

# Use NUC123 I2C to Drive LIS3DH

Example Code Introduction for 32-bit NuMicro<sup>®</sup> Family

## Information

|             |                                      |
|-------------|--------------------------------------|
| Application | 本範例代碼使用 NUC123 I2C 控制三軸加速度傳感器 LIS3DH |
| BSP Version | NUC123Series_BSP_CMSIS_v3.01.001     |
| Hardware    | NuTiny-EVB-123-LQFP64                |

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## 1 功能描述

使用NUC123 I2C接口控制LIS3DH三軸加速度傳感器。通過I2C讀取寄存器中的值，從而可以獲得傳感器在三個方向上的加速度值，這些數值可以拿來做一些有趣的應用，如記錄移動軌跡。

## 2 代碼描述

首先初始化系統時鐘，初始化串口用於打印數據和初始化 I2C 接口，並讀取設備 ID:

```
Init_CLK();
Init_UART0_DebugPort();
Init_I2C();
printf("Device ID = %02x \n", I2C_Read_Byte(DEVICE_LIS3DH, WHO_AM_I_REG));
```

MCU獲取LIS3DH的數據程序如下:

```
XL = I2C_Read_Byte(DEVICE_LIS3DH, OUT_X_L);
XH = I2C_Read_Byte(DEVICE_LIS3DH, OUT_X_H);
YL = I2C_Read_Byte(DEVICE_LIS3DH, OUT_Y_L);
YH = I2C_Read_Byte(DEVICE_LIS3DH, OUT_Y_H);
ZL = I2C_Read_Byte(DEVICE_LIS3DH, OUT_Z_L);
ZH = I2C_Read_Byte(DEVICE_LIS3DH, OUT_Z_H);
printf("X=%02x%02x, Y=%02x%02x, Z=%02x%02x \n", XH, XL, YH, YL, ZH, ZL);
```

### 3 軟件和硬件環境

#### ● 軟件環境

##### ■ BSP 版本

◆ NUC123Series\_BSP\_CMSIS\_v3.01.001

##### ■ IDE 版本

◆ Keil uVersion 4.6

#### ● 硬件環境

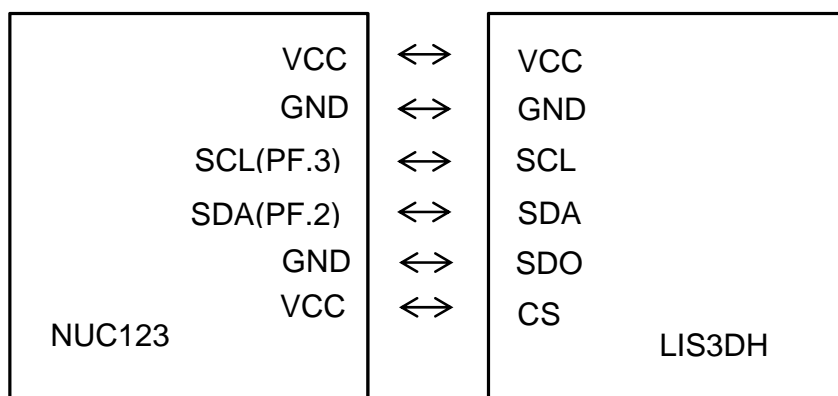
##### ■ 電路元件

◆ NuTiny-EVB-123-LQFP64

◆ LIS3DH







##### ■ 示意圖

NUC123 使用 I<sup>2</sup>C 來控制 LIS3DH 傳感器並讀取三個方向上的加速度值。



## 4 目錄信息

### EC\_NUC123\_3-axis\_Sensor\_LIS3DH\_Driver\_V1.00

|   |   |
|---|---|
|  Library     | Sample code header and source files                                       |
|  CMSIS       | Cortex® Microcontroller Software Interface Standard (CMSIS) by Arm® Corp. |
|  Device      | CMSIS compliant device header file  |
|  StdDriver   | All peripheral driver header and source files                             |
|  SampleCode  |   |
|  ExampleCode | Source file of example code   |

## 5 如何執行示例代碼

1. 根據目錄信息章節進入 ExampleCode 路徑中的 KEIL 文件夾，雙擊 NUC123\_3-axis\_Sensor\_LIS3DH\_Driver
2. 進入編譯模式界面
  - a. 編譯
  - b. 下載代碼到內存
  - c. 進入/離開除錯模式
3. 進入除錯模式界面
  - a. 執行代碼

## 6 修訂記錄

| Date         | Revision | Description |
|--------------|----------|-------------|
| Sep.25, 2019 | 1.00     | 1. 初始發佈     |

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