



DFXE-SM001-DTOR

mbed Kit User Guide of NQ62x
daughter board



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Revision History

Version	Date	Reason of change	Maker
0.1	2016/11/17	First release	Bernie Chou
0.2	2016/11/18	Update platform image in section 2.2	Tsungta Wu

Wireless Bluetooth Low Energy Module

MBED Kit Getting Start

1. Introduction

• The DELTA DFXE-SM001 development kit provides cost effective, low power, and flexible platform to rapid prototype of Delta module design (Wi-Fi® connectivity, Bluetooth Low Energy and Combo). Kit has sensor connection IO on board, it is convenient to set up example application and develop the relative prototype. The DELTA DFXE-SM001 is compatible with Delta brand module (NQ62x, NNN50, TT21x and MAMJ1)

1.1 Minimum Requirements

- Computer (supported OS; Window 7 and above, Ubuntu Linux 12.04 and above, MAC OS 9/10 and above) with a USB port
- Micro USB cable

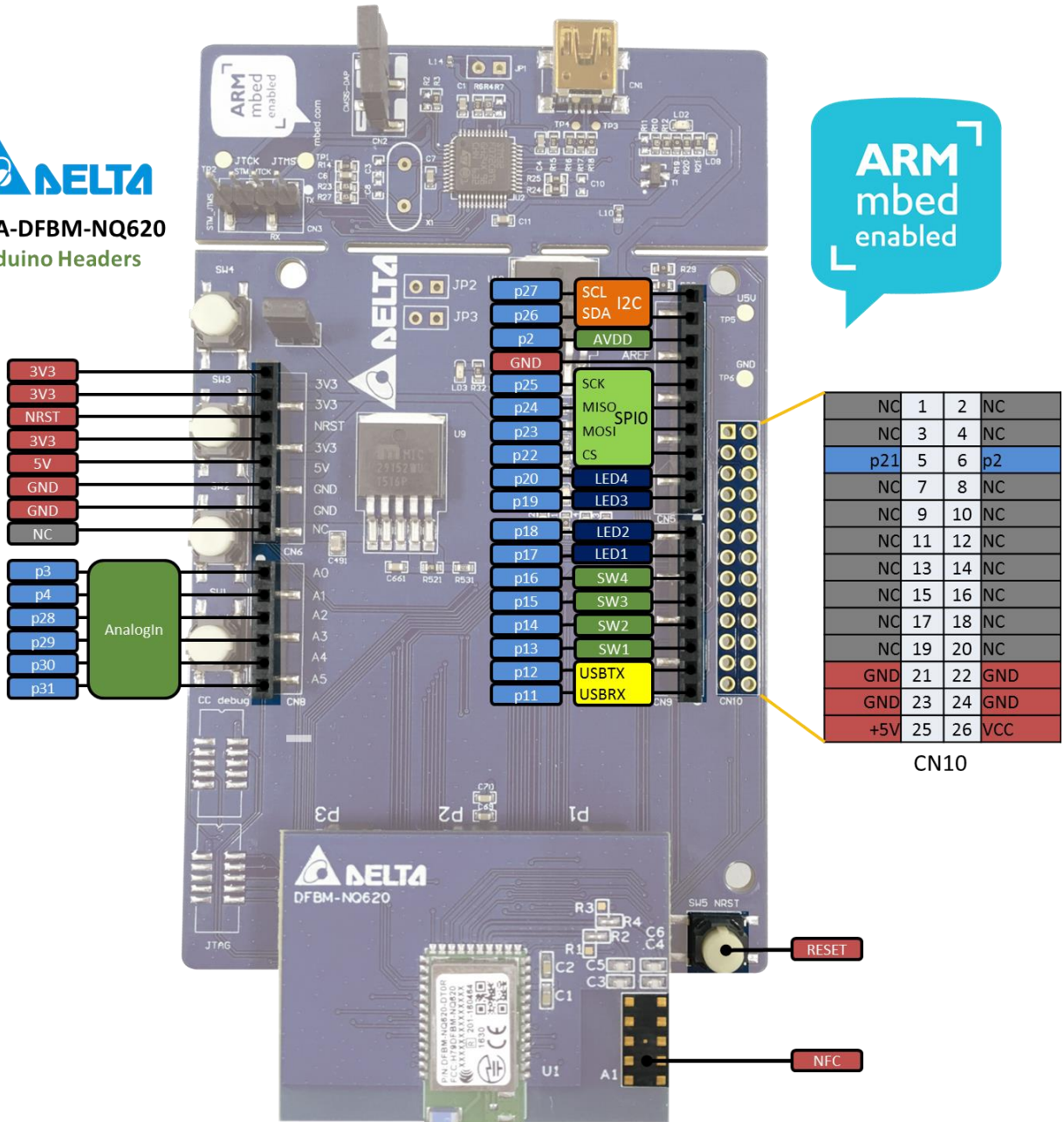
2. Kit Content

2.1 DELTA DFXE-SM001 mbed kit hardware content

- DELTA DFXE-SM001 mbed kit board x 1

2.2 DELTA DFXE-SM001 mbed kit hardware figure

DELTA
DELTA-DFBM-NQ620
Arduino Headers



NC	1	2	NC
NC	3	4	NC
p21	5	6	p2
NC	7	8	NC
NC	9	10	NC
NC	11	12	NC
NC	13	14	NC
NC	15	16	NC
NC	17	18	NC
NC	19	20	NC
GND	21	22	GND
GND	23	24	GND
+5V	25	26	VCC

CN10

2.3 Downloadable Content

