

ELBE

BT 5.4 (direction finding) + 802.15.4 Module

Description

ELBE is a highly integrated ultra-low-power standalone certified full featured BT 5.4 (Bluetooth Low Energy) module. This small form-factor module reduces the system cost and gives design flexibility to the user by combining a high-performance Arm® Cortex®-M4 64MHz CPU with a comprehensive mix of analog and digital peripherals, embedded flash, integrated antenna and needed crystals. This fine-tuned RF module is designed to deliver good performance and reliable wireless operation with no host.

ELBE is based on Nordic semiconductor’s nRF52811 SoC. This globally certified module reduces user’s development cost and time to market with integrated wireless stacks, network stack, and application APIs.

Features

- ❖ Standalone module supporting BT 5.4 (BLE) and Thread/Zigbee with integrated protocol stacks
- ❖ Concurrent multi-protocol support
- ❖ BLE direction finding support
- ❖ Long Range support
- ❖ 1Mbps and 2 Mbps data rates support
- ❖ Highly optimized hardware for ultra-low power consumption with excellent performance
- ❖ AES 128-bit hardware encryption
- ❖ 192KB flash, 24KB SRAM
- ❖ Watchdog timer
- ❖ Secure over the air device firmware upgrade (OTA DFU)
- ❖ Foot print compatible with NILE series
- ❖ Nordic SDK with examples and comprehensive documentation covers all the features supported by the module.
- ❖ Flexible power management options
- ❖ Up to 30 GPIO
- ❖ EasyDMA support for high performance
- ❖ Temperature: -40 to 85C
- ❖ Power: 1.7V to 3.6V with integrated DC-DC

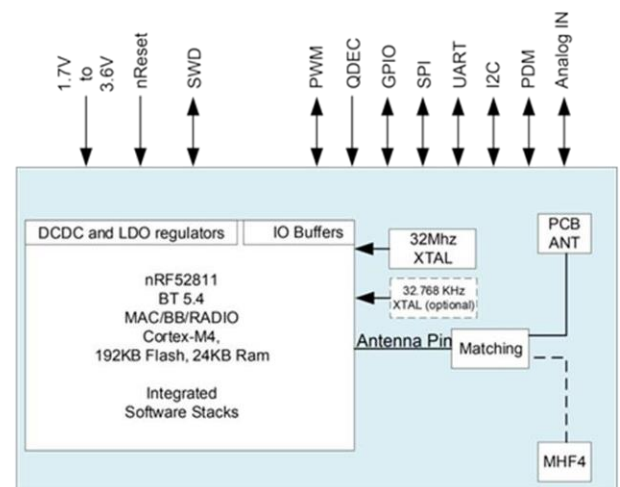


Footprint: 10 mm x 15 mm x 1.6 mm

Applications

- ❖ Direction finding in real time locationing
- ❖ Proximity solutions
- ❖ Beacons
- ❖ Mouse/Keyboard and Mobile HID
- ❖ Sports and fitness trackers
- ❖ Asset tracking
- ❖ Wearable’s like VR headsets
- ❖ Building and home automation

Block Diagram



Specifications

Wireless Protocols	Bluetooth 5.4 + 802.15.4 (Thread/Zigbee)
Frequency	2.402 – 2.480 GHz
Data rates	BLE: 2Mbps, 1Mbps 802.15.4: 250 Kbps
Security Features	AES128 HW encryption with EasyDMA
Antenna options	PCB Trace Antenna or MHF4 connector
Operating modes	BLE
Range	650 meters
Programmable TX output power	-20 to 4 dBm in 4dBm steps
Receive Sensitivity	Bluetooth: -104dBm at 125kbps (long range) -100dBm at 500kbps (long range) -96dBm at 1Mbps -94dBm at 2Mbps 802.15.4: -101dBm at 250Kbps
Current consumption	Deep-power down mode: 300nA TX (0dBm): 4.6mA RX (1Mbps): 4.6mA
GPIO	30
Power supply and operating voltage range	Integrated DC-DC, 1.7v to 3.6v
Temperature	-40C to 85C
Humidity	5-90% non-condensing
Package	10 mm x 15 mm x 1.6 mm (including shield), 0.5mm pitch

Interfaces and peripherals

- ❖ UART (CTS/RTS) with EasyDMA
- ❖ SPI master/slave with EasyDMA
- ❖ I2C master/slave
- ❖ 4 channel PWM with EasyDMA
- ❖ PDM
- ❖ 8ch x 12bit ADC
- ❖ 3 x 32b timer with counter mode
- ❖ 2 x RTC
- ❖ 64 level analog comparator
- ❖ QDEC
- ❖ Watchdog timer
- ❖ Random Number Generator
- ❖ Temperature sensor

Certifications and approvals

- ❖ Module certifications: FCC, IC, CE, TELEC
- ❖ Bluetooth qualification: v5.3

Part Ordering

ELBE module	I512M0L8-I2LT (PCB Antenna, Tray packing)
	I512M0L8-I2LR (PCB Antenna, Tape/Reel packing)
	I513M0L8-I3LT (MHF4 connector, Tray packing)
	I513M0L8-I3LR (MHF4 connector, Tape/Reel packing)

Development Kit

Features:

- ❖ On board debugger LPC Link / Segger Jlink
- ❖ Arduino Uno Rev 3 shield compatible connector
- ❖ Access to I/O and interfaces via edge connectors and user programmable Buttons and LEDs

Additional Information

For the latest collaterals, please visit
<https://www.ivativ.com>