![Chipsmall logo]

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Contact us

EVALUATION BOARD MANUAL
EBSGCN Series

EVALUATION KIT MANUAL
EKSGCN Series

for EYSGCN series Bluetooth® low energy Module

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EBSGCN, EKSGCN

Introduction

This evaluation board is applicable for Taiyo Yuden's **_Bluetooth_**® **low energy** module, EYSGCN Series.

EBSGCN Series

USB

Serial UART interface and power supply are possible with one USB cable. And this board has the SWD connector terminal for software development.

Mounted module

EYSGCN (9.6mm x 12.9mm x 2.0mm_MAX)

Nordic nRF51822 / ARM® Cortex™-M0 32 bit processor
49-pin Land Grid Array / 29GPIOs / SWD

- Basic Module -
Taiyo Yuden writes firmware for S120 (EYSGCNZWY) SoftDevice to this product.
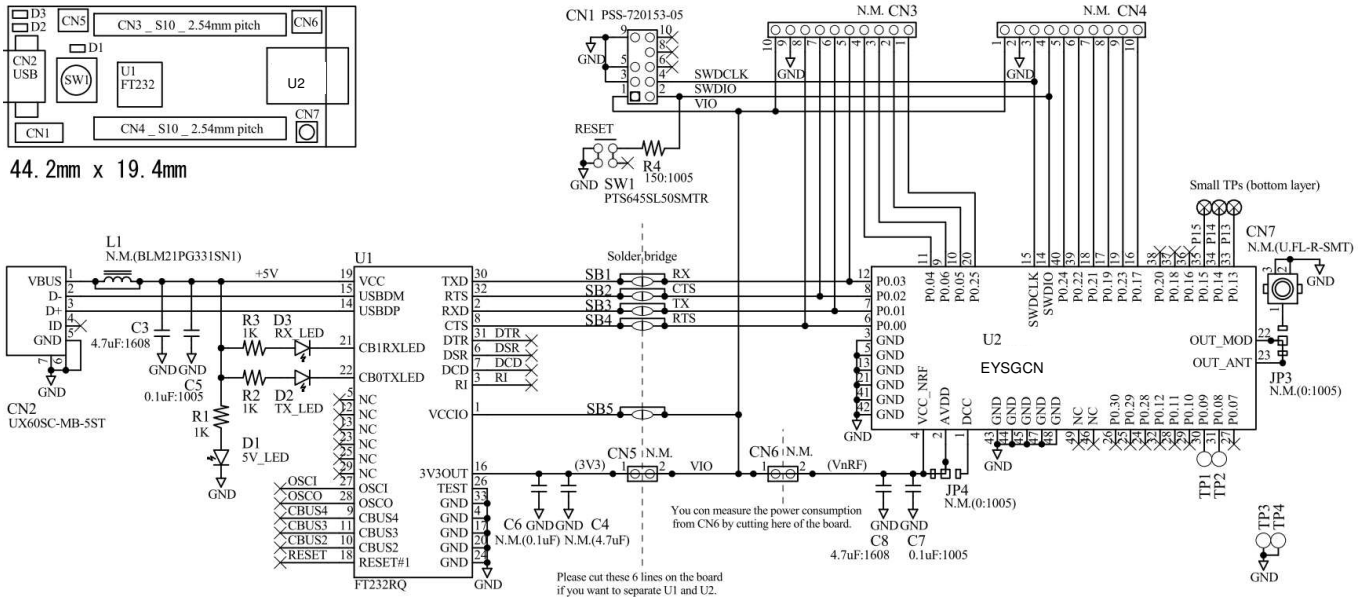The user can develop unique application for the module.

Content

1	EBSGCN Series Evaluation Board	1 pc
2	J-Link Lite (EKSGCNZWY Only)	1 set

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Evaluation board circuit schematic

Evaluation board layout

CN5: Jumper of internal 3V3 Default: Short

CN3: GPIOs and external DC power supply

CN6: Power consumption monitor

CN2: miniUSB - UART +5V DC power supply

U2: BLE Module EYSGCN Series

JP3: Antenna selector Default: Internal Antenna

SW1: Reset button

CN1: SWD (for J-link lite)

