GWBMD00x Kit

User Guide v1.0

1 Introduction

The GWBDO00x Bluetooth, low energy/2.4 GHz proprietary Kit provides a complete solution for testing and evaluating the GWBLEMO module . GWBLEMO module is a module based on nRF51822 chip, GWBLEMO incorporates most of the components and made it a plug and play solution for wireless digital. The nRF51822 is part of the nRF51 series which offers a range of ultra-low power, System on Chip solutions for your 2.4 GHz wireless products.

1.1 Minimum requirements

- nRFgo Studio v1.14 or later
- Computer with a minimum of 2 USB ports
- Windows XP or Windows 7

1.2 Minimum requirements

- Keil MDK-ARM Lite v4.54 or later https://www.keil.com/demo/eval/arm.htm
- J-Link Software v4.56 or later http://www.segger.com/jlink-software.html

2 Kit content

The GWBMD00x Kit consists of hardware and access to software components, documentation, and GWBMD00x board PCB design files.

2.1 GWBMD00x Kit hardware content

- 1 x GWBMD00x Kit board
- 1 x J-Link Emulator

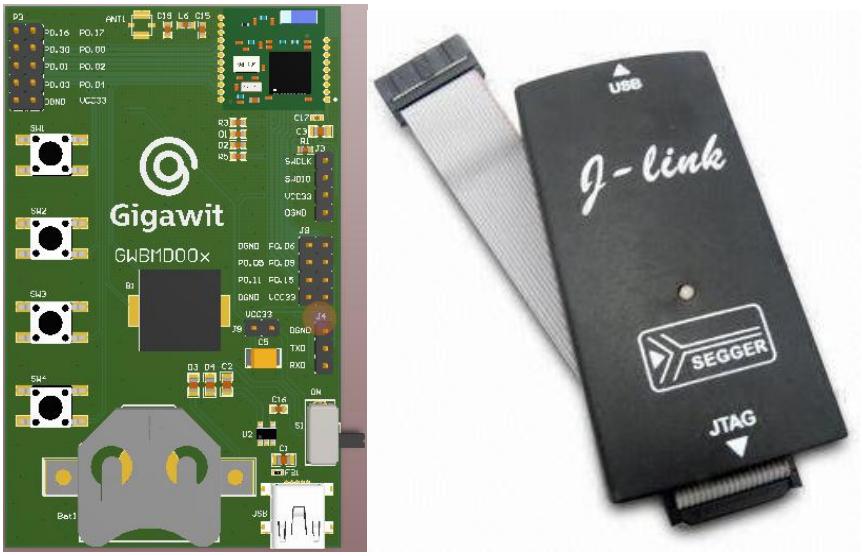


Figure 1 GWBMD00x Kit hardware content

2.2 Software components

- nRFgo studio
- nRF51822 Software Development Kit(SDK)
- S110 nRF51822 SoftDevice

2.3 Documentation

- GWBMD00x Kit User Guide v1.0
- nRF51 Series Reference Manual
- GWBLEMO Datasheet

2.4 GWBMD00x board PCB design files

- Altium Designer files
- Schematics

- PCB layout files

3 Quick start

This section shows you how to set up the GWBMD00x Kit and provides example applications to help you start programming your device.

Download and install

1. Download and install the latest version keil MDK-ARM from https://www.keil.com.
2. Download and install J-Link Software(ver 4.52b or later) from http://www.segger.com.

3.1 Install GWBMD00x Demo board

Connect the hardware

1. Mount J8 jumpers

2. Connect a USB cable frome GWBMD00x board to a usb power supply(+5V,100ma).

Start a demo project

1. Open the 51822 SDK folder, find blinky project and open it with keil.

2. Change LEDs and buttons GPIO.

3. Download to the target board.

4 Hardware description

This chapter describes the GWBMD00x Kit hardware.

