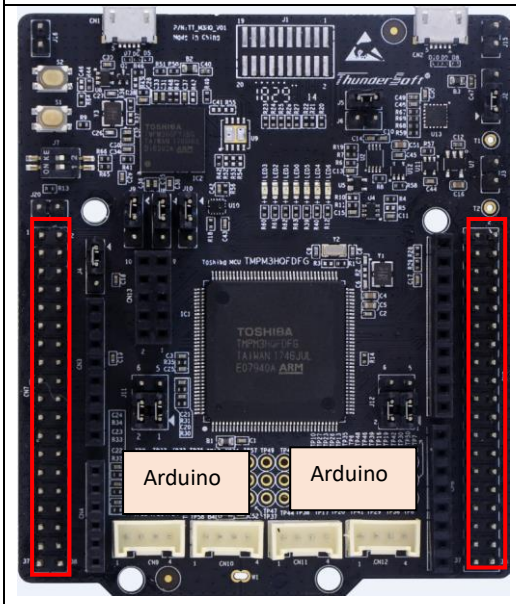
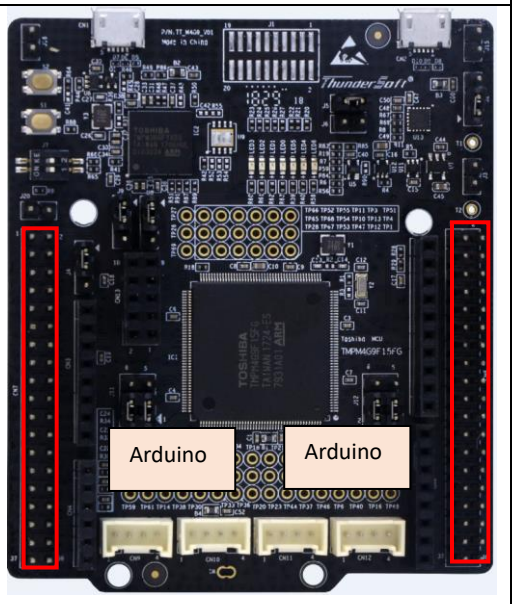
This manual is suitable for TT_M3HQ and TT_M4G9 development boards designed and manufactured by Thunder Software Technology Co., Ltd.
In this paper, TT_M3HQ and TT_M4G9 development boards are referred to as development boards. For TT_M3HQ and TT_M4G9, please refer to the following links for details.

Official	TT_M3HQ	https://www.thundersoft.com/index.php/iot/kit/m3hq/3-126
	TT_M4G9	https://www.thundersoft.com/index.php/iot/kit/m4g9/3-127
mbed	TT_M3HQ	https://os.mbed.com/platforms/TT-M3HQ/
	TT_M4G9	https://os.mbed.com/platforms/TT-M4G9/

For the Shield Board FRDM-FXS-MULTI, used in this manual, please refer to the following links, referred to as the Shield Board in this article.

Nxp Official	https://www.nxp.com/docs/en/supporting-information/FRDM-FXS-MULTI.pdf
mbed	https://os.mbed.com/components/Freescale-Multi-Sensor-Shield/