CN4: GPIOs, SWD and DC power supply

CN7: RF Connector U.FL-R-SMT (HIROSE)
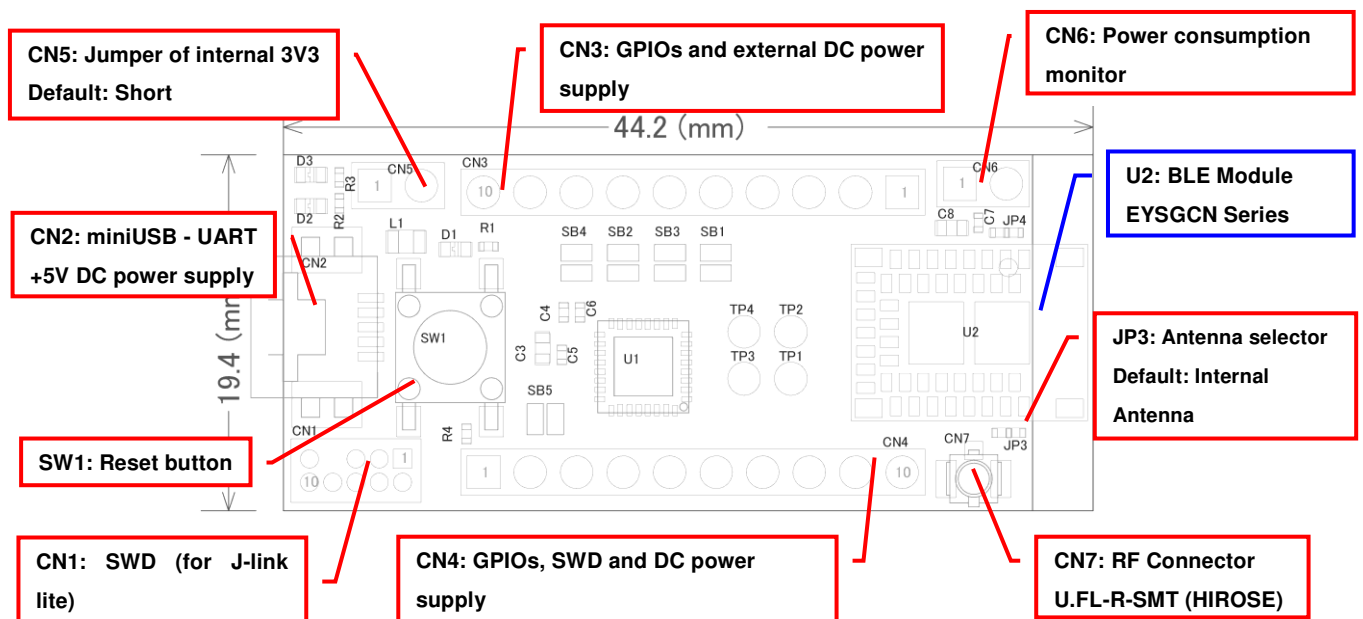
1) All pin headers are 2.54mm pitch. And distance between **CN3** and **CN4** is **15.24mm**.
2) CN3-CN6, C4, C6, L1, JP3, JP4, SB1-5, TP1-4 are not mounted (N.M.).
3) D1 (LED): USB VBUS 5V LED Indicator
4) D2 (LED): UART TX Indicator
5) D3 (LED): UART RX Indicator
6) SW1 (Push button): Module Reset (active low)

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Silkscreen Printing
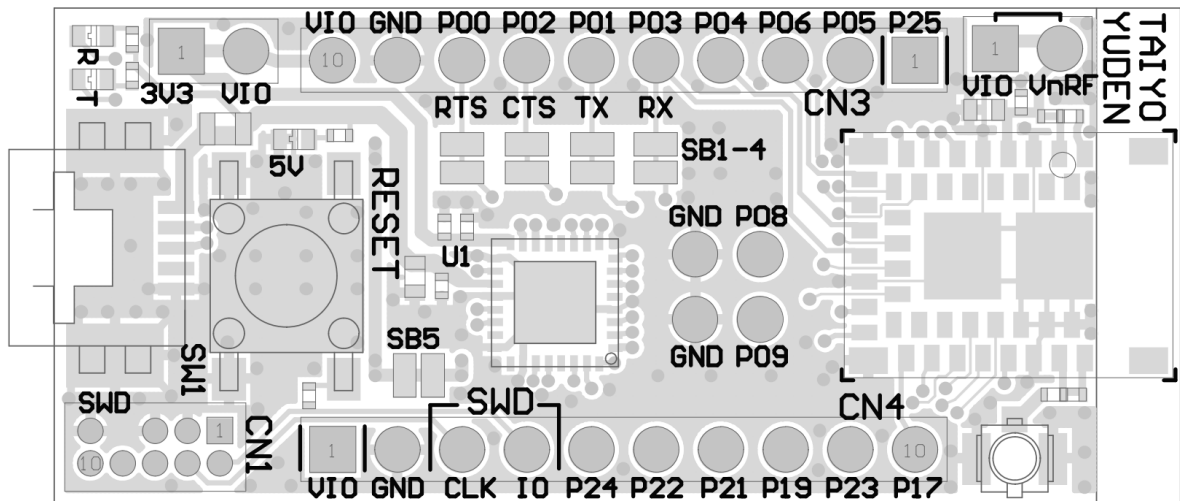
Pin Descriptions

