x 32-bit and 3 x 24-bit RTC with 12-bit prescaler, watchdog

\* Not all simultaneously

## Package

Dimensions	9.8 x 14.0 x 1.9 mm
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: 4.6 mA Full RAM retention, wake on RTC: 1.5 µA No RAM retention, wake on RTC: 1.3 µA Sleep, full RAM retention: 500 nA Sleep, no RAM retention: 300 nA

## Certifications and approvals

Type approvals	Europe (ETSI RED); US (FCC/CFR 47 part 15 unlicensed modular transmitter approval); Canada (ISED RSS); Australia and New Zealand (RCM)
Health and safety	EN 62479, EN 60950-1, IEC 60950-1
Bluetooth qualification	v5.1 (Bluetooth low energy), Bluetooth RF PHY

## Support products

BMD-360-Eval	Evaluation kit for BMD-360 with open CPU and internal PCB antenna
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## Product variants

BMD-360	With PCB antenna, open CPU
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## Further information

For contact information, see [www.u-blox.com/contact-us](http://www.u-blox.com/contact-us).

For more product details and ordering information, see the [product data sheet](#).

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