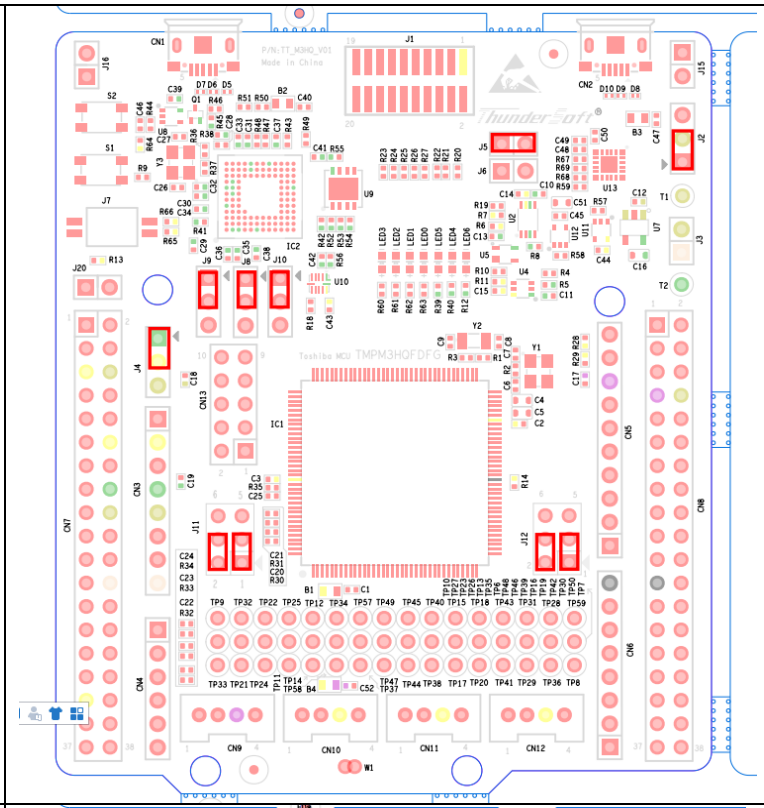
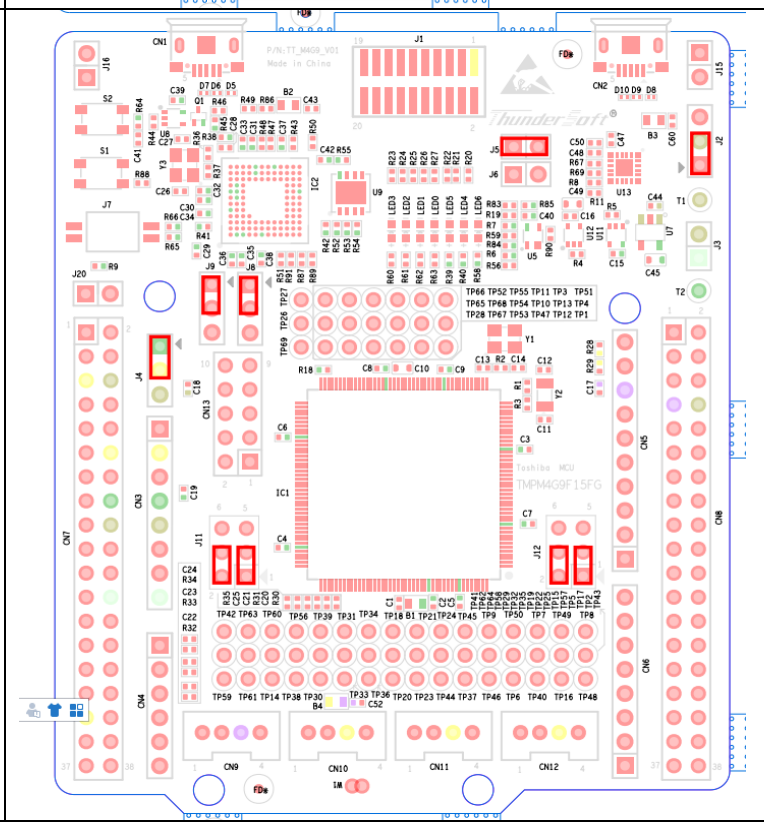
Precautions No.1:
The final version of the development board is not equipped with the following extension connectors. If you need to use them, please solder the extension connectors or jump wire by yourself.

TT_M3HQ	TT_M4G9
	

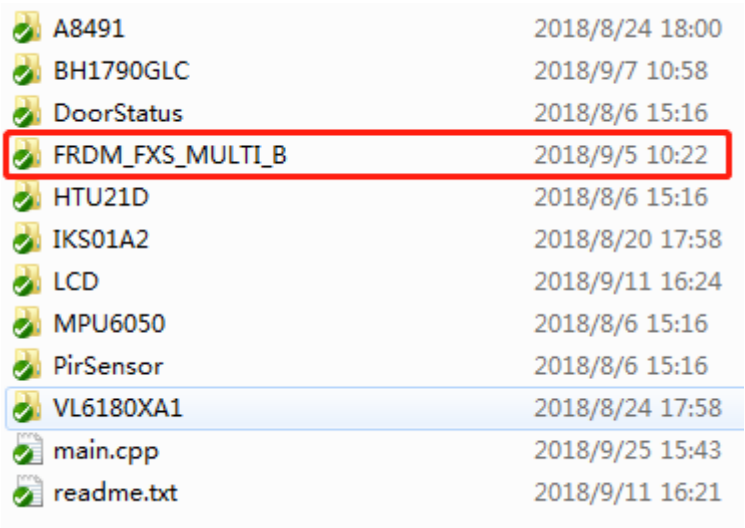
Precautions No.2:

Please confirm that the jumper caps are installed correctly as below before use.

