# Freescale MQX RTOS Example Guide
# IIC MMA8451Q example

This document explains the IIC driver example, what to expect from the example and a brief introduction to the IIC driver API.

## The Example

The example shows the usage of the IIC driver as a master using either polling or interruption drivers, and an Accelerometer Sensor MMA8451Q as slave device.

## Running the example

The connections needed for running this example are:

- Serial cable connected to the UART used, this may vary between targets. And a terminal set to 115200 baud, no parity, 8 bits.
- Wire SDA and SCL with the corresponding pull-up resistors from your target to the ACC Sensor device.
- If necessary provide Vdd and GND to the MMA8451Q from your board.

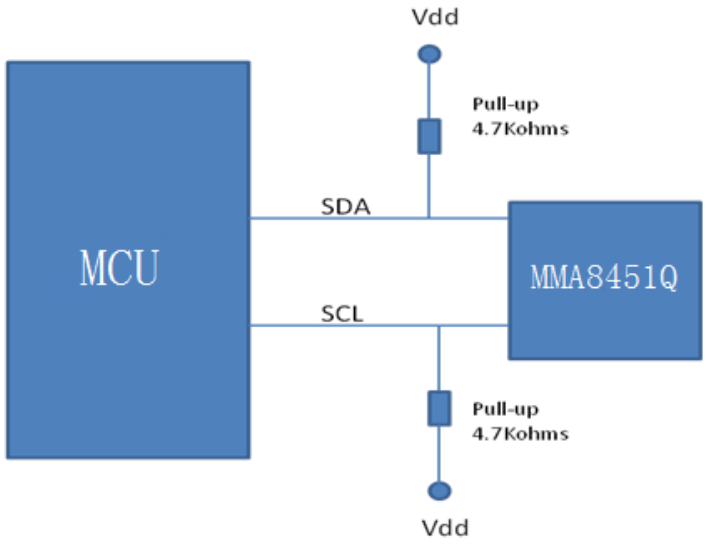


**Figure 1**
**Communications lines**

After the connections are set, now the application can be executed. Verify that the target BSP has the IIC driver installed

(either polled or interruption; for both polled and interruption are enabled, the example will work under interruption mode), if not, please add the proper macro and rebuild the libraries.

## Explaining the example

The driver example will open the IIC driver and will test the different IOCTL commands that are available on the driver, such as:

- IO_IOCTL_I2C_GET_BAUD
- IO_IOCTL_I2C_SET_MASTER_MODE
- IO_IOCTL_I2C_GET_MODE
- IO_IOCTL_I2C_SET_STATION_ADDRESS
- IO_IOCTL_I2C_GET_STATISTICS

