Wireless Module

*Bluetooth® low energy* Module Overview

Sep. 25, 2017 Version 1.7
TAIYO YUDEN Bluetooth® low energy Module Line-Up

**Taiyo Yuden Bluetooth® low energy Module**

- **nRF52832 Module**
  - **EYSHCN Series**
    - Big: Embedded antenna, Int. 32kHz X’tal, Int. LC for DC/DC, 9.6 x 12.9 x 2.0 mm
    - EYSHCN ZWZ: RAM 64kB, SoftDevice S132
  - **EYSHJN Series**
    - Small: Embedded antenna, Ext. 32kHz X’tal, Ext. LC for DC/DC, 5.1 x 11.3 x 1.3 mm
    - EYSHJN ZWZ: RAM 64kB, SoftDevice S132
  - **EYSHSN Series**
    - Ultra-small: Embedded antenna, Ext. 32kHz X’tal, Ext. LC for DC/DC, 3.25 x 8.55 x 0.9 mm
    - EYSHSN ZWZ: RAM 64kB, SoftDevice S132
TAIYO YUDEN Bluetooth® low energy Module Line-Up

nRF51x22 Bluetooth® low energy Module

Big
- Embedded antenna
- Int. 32kHz X’tal
- Int. LC for DC/DC
- 9.6 x 12.9 x 2.0 mm

EYSGCN Series

Basic
- RAM 16kB
- SoftDevice S110
- TY’s App
- UART Control
- GPIO Control

Application
- Embedded
- SoftDevice S120

EYSGJN Series

EYAGJN Series

Small
- Embedded antenna
- Ext. 32kHz X’tal
- Ext. LC for DC/DC
- 5.1 x 11.3 x 1.3 mm

Basic
- RAM 32kB
- SoftDevice S110
- TY’s App
- UART Control
- GPIO Control

Application
- Embedded
- SoftDevice S120

EYSGCN ZXX
- RAM 16kB
- SoftDevice S110
- TY’s App
- UART Control
- GPIO Control

EYSGCN ZWY
- RAM 32kB
- SoftDevice S120
- TY’s App
- UART Control
- GPIO Control

EYSGCN AWY-1X
- TY’s App
- SoftDevice S110
- GPIO Control

EYSGCN AWY-WX
- TY’s App
- SoftDevice S310
- UART Control

EYAGJN ZXX
- RAM 32kB
- ANT + BLE
- SoftDevice S310
- GPIO Control

EYAGJN ZWY
- RAM 16kB
- SoftDevice S110
- GPIO Control

TY’s App Lite

TY’s App

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### Latest Documents for Bluetooth® low energy Module

<table>
<thead>
<tr>
<th>Model</th>
<th>URL</th>
</tr>
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<tr>
<td>EYSHSNZWZ</td>
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- The documents for the evaluation board and evaluation kit are also available on the above page.
- The Japanese documents are available on the following page.
  [http://www.yuden.co.jp/jp/product/category/module/lineup.html#Bluetooth](http://www.yuden.co.jp/jp/product/category/module/lineup.html#Bluetooth)
2Mbps Bluetooth® 5.0 low energy Module: EYSHSNZWZ

Features
- Frequency: 2402 to 2480 MHz with +4dBm Output power
- Single power supply: 1.7 – 3.6V
- Single Mode Bluetooth low energy (ANT™ Available)
- Chip: nRF52832 (Nordic) with Bluetooth low energy 2Mbps mode
- Integrated System Clock
- ARM Cortex M4F 32bit processor
- 512kB Flash and 64kB RAM
- Interface: SPI, UART, I2C, I2S, PDM and 12bit ADC
- Support NFC-A Type-2 for Touch-to-Pair
- Integrated high performance PCB antenna
- Outline: 3.25 x 8.55 x 0.9mm MAX
- Operating Temperature range: -40 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

Applications
- Smart wristband
- Smart glasses
- Remote control ring
- Smart pen
- Heart rate monitor
- Pressure monitor
- Blood glucose meter
- Thermometer
- Mobile accessories

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Bluetooth® low energy Module Sample, Evaluation Board / Kit

**ESHNSNZWZ (Module)**

- Module samples
- Tray or Tape

**EBSHNSNZWZ (EV-B)**

- Evaluation board

**EKSNSHNSNZWZ (EV-K)**

- Evaluation kit
  - SEGGER J-Link LITE Attached

TAIYO YUDEN
**2Mbps Bluetooth® 5.0 low energy Module: EYSHCNZWZ**

**Features**
- Frequency: 2402 to 2480 MHz with +4dBm Output power
- Single power supply: 1.7 – 3.6V
- Single Mode Bluetooth low energy Slave/Master (ANT™ Available)
- Chip: nRF52832 (Nordic) with Bluetooth low energy 2Mbps mode
- Integrated System/Sleep Clock, LC for DC/DC
- Integrated high performance ceramic chip antenna
- ARM Cortex M4F 32bit processor
- 512kB Flash and 64kB RAM
- Interface: SPI, UART, I2C, I2S, PDM and 12bit ADC
- Support NFC-A Type-2 for Touch-to-Pair
- Outline: 9.6 x 12.9 x 2.0 mm with 1mm pad pitch
- Operating Temperature range: -40 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