(The jumper caps are installed according to the default state in factory. However, the jumper caps may fall off during use, which may cause the board to fail to start.)

TT_M3HQ	
TT_M4G9	

Operation steps：
Step1: Download the corresponding test code from the official website or mbed website, as shown below.

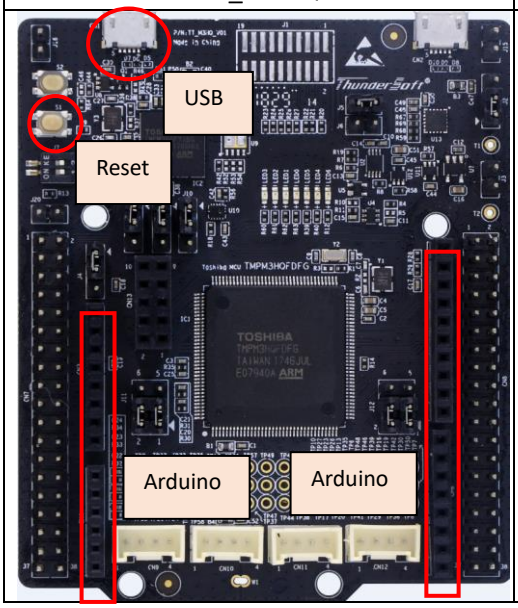
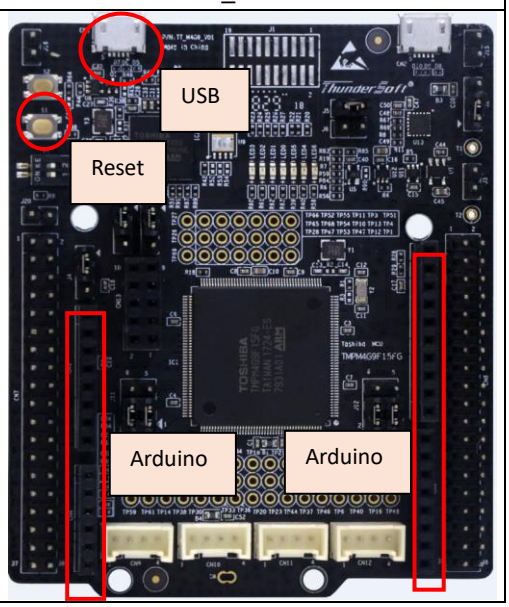


Step2: Compile source code
Developers can compile code in command line tools with the following commands.

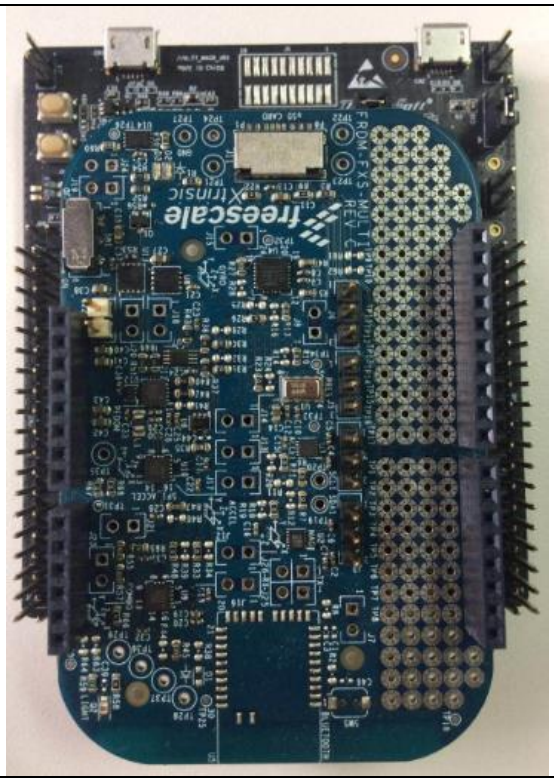
TT_M3HQ	mbed compile -t GCC_ARM -m TT_M3HQ -D TEST_FRDM_FXS_MULTI
TT_M4G9	mbed compile -t GCC_ARM -m TT_M4G9 -D TEST_FRDM_FXS_MULTI

Step3: Connect development board and Shield Board.

