Use NUC123 I2C to Drive LIS3DH

Example Code Introduction for 32-bit NuMicro® 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

For additional information or questions, please contact: Nuvoton Technology Corporation.

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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));
```

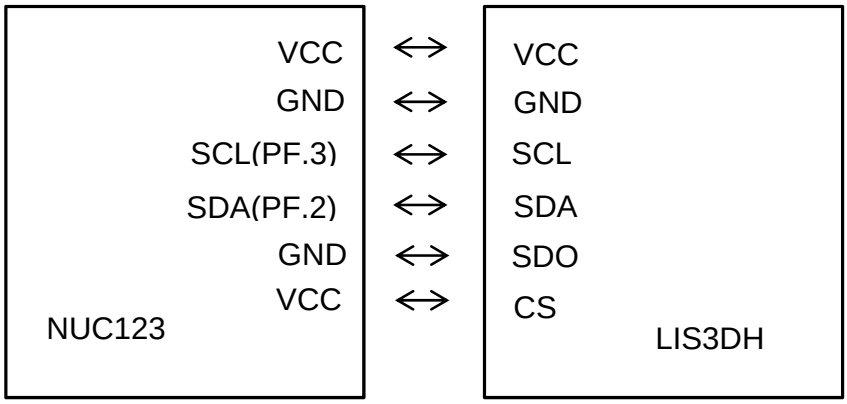
MCU獲取LIS3DH的數據程序如下:

```
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^2C 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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