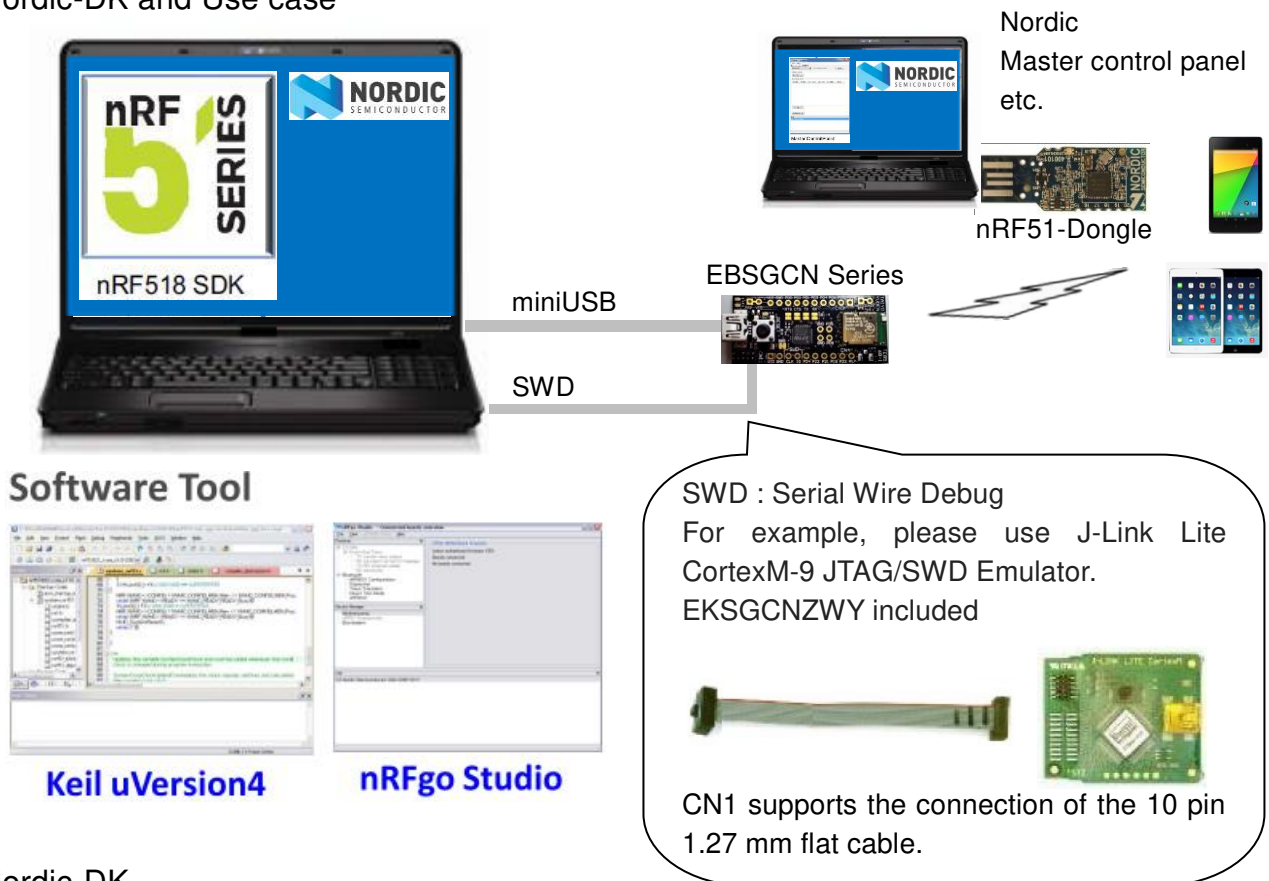| Pin No.	CN3	CN4
1	P0.25	VIO
2	P0.05	GND
3	P0.06	SWDCLK
4	P0.04	SWDIO
5	P0.03	P0.24
6	P0.01	P0.22
7	P0.02	P0.21
8	P0.00	P0.19
9	GND	P0.23
10	VIO	P0.17

