

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.

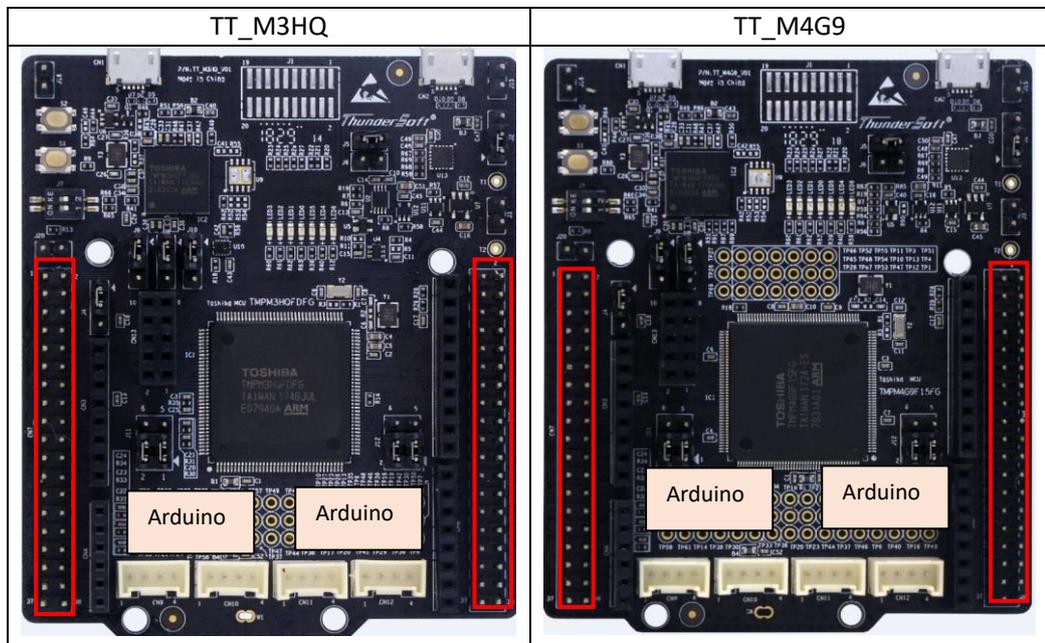
Official	TT_M3HQ	https://www.thundersoft.com/index.php/iot/kit/m3hq/3-126
	TT_M4G9	https://www.thundersoft.com/index.php/iot/kit/m4g9/3-127
mbed	TT_M3HQ	https://os.mbed.com/platforms/TT-M3HQ/
	TT_M4G9	https://os.mbed.com/platforms/TT-M4G9/

For the 6-axis sensor GY-521 MPU6050, used in this manual, please refer to the following links, referred to as the Test Sensor in this article.

Purchase Address	https://detail.tmall.com/item.htm?spm=a230r.1.14.9.29b2347bsLO7AA&id=41337720621&cm_id=140105335569ed55e27b&abbucket=13
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Precautions No.1:

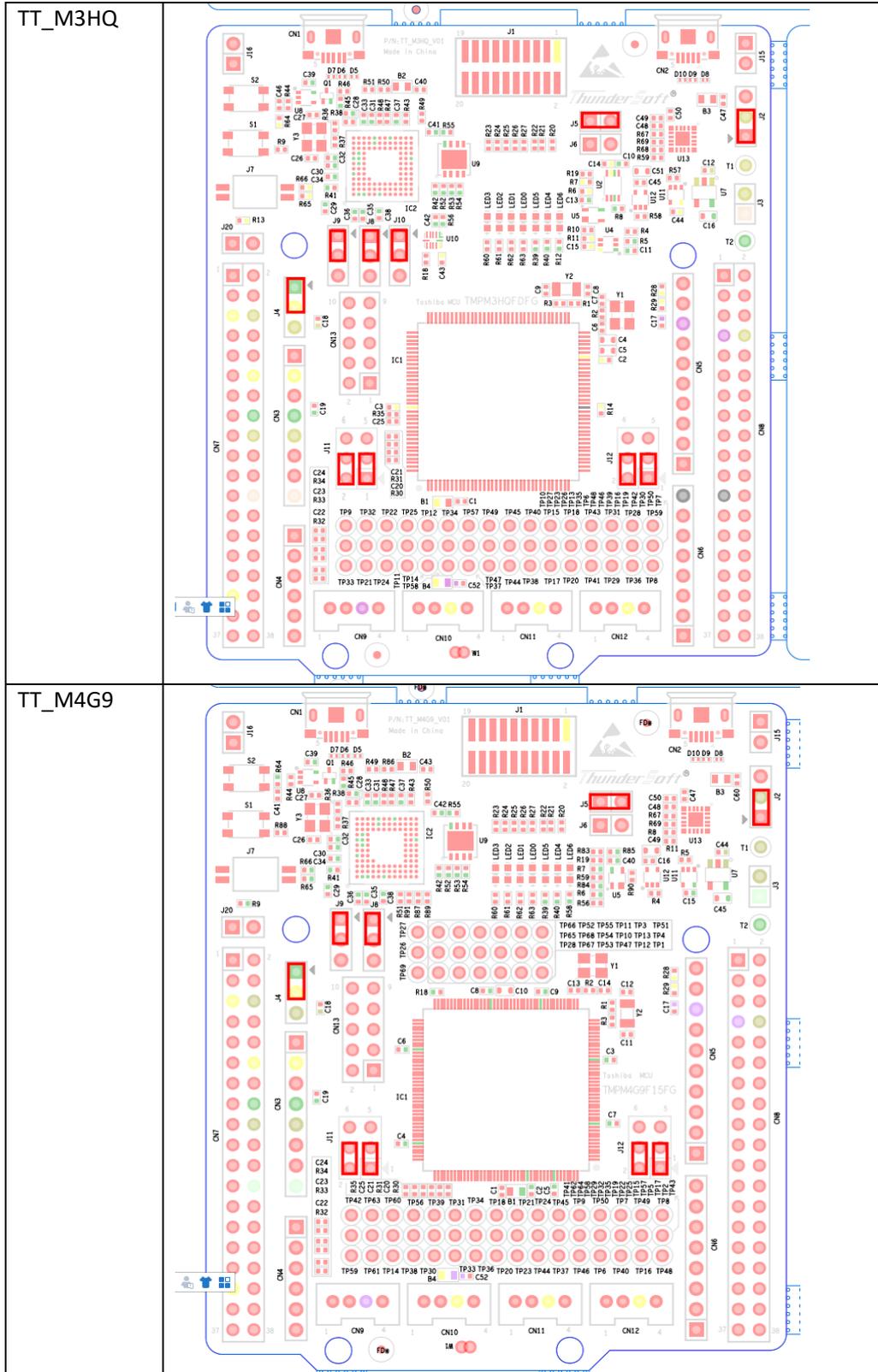
The final version of the development board is not equipped with the following extension connectors. If you need to use them, please solder the extension connectors or jump wire by yourself.