**Applications**
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

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## Bluetooth® low energy Module Sample, Evaluation Board / Kit

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- **EYSHCNZWZ (Module)**: Tray or Tape
- **EBSHCNZWZ (EV-B)**: Evaluation board
- **EKSRCZNWZ (EV-K)**: SEGGER J-Link LITE Attached
**2Mbps Bluetooth® 5.0 low energy Module: EYSHJNZWZ**

### Features
- Frequency: 2402 to 2480 MHz with +4dBm Output power
- Single power supply: 1.7–3.6V
- Single Mode Bluetooth low energy Slave/Master (ANT™ Available)
- Chip: nRF52832 (Nordic) with Bluetooth low energy 2Mbps mode
- Integrated System Clock
- ARM Cortex M4F 32bit processor
- 512kB Flash and 64kB RAM
- Interface: SPI, UART, I2C, I2S, PDM and 12bit ADC
- Support NFC-A Type-2 for Touch-to-Pair
- Integrated high performance pattern antenna
- Outline: 5.1 x 11.3 x 1.3mm MAX
- Operating Temperature range: -40 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

### Applications
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

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TAIYO YUDEN
# Bluetooth® low energy Module Sample, Evaluation Board / Kit

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<td>EBSHJNZWZ (EV-B)</td>
<td>EKSHJNZWZ (EV-K)</td>
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</table>

- **Module samples**
  - Tray
  - Tape

- **Evaluation board**
  - SEGGER J-Link LITE Attached
Bluetooth® low energy Module: EYSGCNZXX

Features
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy Slave
- Chip: nRF51822 Rev.3 (Nordic)
- Integrated System/Sleep Clock
- Integrated high performance ceramic chip antenna
- ARM Cortex M0 32bit processor
- 256kB Flash and 16kB RAM
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Outline: 9.6 x 12.9 x 2.0 mm with 1mm pad pitch
- Operating Temperature range: -40 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

Applications
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

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TAIYO YUDEN
Bluetooth® low energy Module: EYSGCGNZWY

Features
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy Slave / Master
- Chip: nRF51822 Rev.3 (Nordic)
- Integrated System/Sleep Clock
- Integrated high performance ceramic chip antenna
- ARM Cortex M0 32bit processor
- 256kB Flash and 32kB RAM
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Outline: 9.6 x 12.9 x 2.0 mm with 1mm pad pitch
- Operating Temperature range: -25 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

Applications
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

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Bluetooth® low energy Module Sample, Evaluation Board / Kit

**EYSGCNZXX, EYSGCNZWY** (Module)
- **Module samples**
  - Tray
  - Tape

**EBSGCNZWY** (EV-B)
- **Evaluation board**

**EKSGCNZWY** (EV-K)
- **Evaluation kit**
  - SEGGER J-Link LITE Attached
Bluetooth® low energy Module EYSGJNZXX

Features
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy Slave
- Chip: nRF51822 Rev.3 (Nordic)
- Integrated System Clock
- ARM Cortex M0 32bit processor
- 256kB Flash and 16kB RAM
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Integrated high performance pattern antenna
- Outline: 5.1 x 11.3 x 1.3mm MAX
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- Bluetooth and Japan, FCC, IC qualified
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Outline

Applications
- Cycle computer
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- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Block Diagram

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**Bluetooth® low energy Module**  EYSGJNZWY

### Features
- **Frequency:** 2402 to 2480 MHz
- **Output power:** +4dBm typ.
- **Single power supply:** 1.8 – 3.6V
- **Single Mode Bluetooth low energy** Slave / Master
- **Chip:** nRF51822  Rev3 (Nordic)
- **Integrated System Clock**
- **ARM Cortex M0** 32bit processor
- **256kB Flash and 32kB RAM**
- **Interface:** SPI, UART, I2C and 8/9/10bit ADC
- **Integrated high performance pattern antenna**
- **Outline:** 5.1 x 11.3 x 1.3mm MAX
- **Operating Temperature range:** -25 to 85 deg-C
- **Bluetooth and Japan, FCC, IC qualified**
- **CE Conducted Test Report Available**
- **RoHS compliant / Complete Lead Free**

### Outline
- **Applications**
  - Cycle computer
  - Heart rate monitor
  - Blood pressure monitor
  - Blood glucose meter
  - Weighing machine
  - Thermometer
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  - Sports and fitness sensors
  - Remote controllers / Toys

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**Block Diagram**

**Applications**
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
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- Thermometer
- Mobile accessories
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- Remote controllers / Toys

**Features**
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy Slave / Master
- Chip: nRF51822 Rev3 (Nordic)
- Integrated System Clock
- ARM Cortex M0 32bit processor
- 256kB Flash and 32kB RAM
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Integrated high performance pattern antenna
- Outline: 5.1 x 11.3 x 1.3mm MAX
- Operating Temperature range: -25 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