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How to use

It is very easy just to tie this board to the PC with a USB cable. It is not necessary to change the setting of the board. The power supply of the module supplies by default 3.3V from 3V3OUT of FT232RQ.
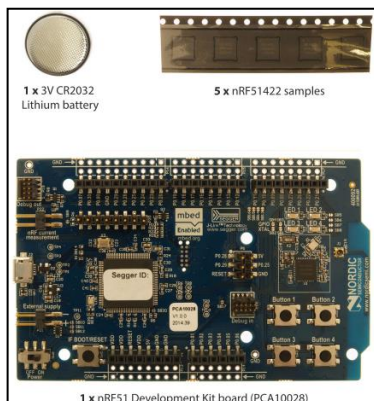
## For software development

Nordic-DK and Use case

Nordic
Master control panel
etc.

nRF51-Dongle

miniUSB

EBSGCN Series

SWD

Software Tool

Keil uVersion4   **nRFgo Studio**

SWD : Serial Wire Debug
For example, please use J-Link Lite CortexM-9 JTAG/SWD Emulator.
EKSGCNZWY included

CN1 supports the connection of the 10 pin 1.27 mm flat cable.

Nordic-DK
http://www.nordicsemi.com/eng/Products/nRF51-DK

Nordic-nRF51DK

1 x 3V CR2032 Lithium battery

5 x nRF51422 samples

1 x nRF51 Development Kit board (PCA10028)

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MEMO

1) Current measurment
To measure the current, please cut the shorting 1pin and 2 pin of CN6. And connect an ampere-meter between the pins of connector CN6 to monitor the current directly.
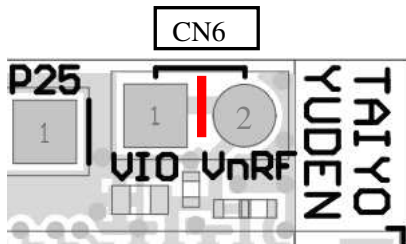
2) About the power supply of the module
When you use external power supply, please supply power from 9pin and 10pin of CN3. On this configuration, you cut short circuit 1pin and 2pin of CN5 and should separate 3V3OUT of FT232RQ.
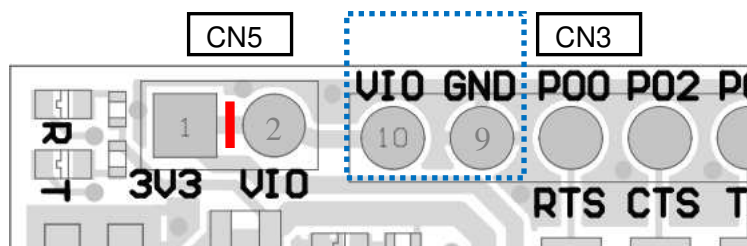
3) USB to serial UART interface
It needs to install driver of FT232RQ to use USB for UART interface.
The drivers are available on FTDI website.

http://www.ftdichip.com/Drivers/D2XX.htm

In addition, by the application development, please assign GPIO as follows.

GPIO	UART
P0.00	RTS
P0.01	TX
P0.02	CTS
P0.03	RX

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4) Size and Coordinate information