2.3.1 nRF52832 documentation

- nRF52 Series Reference Manual
- nRF52832 Product Specification
- S110 nRF52832SoftDevice Specification
- nRF52832 Product Anomaly Notification
- All documents can be found from the link below

<http://www.nordicsemi.com/eng/Products/Bluetooth-Smart-Bluetooth-low-energy>

2.3.2 Hardware related files

- Schematics
- Placement
- All documents can be found from DELTA DFXE-SM001 and NQ620 daughter board platform page

<https://developer.mbed.org/platforms/Delta-DFBM-NQ620/>

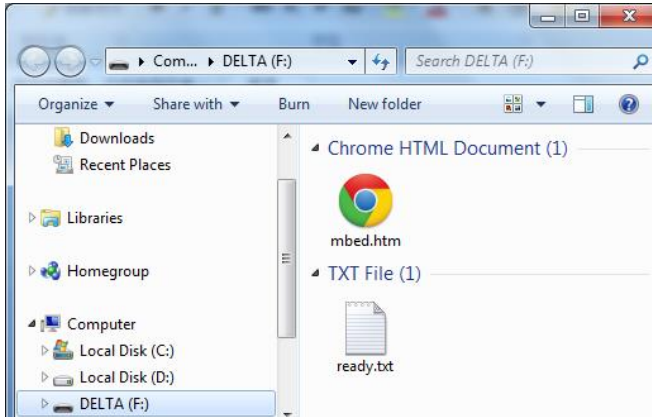
3. Getting started

This section contains the procedure from login in mbed page to load application to DELTA DFXE-SM001 and NQ620 daughter board.

3.1 Connect your Delta DFXE-SM001 mbed kit to a computer

- (1) Connect your mbed kit to a computer with a USB cable.
- (2) The status light (LD3) turn on, indicating the kit is powered on.

(3) After a few seconds, the computer will recognize the mbed microcontroller as a standard USB drive named as DELTA.



Windows Example

3.2 Click the MBED.HTM file to log in

- (1) Go to the new USB Drive and click MBED.HTM to open it in a web browser.
- (2) If you do not have an mbed account, click Signup to create your mbed account. Otherwise, log in with your normal username and password. This will give you access to the website, tools, libraries, and documentation.