4.1 GWBMD00x Kit board

The GWBMD00x Kit board is a standalone nRF51822 evaluation board with a GWBLEMO module. There are some ports Kit board,Use the J-Link by SWD port to delivered with nRF51822 chip.

Kit plate design with port

4.1.1 Key features

The GWBMD00x board has the following key features:

- nRF51822 flash based SoC solution
- Easy to design by GWBLEMO
- Integrated ceramic antenna, connector or RF pin
- Bluetooth low energy compatible
- 2.4 GHz compatible with nRF24L devices
- Buttons, Buzzer and LEDs for user interaction
- I/O interface for plug-in modules
- SWD interface for programming and debugging capabilities

4.1.2 Hardware pictures

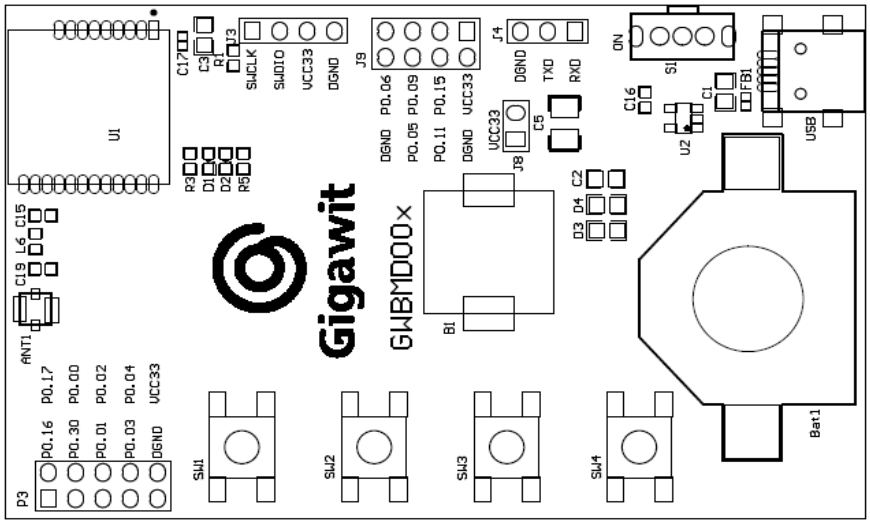


Figure 2 GWBD00x top

4.1.3 Block diagram

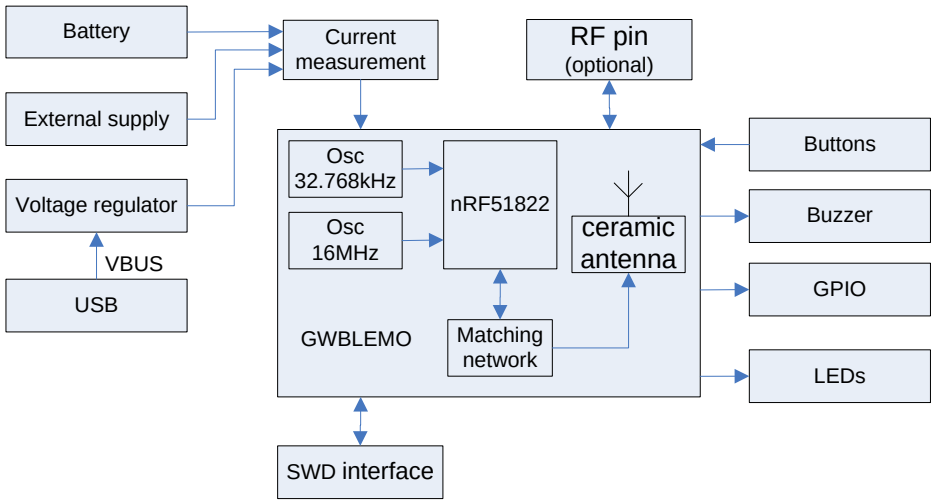
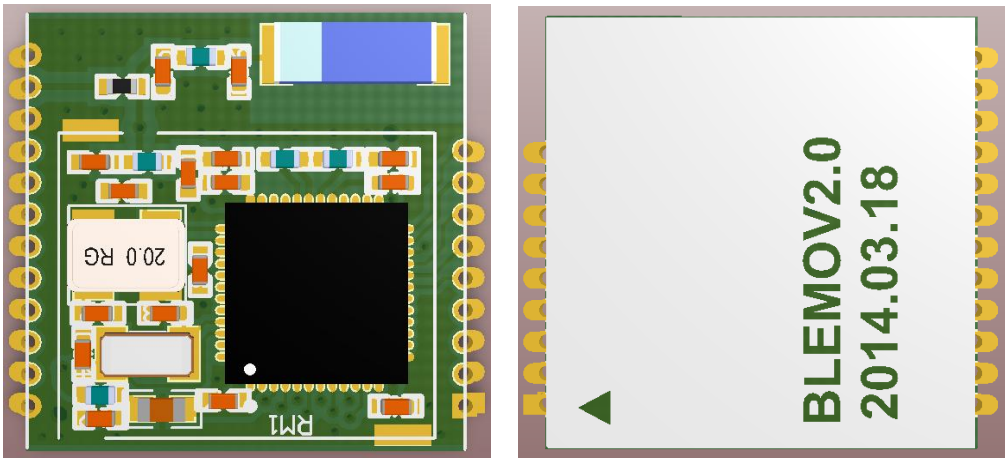