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.)



Operation steps:

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

 A8491	2018/8/24 18:00
 BH1790GLC	2018/9/7 10:58
 DoorStatus	2018/8/6 15:16
 FRDM_FXS_MULTI_B	2018/9/5 10:22
 HTU21D	2018/8/6 15:16
 IKS01A2	2018/8/20 17:58
 LCD	2018/9/11 16:24
 MPU6050	2018/8/6 15:16
 PirSensor	2018/8/6 15:16
 VL6180XA1	2018/8/24 17:58
 main.cpp	2018/9/25 15:43
 readme.txt	2018/9/11 16:21

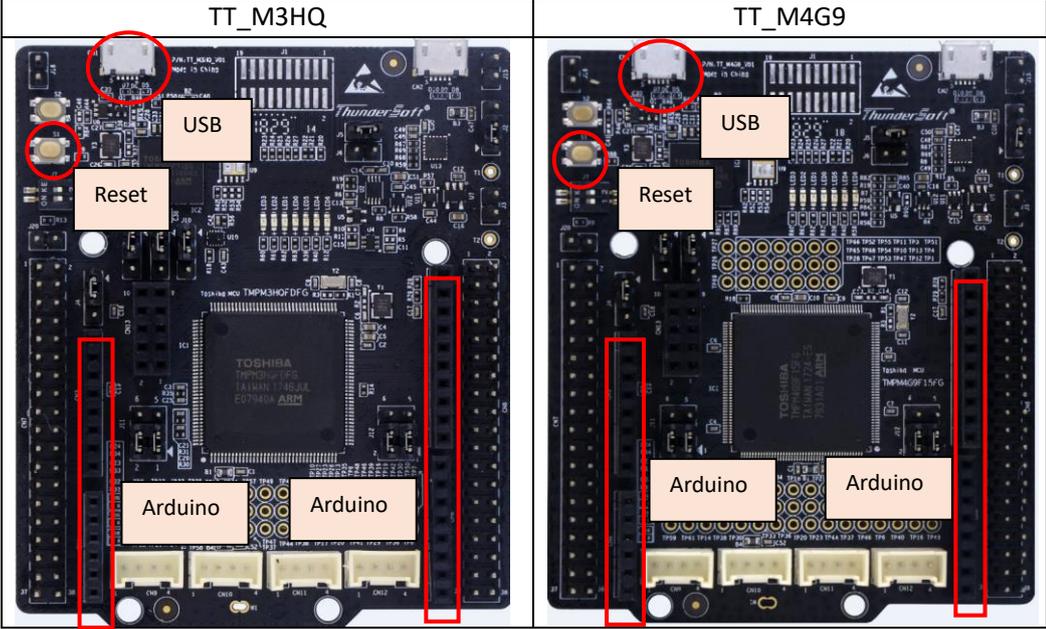
Step2: Compile source code

Developers can compile code in command line tools with the following commands.