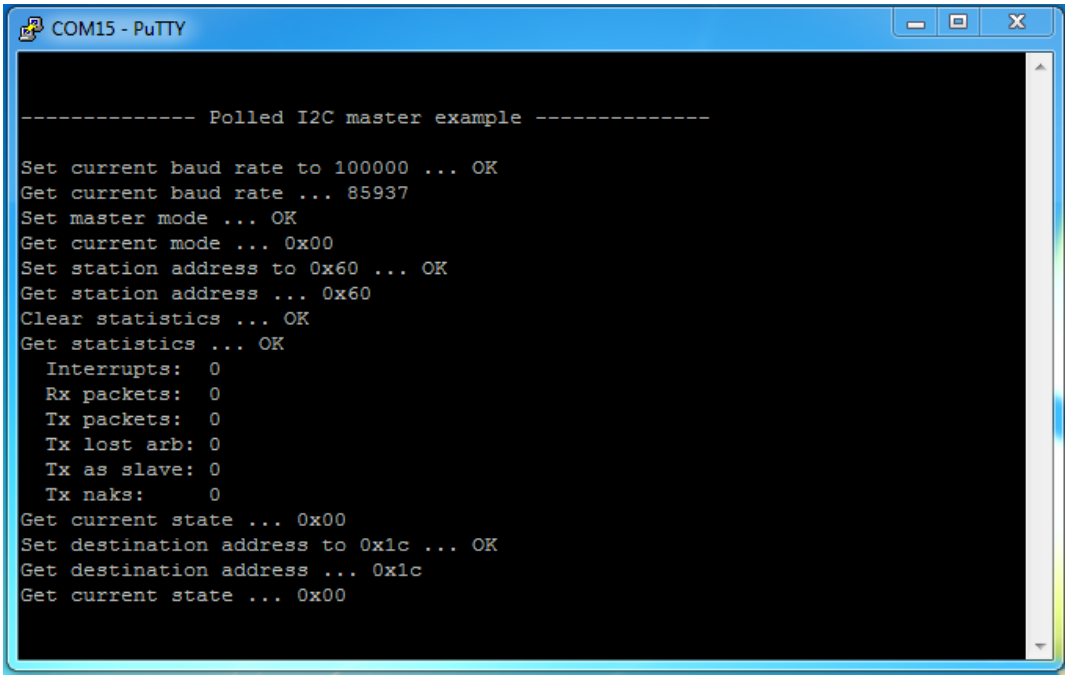


**Figure 2**
**Example output before writing to MMA8451Q Addresses**

After testing the IOCTL commands, the example will initialize the MMA8451Q Sensor into following Condition:

- **Working mode:** Active mode without fast read
- **Measurement Range:** 0 - ±2G

**Note:** Other settings remain default as mentioned in MMA8451Q datasheet.

When the initialization pass, the example will consecutive read acceleration data in 3-Axises and prints the data to terminal 10 times. These operations are just demonstrative of the usage of the driver.

The example implements two functions that perform read/write to the MMA8451Q:

- i2c_write_MMA8451Q
- i2c_read_ MMA8451Q

These functions are template of interacting with i2c driver. Keep in mind that your i2c_read function can only call one fread function during single i2c read operation.

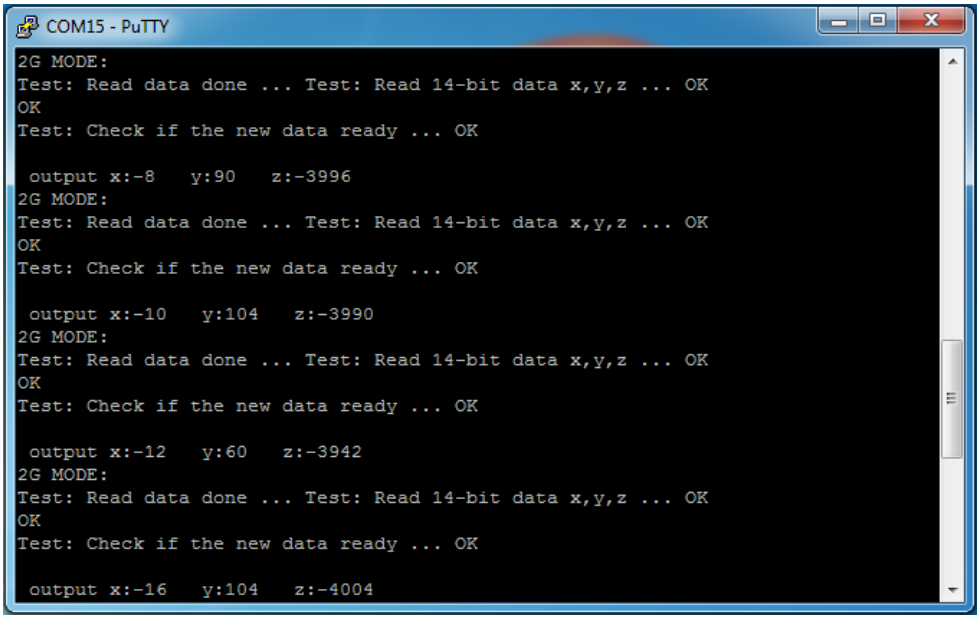


**Figure 3**
**Screenshot of the example output 3-axises of acceleration**

The interrupt and polled driver are designed with same interface, so the only different between interrupt and polled driver is the fopen function parameter.

After it print 3-axises of acceleration 10 times, the example will report the statistics, close the driver and block the main task.