Figure 3 GWBD00x block diagram

4.1.4 GWBLEMO

GWBLEMO is the module version of Gigawit GWBLE family wireless digital audio products. The GWBLEMO is a compact, surface mount Bluetooth low energy (BLE) compliant wireless module. It combines the latest RF transceiver technology with a sophisticated antenna circuit in a compact module. With only a few external components, robust BLE master or slave nodes can easily be built. The pre-qualified module enables its user to create a Bluetooth low energy product within the shortest possible time to market.



a) Top b) Bottom

Figure 2 GWBLEMO

4.1.4 Power supply

The GWBMD00x board has several power options:

- USB (see Figure 4)
- External power supply through J3(3.3V)

- CR2032 coin cell battery

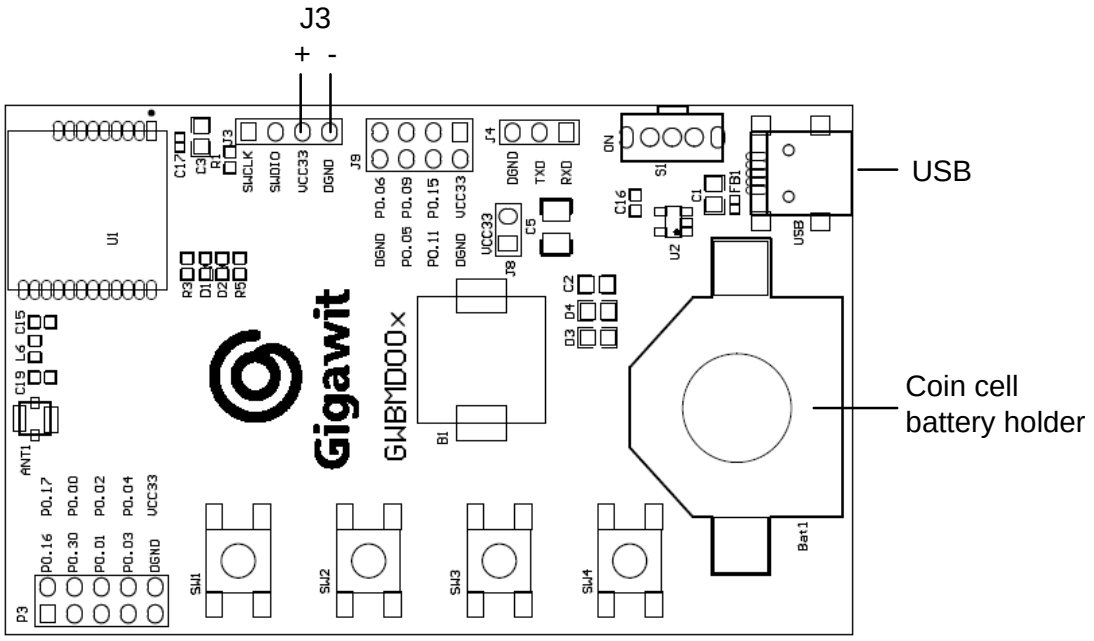


Figure 4 USB and external power supply

The 5V from the USB is regulated down to 3.3V through an on-board voltage regulator. The battery and external power supply are not regulated. The