



IWM-BL100 DataSheet

v0.1.1e

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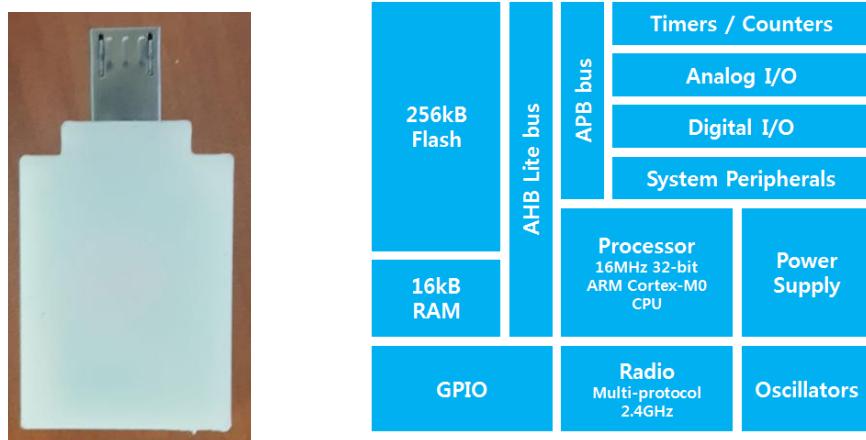
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1. IWM-BL100 Introduction

IWM-BL100 is an ultra-low power 2.4 GHz wireless System on Chip (SoC) module, a 32 bit ARM® Cortex™-M0 CPU, flash memory, and analog and digital peripherals.

IWM-BL100 can use **Bluetooth® Low Energy** and a range of proprietary 2.4 GHz protocols, such as Gazell from Nordic Semiconductor.

Fully qualified Bluetooth Low Energy stacks for IWM-BL100 are implemented in the S100 series of SoftDevices.



Key Features

- 2.4 GHz transceiver
 - 93 dBm sensitivity in Bluetooth® low energy mode
 - 250 kbps, 1 Mbps, 2 Mbps supported data rates
 - TX Power -20 to +4 dBm in 4 dB steps
 - TX Power -30 dBm Whisper mode
 - 13 mA peak RX, 10.5 mA peak TX (0 dBm)
 - RSSI (1 dB resolution)
- ARM® Cortex™-M0 32 bit processor
 - 275 µA/MHz running from flash memory
 - 150 µA/MHz running from RAM
 - Serial Wire Debug (SWD)
- S1x0 series SoftDevice ready
- Memory
 - 256 kB or 128 kB embedded flash program memory
 - 16 kB RAM
- Support for non-concurrent multiprotocol operation
 - On-air compatibility with nRF24L series
- Flexible Power Management
 - Supply voltage range 4.5V to 5.5V
 - 2.5 µs wake-up using 16 MHz RCOSC
 - 0.4 µA @ 3 V OFF mode
 - 0.5 µA @ 3 V in OFF mode + 1 region RAM retention
 - 2.3 µA @ 3 V ON mode, all blocks IDLE
- Serial Interface and 1 GPIO Pins
- One 32 bit and two 16 bit timers with counter mode
- UART (CTS/RTS) Serial Interface
- CPU independent Programmable Peripheral Interconnect (PPI)
- AES HW encryption
- Real Timer Counter (RTC)

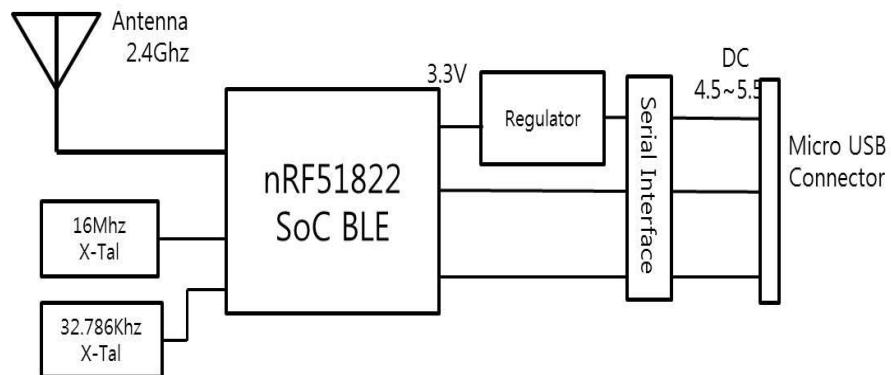
Applications

- Remote Control System
 - Wireless LED Lamp Control
 - Wireless Street Lamp System
- Personal Area Networks
 - Health/fitness sensor and monitor devices
 - Medical devices
 - Key-fobs + wrist watch
 - Environment Monitoring system
- Remote control toys
- Remote control System
 - Remote Robot