Schematic diagram of development board:

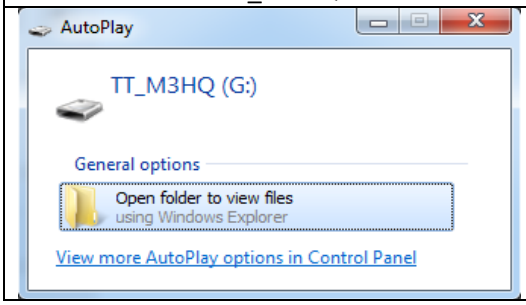
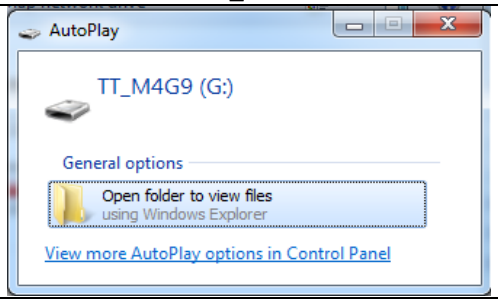
TT_M3HQ	TT_M4G9
	

Schematic diagram of connection:

Shield Board

Connecting development board and Shiled Board through Arduino interface ※：Because of the SPI interface conflict, this Shield Board can not be used together with the LCD screen specified by Thunder Software Technology Co., Ltd.

Step4:Burn .bin file：

After connecting the development board and PC through USB, the following symbols appear.

TT_M3HQ	TT_M4G9
	

Then drag and drop (or copy) the.bin file compiled in Step2 to the corresponding symbols. After the drag and drop (copy) is completed, press the reset key, and the following output will appear.

	Serial port Log output
Output format	Welcome to Thundersoft TT_M3HQ sensor1 id = 0xxx sensor2 id = 0xxx sensor3 id = 0xxx sensor1 data = sensor2 data = sensor3 data =
Output example	Welcome to Thundersoft TT_M4G9 FXLS8471 Acc = 0x6a MMA8652 Acc = 0x4a FXOS8700 Combo = 0xc7 MAG3110 Mag = 0xc4 FXAS21000 Gyro = 0xd1 MPL3115A2 = 0xc4 FXLS8471 Acc: X: 0.019 Y:-0.057 Z: 1.027 (Raw X: 77 Y:-232 Z:4208) MMA8652 Acc: X:-0.020 Y: 0.001 Z: 1.015 (Raw X: -79 Y: 4 Z:4156) FXOS8700 Acc: X: 0.009 Y:-0.002 Z: 0.990 FXOS8700 Mag: X: 82.80 Y:-46.10 Z: 49.80 MAG3110 Mag: X:-148.00 Y: 62.90 Z:-14.40 FXAS21000 Gyro: X: 0.32 Y: 0.57 Z: -0.10 Pressure: 101846.500000 Temperature: 26.000000 FXLS8471 Acc: X: 0.017 Y:-0.051 Z: 1.028 (Raw X: 68 Y:-208 Z:4209) MMA8652 Acc: X:-0.019 Y: 0.004 Z: 1.012 (Raw X: -75 Y: 16 Z:4144) FXOS8700 Acc: X: 0.008 Y:-0.001 Z: 0.994 FXOS8700 Mag: X: 82.60 Y:-46.90 Z: 49.90 MAG3110 Mag: X:-148.50 Y: 63.10 Z:-15.60 FXAS21000 Gyro: X: 0.70 Y: 0.40 Z: -0.30 Altitude: -42.750000 Temperature: 25.937500 FXLS8471 Acc: X: 0.016 Y:-0.049 Z: 1.027 (Raw X: 64 Y:-201 Z:4206) MMA8652 Acc: X:-0.020 Y: 0.003 Z: 1.010 (Raw X: -51 Y: 12 Z:4136) FXOS8700 Acc: X: 0.001 Y: 0.000 Z: 0.992 FXOS8700 Mag: X: 82.40 Y:-47.30 Z: 49.50 MAG3110 Mag: X:-148.40 Y: 62.80 Z:-16.80 FXAS21000 Gyro: X: 0.32 Y: 0.85 Z: -0.05 Pressure: 101846.750000 Temperature: 26.000000

The developer can compile and write the program to the development board through IAR / KEIL after getting the code. This article will not introduce the use of IAR and KEIL, so the developer can debug it by himself.