power sources are routed through a set of diodes (D3, D4), where the circuit is supplied from the source with the highest voltage. The board is equipped with a switch (S1) for USB or coin battery power supply connects the lines to the board when the SW4 must be switched to ON. The battery and USB power supply also can be disconnected by J8, see Figure 5.

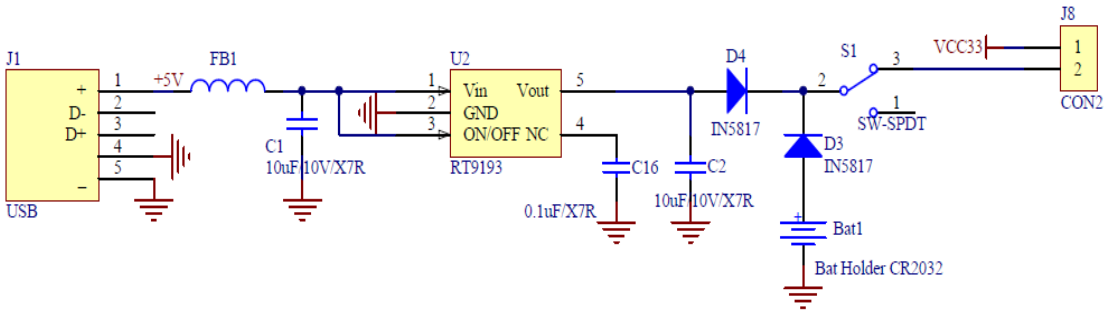


Figure 5 Power supply circuitry

4.1.5 SWD interface

GWBMD00x programming and debugging is to use J-Link by SWD interface(J3). From the J-Link Emulator wire the SWCLK, SWDIO, VCC and GND four pins connection with GWBMD00x interface by J3, the board will power supply by J-Link.GWBMD00x also power supply by the USB and battery, not J-Link, but should notice is that the GND pin must be keep connect.

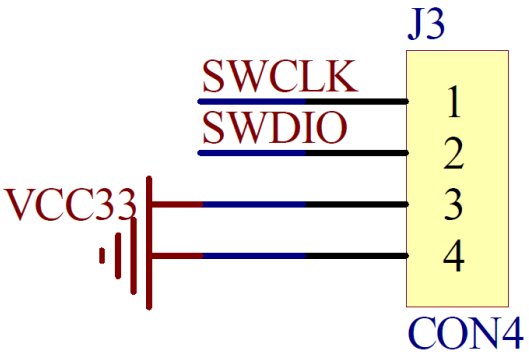


Figure 6 SWD interface

4.1.6 GPIO interface

Access to the nRF51822 GPIOs is available at connectors J9, J4 and P3 on the GWBMD00x board.