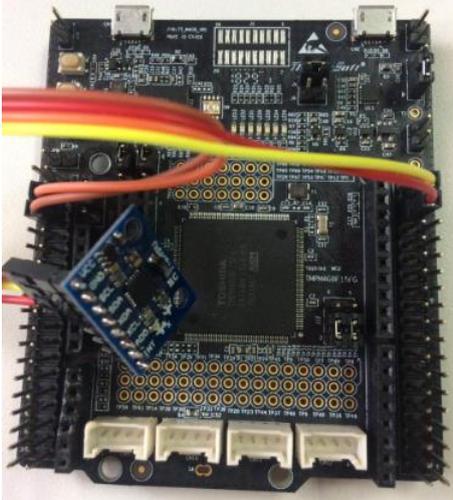
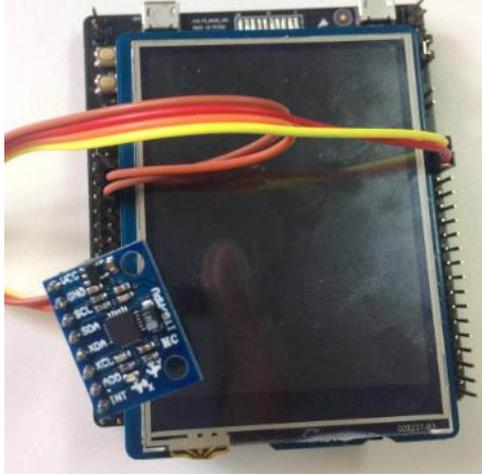
TT_M3HQ	<code>mbed compile -t GCC_ARM -m TT_M3HQ -D TEST_MPU6050</code>
TT_M4G9	<code>mbed compile -t GCC_ARM -m TT_M4G9 -D TEST_MPU6050</code>

Step3: Connect development board ,Test Sensor (and LCD screen).

Schematic diagram of development board:

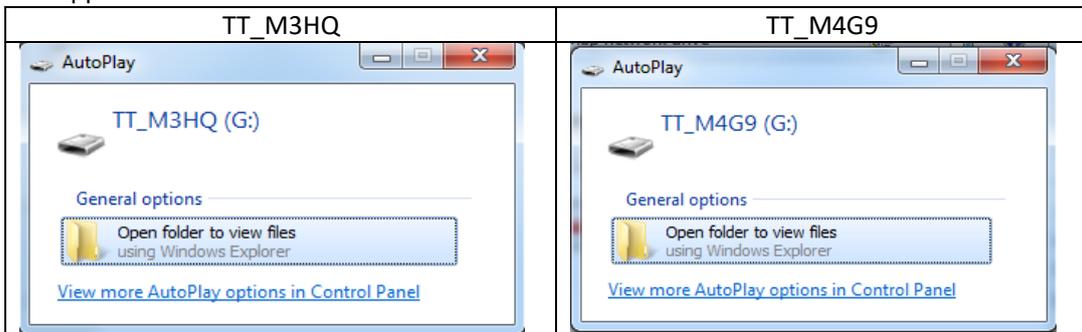


Schematic diagram of connection:

Test Sensor	Test Sensor + LCD Unit
	
<p>Connect the development board and Test Sensor through DuPont line, as follows</p> <ul style="list-style-type: none"> • Test sensor 3.3v interface connects with development board CN7 pin6 • Test sensor GND interface connects with development board CN7 pin8 • Test sensor SCL interface connects with development board CN8 pin 3 • Test sensor SDA interface connects with development board CN8 pin5 	<p>Connect the development board with the specified LCD through the Arduino interface, and connect the development board with the Test Sensor via the DuPont line, as follows</p> <ul style="list-style-type: none"> • Test sensor 3.3v interface connects with development board CN7 pin6 • Test sensor GND interface connects with development board CN7 pin8 • Test sensor SCL interface connects with development board CN8 pin 3 • Test sensor SDA interface connects with development board CN8 pin5 <p>※ : LCD is the designated LCD of the Thunder Software Technology Co., Ltd.Please refer to 「LCD HX8347D Manual.doc」</p>

Step4:Burn .bin file:

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



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	LCD output
Output format	<pre>Welcome to ThunderSoft TT_M4G9 MPU6050 id:0xxx MPU6050 ACC data = MPU6050 MAG data =</pre>	<pre>Welcome to ThunderSoft TT_M4G9 MPU6050 id:0xxx MPU6050 ACC: data MPU6050 MAG: data</pre>
Output example	<pre>Welcome to Thundersoft TT_M4G9 MPU6050 ID = 0x68 MPU6050 ACC data = 5952,2216,17128 MPU6050 MAG data = 65383,65509,65493 MPU6050 ACC data = 5836,2028,17196 MPU6050 MAG data = 65277,65235,65490 MPU6050 ACC data = 5920,2196,17000 MPU6050 MAG data = 65302,65233,65490 MPU6050 ACC data = 5824,1988,17060 MPU6050 MAG data = 65274,65248,65469 MPU6050 ACC data = 6140,2060,17040 MPU6050 MAG data = 65531,65222,65452</pre>	<p>The photograph shows the LCD screen of the development board displaying the following text: <pre>Welcome to Thundersoft TT_M4G9 MPU6050 ID: 0x68 MPU6050 ACC: 5924, 2152, 16932 MPU6050 MAG: 65528, 65258, 65473</pre> </p>

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.