Specifications

Frequency band	2.4GHz ISM (2.40000–2.4835GHz)
On-air data rate	250 kbps, 1 Mbps or 2 Mbps
Modulation	GFSK
Output power	Programmable: +4 to -20dBm in 4dB steps
Sensitivity	-92.5dBm Bluetooth low energy -96dBm at 250kb -90dBm at 1Mbps -85dBm at 2Mbps
Radio current consumption LDO at 1.8V	16mA - TX at +4dBm output power 10.5mA - TX at 0dBm output power 13mA - RX at 1Mbps
Radio current consumption DC-DC at 3V	10.5mA - TX at +4dBm output power 8.1mA - TX at 0dBm output power 9.5mA - RX at 1Mbps
Microcontroller	32-bit ARM Cortex M0
Program Memory	128/256kB Flash RAM 16/32kB
Oscillators	16MHz crystal oscillator 16MHz RC oscillator 32kHz crystal oscillator 32kHz RC oscillator (± 250 ppm)
System current consumption	420nA - No RAM retention 530nA - 8k RAM retention 2 μ A - All peripherals in IDLE mode
Hardware Security	128-bit AES ECB/CCM/AAR co-processor
GPIO	1 configurable
Digital I/O	UART
Peripherals	1 GPIO Pins
Voltage regulator	LDO (Input : 4.5V ~ 5.5V Output : 3.0 ~ 3.3V) 1.8V Low Power (1.75 to 1.95V)
Timers/counters	2 x 16 bit, 1 x 24bit, 2 x 24bit, RTC

2. IWM-BL100 Block Diagram



3. IWM-BL100 Picture



4. IWM-BL100 Pin Signal

VDD5 : Power Pin (DC3.3 ~ 5.5V)

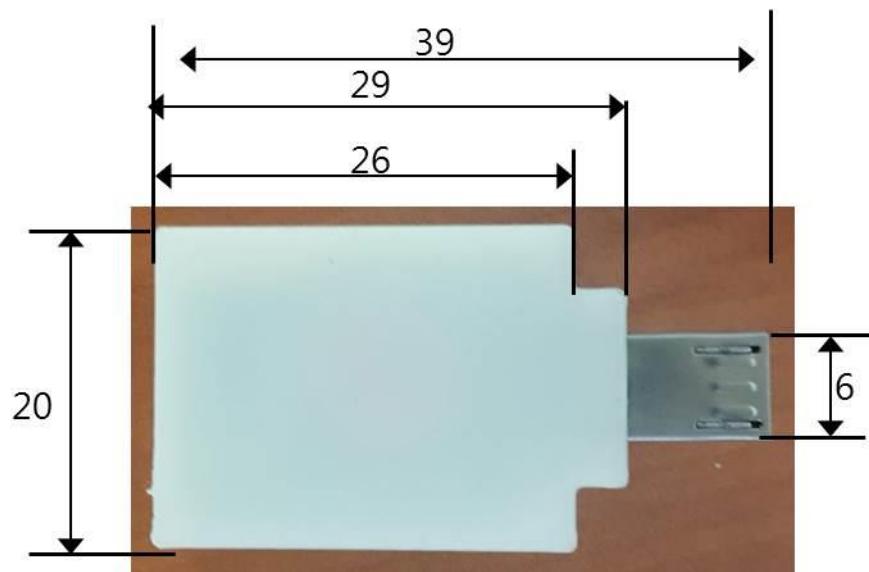
TX : Transceiver Signal

RX : Receiver Signal

GPIO : General Purpose Port

GND : Ground Signal

5. IWM-BL100 Dimension



※unit of standard length = mm

FCC Information

This device complies with part 15 of the FCC Results. Operation is subject to the following two conditions :

- (1) This Device may not cause harmful interface, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna.
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.