3.3 Windows serial configuration

The mbed serial port works by default on Mac and Linux, but Windows needs a driver. These instructions explain how to setup the mbed Microcontroller to use the USB serial port on Windows.

- (1) Download the mbed Windows serial port driver

Download the installer to your PC, e.g. your desktop. [Download latest driver](#)

- (2) Run the installer

With your mbed plugged in, and no explorer drive windows open, run the installer:

It will take some time (especially on Vista), and pop up a few 'unsigned driver' warnings, but after a while you should have a Serial port.

- (3) Where Next- Any Detail needs to refer below website

<https://developer.mbed.org/handbook/Windows-serial-configuration>

3.4 Build up the first program on DELTA DFXE-SM001

- (1) After you login the mbed, click the new program button. Then choice one of the example program, the project will be generated from mbed.
- (2) Click the compile button directly; the image file will be generated from mbed
- (3) The image file can be saved to USB drive of DELTA DFXE-SM001 directly. Or download to your local storage and use drag-n-drop to USB drive to load firmware.
- (4) During the image uploading, the (LD8) should blink to indicate the uploading state.
- (5) When the uploading is completed, the succ.txt should be appeared in USB drive. Then the uploaded application starts running on DELTA DFXE-SM001.

4. Kit Description.

4.1 Kit Feature – NQ62x Daughter board

- DFBMNQ62x-DT0R BLE module
- BLE chip with a single chip antenna or an external RF connector
- Integrate a 32 bit ARM® Cortex M4F CPU,512KB flash memory and 64KB RAM
- Extra 512KB flash memory for user data storage (Optional)
- 32.768KHz Real Time Clock (Optional)
- 12-bit 200kspc ADC - 8 configurable channels with programmable gain
- 30 General Purpose I/O Pins
- Two-wire Master (I2C compatible) support 100K bps and 400K bps
- UART baud rate up to 921600 bps
- SPI bit rate up to 4M bps
- Quadrature Decoder (QDEC)
- LGA 36 pin package
- Dimension 19.0mm(L) x 11.0mm(W) x 1.9 mm(H)
- RoHS compliant
- FCC, CE, TELEC, NCC, BQB Certified

4.2 HDK – DFXE-SM001-DT0R

- USB drag and drop programming
- USB Virtual COM port for serial terminal
- CMSIS-DAP interface for programming and debugging
- Accepts power through USB or external source (7V-12V)
- Pin header for current measurement

5. HDK Reset

DELTA DFXE-SM001 performs reset and run for the whole kit when the firmware is programmed. The user will observe the DELTA USB drive is then closed and remounted due to the reset. The Reset button (SW5) can be used to HW reset module manually and it is working no matter the power supply is from USB or external power.

6. Power Supply

- USB
- External power supply from VIN (7V~12V)

7. Button and LED

There are four user buttons and four LEDs on this mbed kit board, in which those are connected to dedicate I/Os on the DFBM-NQ62x-DT0R. The connections are shown in the table below.

Part	GPIO	Short
BUTTON1(SW1)	P0.13	NA
BUTTON2(SW2)	P0.14	NA
BUTTON3(SW3)	P0.15	NA
BUTTON4(SW4)	P0.16	NA
LED1 (LD9)	P0.17	SB_4
LED2 (LD10)	P0.18	SB_3
LED3 (LD6)	P0.19	SB_2

LED4 (LD7)	P0.20	SB_1
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8. UART Configuration

Below table shows an overview of the UART connections on DELTA DFXE-SM001, refer to section 3.3 to setup the Virtual Com Port on your PC

nRF52832	
Default GPIO	UART
P0.12	TXD
P0.11	RXD

9. Measuring Current

The current drawn by the DFBM-NQ62x-DT0R module can be monitored on the DELTA DFXE-SM001 mbed kit via JP5 (open and hook to the current meter). If no current measurement is needed, please make sure JP5 is shorted at all times.

10. Learning Video

<https://developer.mbed.org/getting-started/>