

Freescale MQX Example Guide

MMA8451Q Low Power example

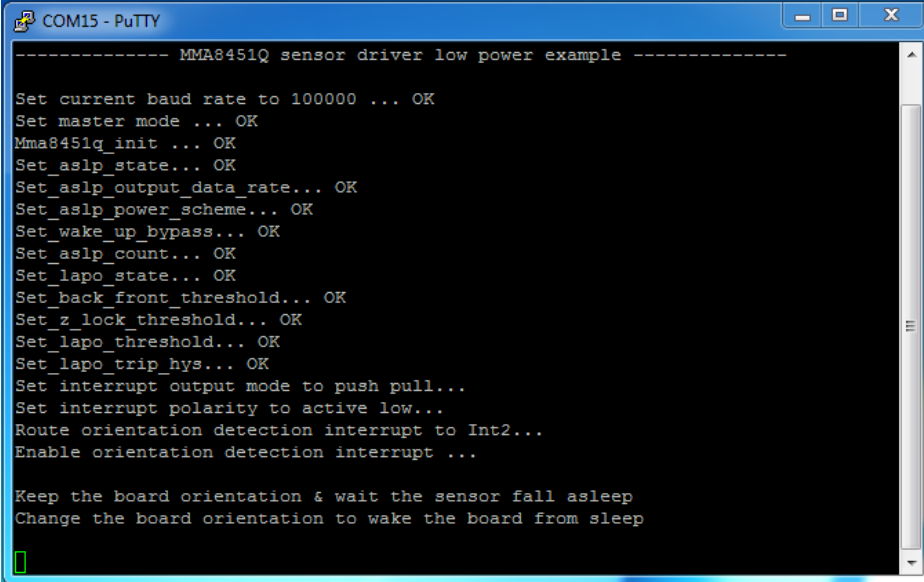
This document describes the MMA8451Q component Low Power example application. It shows how to work with the component and how to use API functions.

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 Low Power 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.



```
COM15 - PuTTY
----- MMA8451Q sensor driver low power example -----
Set current baud rate to 100000 ... OK
Set master mode ... OK
Mma8451q_init ... OK
Set_aslp_state... OK
Set_aslp_output_data_rate... OK
Set_aslp_power_scheme... OK
Set_wake_up_bypass... OK
Set_aslp_count... OK
Set_lapo_state... OK
Set_back_front_threshold... OK
Set_z_lock_threshold... OK
Set_lapo_threshold... OK
Set_lapo_trip_hys... OK
Set interrupt output mode to push pull...
Set interrupt polarity to active low...
Route orientation detection interrupt to Int2...
Enable orientation detection interrupt ...
Keep the board orientation & wait the sensor fall asleep
Change the board orientation to wake the board from sleep
█
```

Figure1.

Example output before Auto-SLEEP interrupt 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 Auto-SLEEP function;
- Initialize Orientation detection function as a wakeup source of the sensor;
- Initialize GPIO interrupt on acc_int pin which connected to mma8451q interrupt request pin;
- Set mma8451q interrupt output mode, output polarity and route Orientation detection & Auto-SLEEP to mma8451q int2 pin;
- Enable GPIO interrupt on acc_int pin;
- Switch mma8451q to active mode;
- Wait for mma8451q interrupt;
- Output current orientation & current Power mode of the sensor when orientation changed.
- After 10 Auto SLEEP event detected, the example will switch the sensor to standby mode;
- Disable GPIO interrupt;
- Deinit MMA8451Q sensor;
- Destroy semaphore;
- Close i2c bus;
- Example finish.

int_service_routine:

- Clears interrupt flag.
- Posts semaphore.