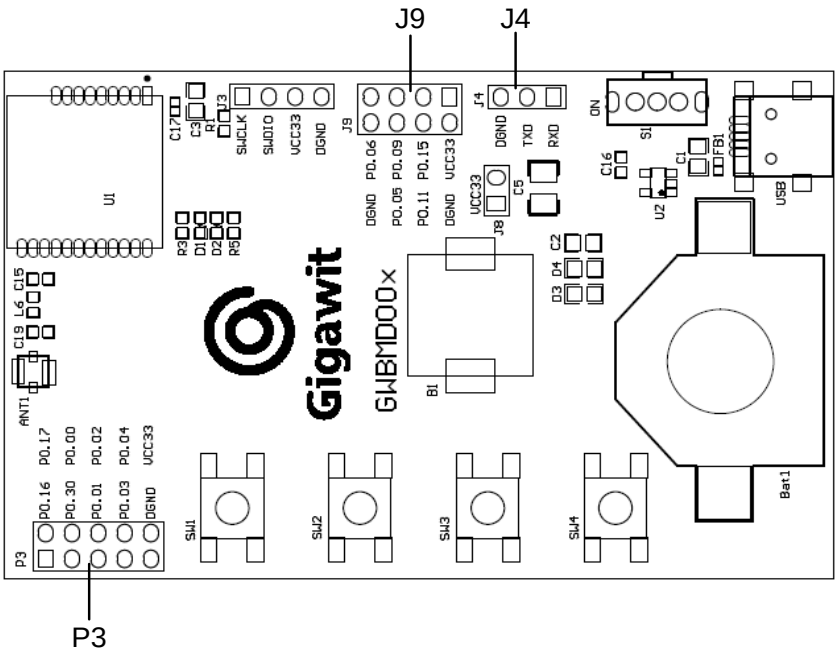


Figure 7 GWBMD00x GPIO pin headers

Port	Pin name	Type	Description
P3	P0.16	I/O	General purpose IO
	P0.17	I/O	General purpose IO
	P0.30	I/O	General purpose IO
	P0.00	I/O	ADC Reference voltage/General purpose IO
	P0.01	I/O	ADC Input2/General purpose IO
	P0.02	I/O	ADC Input3/General purpose IO
	P0.03	I/O	ADC Input4/General purpose IO

	P0.04	I/O	ADC Input5/General purpose IO
	DGND	P	Ground
	VCC33	P	+3.3V Power Input
J9	DGND	I/O	General purpose IO
	P0.06	I/O	ADC Input7/ ADC Reference voltage/General purpose IO
	P0.05	I/O	ADC Input6/General purpose IO
	P0.09	I/O	General purpose IO
	P0.11	I/O	General purpose IO
	P0.15	I/O	General purpose IO
	DGND	P	Ground
	VCC33	P	+3.3V Power Input
J4	TXD	I/O	General purpose IO
	TRD	I/O	General purpose IO
	DGND	P	Ground

Table 1 GPIO Interface Description

Note: Some pins have default settings.

- P0.01,P0.02,P0.03,P0.04,P0.16, P0.17, P0.15, and P0.05 are by default connected to the LEDs. Please see Section 4.1.7 “Buttons, Buzzer and LEDs” on page 9 for more information.
- P0.09, and P0.11 on the J9 connector are by default connect to the TXD, and RXD on the J3 connector.

4.1.7 Buttons, Buzzer and LEDs

There are four buttons, one buzzer and two LEDs on GWBMD00x board, they are connected to dedicated I/Os on the nRF51822chip. The connections are shown in Table 2.

Part	GPIO	Comment
Button0	P0.01	SW1
Button1	P0.02	SW2
Button2	P0.03	SW3
Button3	P0.04	SW4
Buzzer	P0.16,P0.17	B1
LED0	P0.15	D1
LED1	P0.05	D2

Table 2 Button,Buzzer and LED connection

If GPIO P0.18 and P0.19 are needed elsewhere, the LEDs can be disconnected by cutting the short on SB6 and SB7, see Figure 8.