**Block Diagram**

**Outline**
- Applications
- Features

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ANT + Bluetooth® low energy Module  EYAGJNZXX

Features
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- ANT + Single Mode Bluetooth low energy Slave
- Chip: nRF51422 Rev 3 (Nordic)
- Integrated System Clock
- ARM Cortex M0 32bit processor
- 256kB Flash and 32kB RAM
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Integrated high performance pattern antenna
- Outline: 5.1 x 11.3 x 1.3mm MAX
- Operating Temperature range: -25 to 85 deg-C
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- CE Conducted Test Report Available
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Outline

Applications
- Cycle computer
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## Bluetooth® low energy Module Sample, Evaluation Board / Kit

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### Module samples
- Tray
- Tape

### Evaluation board

### Evaluation kit
- SEGGER J-Link LITE Attached
Application Layer image for **Basic Module**

**Bluetooth® low energy Device**
- Switch
- Sensors
- Clock
- LED
- Data

**nRF51822, 422 module**
- Temperature Sensor
- Power Regulator
- 32MHz X’tal
- 32kHz X’tal (EYSGCN)

**Antenna**

**Application (Profiles)**
- Generic Attribute Server
- Generic Attribute Client
- SM
- ATT
- L2CAP
- LL
- PHY
- DTM

**Basic module will be written under GATT.**

**Nordic SDK**
- Alert Notification
- Blood Pressure
- Cycling Speed and Cadence
- Glucose
- HID Mouse
- Heart Rate
- Phone Alert Status
- Proximity
- Running Speed and Cadence
- Time

**EYSGCN, EYSGJN, EYAGJN Basic Module**

**Softdevice**

- GAP: Generic Access Profile
- SM: Security Manager
- ATT: Attribute Protocol
- L2CAP: Logical Link Control and Adaptation Protocol
- LL: Link Layer
- PHY: Physical Layer
- DTM: Direct Test Mode
Features
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy Slave / Master
- Chip: nRF51822 (Nordic)
- Integrated System/Sleep Clock
- Integrated high performance ceramic chip antenna
- ARM Cortex M0 32bit processor
- Application Embedded by Taiyo Yuden
  - (TY’s App Lite: Generic Data transfer, Battery Service)
- Interface: UART
- Outline: 9.6 x 12.9 x 2.0 mm with 1mm pad pitch
- Operating Temperature range: -25 to 85 deg-C
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**Bluetooth low energy Module Sample, Evaluation Board**

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Alternatively, you can use tape or a tray to hold the module samples.
Features

- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy Slave / Master
- Chip: nRF51822 Rev3 (Nordic)
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- ARM Cortex M0 32bit processor
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<td><img src="image1" alt="Module samples" /></td>
<td><img src="image2" alt="Evaluation board" /></td>
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- Tray
- Tape

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TAIYO YUDEN
Bluetooth® low energy Module: EYSGCNAWY-WX

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TAIYO YUDEN
Bluetooth low energy Module Sample, Evaluation Board

EYSGCNAWY-WX (Module)
- Module samples
  - Tray
  - Tape

EBSGCNAWY-WX (EV-B)
- Evaluation board
Bluetooth® low energy Module  EYSGJNAWY-WX

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- Chip: nRF51822  Rev3 (Nordic)
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- Application Embedded by Taiyo Yuden
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- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline

Block Diagram

VCC
AVDD
DCC
UART (4)
Control (8)
RESET
GND

All specifications are subject to change without notice.
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Bluetooth low energy Module Sample, Evaluation Board

<table>
<thead>
<tr>
<th>EYSJNAWY-WX (Module)</th>
<th>EBSJNAWY-WX (EV-B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module samples</td>
<td>Evaluation board</td>
</tr>
</tbody>
</table>

- Tray
- Tape
- or

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Application Layer image for **Application Embedded Module**

**nRF51822 module**

- **Application**
  - Generic Attribute Server
  - Generic Attribute Client
  - SM
  - ATT
  - L2CAP
  - LL
  - PHY
  - DTM

**Connection option**

- **-1X module for**
  - Module - Module only

- **-WX module for**
  - Module – Module
  - Module – Smart phone

**Softdevice**

- **GAP**: Generic Access Profile
- **SM**: Security Manager
- **ATT**: Attribute Protocol
- **L2CAP**: Logical Link Control and Adaptation Protocol
- **LL**: Link Layer
- **PHY**: Physical Layer
- **DTM**: Direct Test Mode

**EYSGCN, EYSGJN**

**Application Embedded Module**
# Bluetooth® low energy standard module

<table>
<thead>
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<th>Type</th>
<th>Part No.</th>
<th>Size (L×W×H)</th>
<th>Specification</th>
<th>ANT™ Support</th>
<th>I/F</th>
<th>RAM</th>
<th>Certification</th>
<th>Temperature</th>
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※1 Supported by S130 SoftDevice
※2 CE conducted test report available
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