

Freemscale MQX Example Guide

MMA8451Q Freefall & Motion detection example

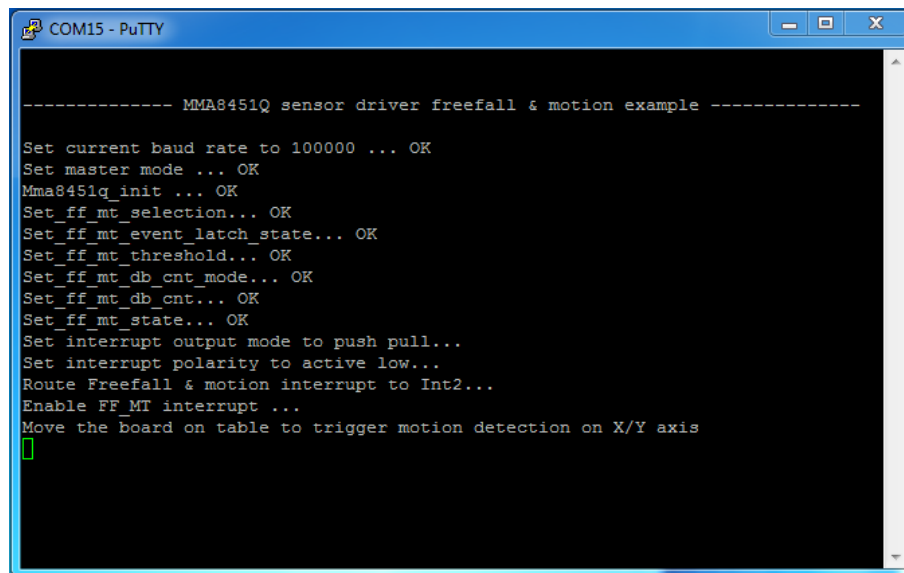
This document describes the MMA8451Q component Freefall & Motion detection example application. It shows how to work with the component and how to use API functions.

Running the example

Start a terminal application on your PC and set the serial connection for 115200 baud, 8 data bits, 1 stop bit, no parity and no flow control.

Start the MMA8451Q Freefall & Motion detection example on the target platform. For instructions about how to do that in different IDEs and for different debuggers, see the MQX documentation (<MQX installation folder>/doc/tools).

After starting the application, you will see the printed message as the following.



```
----- MMA8451Q sensor driver freefall & motion example -----  
Set current baud rate to 100000 ... OK  
Set master mode ... OK  
Mma8451q_init ... OK  
Set_ff_mt_selection... OK  
Set_ff_mt_event_latch_state... OK  
Set_ff_mt_threshold... OK  
Set_ff_mt_db_cnt_mode... OK  
Set_ff_mt_db_cnt... OK  
Set_ff_mt_state... OK  
Set interrupt output mode to push pull...  
Set interrupt polarity to active low...  
Route Freefall & motion interrupt to Int2...  
Enable FF MT interrupt ...  
Move the board on table to trigger motion detection on X/Y axis  
█
```

Figure1.

Example output before motion detected

Explanation of the example

The example code consist of just one task (main_task) and the interrupt service routine triggered by the acc_int pin(int_service_routine).

main_task:

- Allocate buffer;
- Open i2c bus, initialize its working mode and frequency;
- Create semaphore;
- Initialize the MMA8451Q with the parameters set in mma8451q_init_str structure;

- Initialize Freefall/Motion detection function to motion detection;
- Initialize GPIO interrupt on acc_int pin which connected to mma8451q interrupt request pin;
- Set mma8451q interrupt output mode, output polarity and route Freefall & Motion detection to mma8451q int2 pin;
- Enable GPIO interrupt on acc_int pin;
- Switch mma8451q to active mode;
- Wait for Motion interrupt;
- Print Motion detected on which axis;
- After 50 Motion detected, the example will switch the sensor to standby mode;
- Disable GPIO interrupt on acc_int pin;
- Deinit MMA8451Q sensor;
- Destroy semaphore;
- Close i2c bus;
- Example finish.

int_service_routine:

- Clears interrupt flag.
- Posts semaphore.