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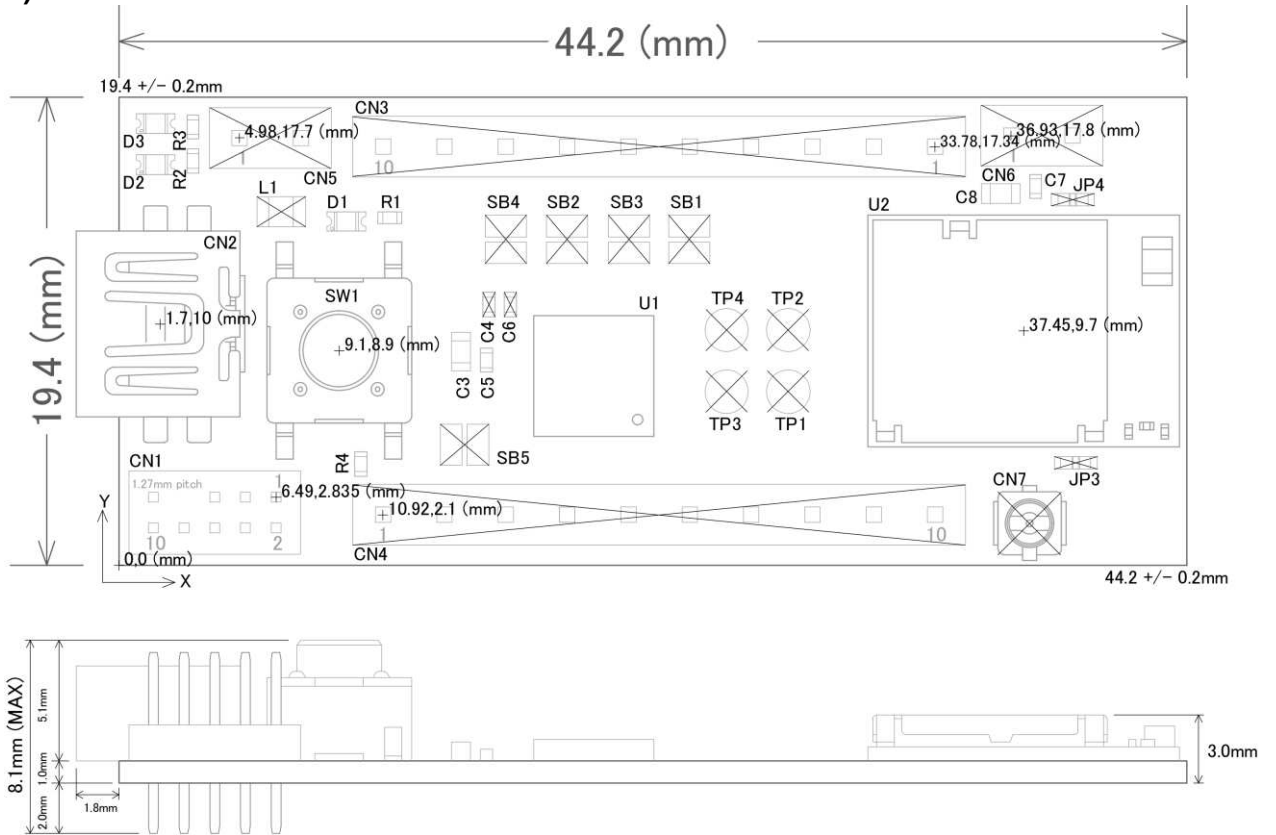
Important notes

The evaluation board included with the Nordic Development Kit uses a 16MHz clock. Therefore the sample code from Nordic is designed to be used with a 16MHz clock. On the other hand, the EYSGCN series module uses a 32MHz system clock, making it incompatible with the Nordic sample code (i.e. sample code does not configure HFCLK: XTALFREQ register for 32MHz). To fix this issue, we need to write the value 0xFFFFFF00 to the UICR (User Information Configuration Register) at address 0x10001008. Please note that the UICR is erased whenever you download a SoftDevice.

The UICR can be written by using the debug tools:
nrfjprog.exe --snr <your_jlink_debugger_serial_number> --memwr 0x10001008 --val 0xFFFFFF00

Or the following code can be added to the SystemInit function in the system_nRF51.c file, right before launching the TASK_HFCLKSTART task:

```
if (*(uint32_t *)0x10001008 == 0xFFFFFFFF)
 {
     NRF_NVMC->CONFIG = NVMC_CONFIG_WEN_Wen << NVMC_CONFIG_WEN_Pos;
     while (NRF_NVMC->READY == NVMC_READY_READY_Busy){}
     *(uint32_t *)0x10001008 = 0xFFFFFF00;
     NRF_NVMC->CONFIG = NVMC_CONFIG_WEN_Ren << NVMC_CONFIG_WEN_Pos;
     while (NRF_NVMC->READY == NVMC_READY_READY_Busy){}
     NVIC_SystemReset();
     while (true){}
 }
```


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TY's App or TY's App Lite Installation model
TY's App (Taiyo Yuden Standard Application for BLE)
BLE Embedded Software

EYSGCNA Series. (9.6mm x 12.9mm x 2.0mm_MAX)

Nordic nRF51822 / ARM® Cortex™-M0 32 bit processor

TY's App is installed.
Development of the application software in the module is unnecessary.

Peripheral Side	**Central Side**
EBSGCNAWY-1X	EBSGCNAWY-1X
EBSGCNAWY-WX	EBSGCNAWY-WX
TY's App	TY's App
Slave	Master

TYSA-B Tester

UART

UART

TYSA-B Tester

TY's App and TY's App Lite

UART

UART

Your product

Your product

TY's App

UART

Your product

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