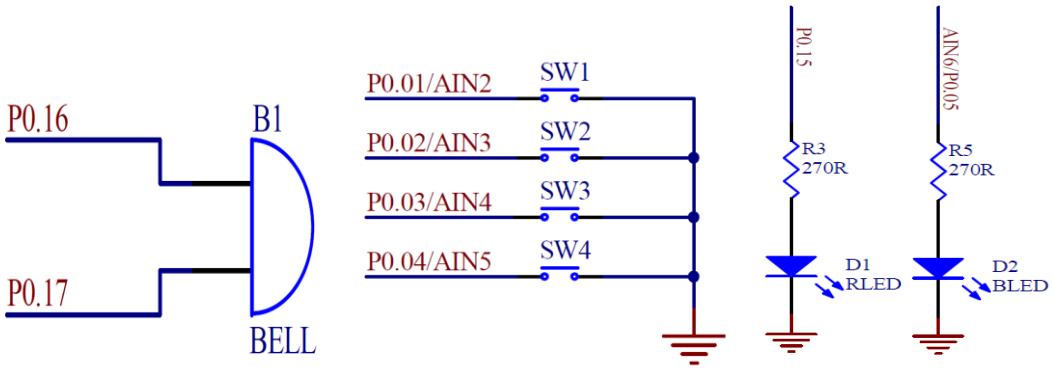


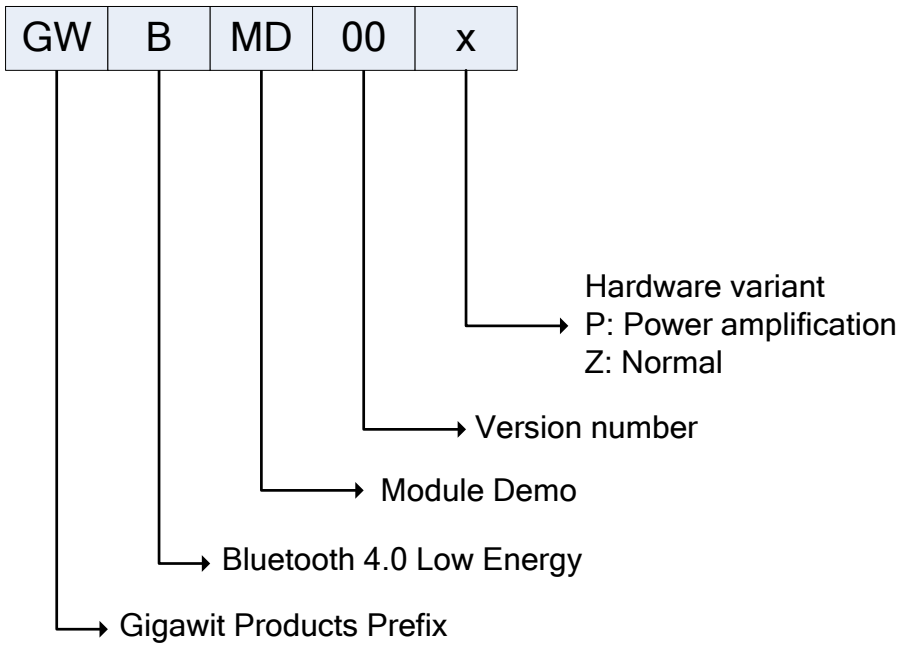
Figure 8 Buzzer, Button, and LED configuration

The buzzer are active one high and another low, meaning that one writing a logical zero(‘0’),the other writing a logical noe(‘1’)to the output pin will drive the buzzer.

The buttons are active low meaning the input will be connected to ground when the button is activated. The buttons have no external pull-up resistor, so to use the buttons the P0.01, P0.02, P0.03 and P0.04 pins must be configured as an input with internal pull-up resistor.

The LEDs are active high, meaning that writing a logical one (‘1’) to the output pin will illuminate the LED.

5.Naming Rule



6 Ordering Information

Gigawit ID.	Description
GWBMD00x	The GWBMD00x test board

7 Contact

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8 Revision History

2014-7-8 Version 1.0, Original version