Use NUC123 I2C to Drive LIS3DH

Example Code Introduction for 32-bit NuMicro® Family

Information

Application	This example code controls three-axis accelerometer LIS3DH through NUC123 I2C
BSP Version	NUC123Series_BSP_CMSIS_v3.01.001
Hardware	NuTiny-EVB-123-LQFP64

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1 Function Description

NUC123 controls LIS3DH three-axis accelerometer by I2C interface. The accelerometer values in three directions can be obtained by reading the registers through I2C. These values can be used for some interesting applications. Such as recording moving trajectories .

2 Code Description

First, initialize the system clock, initialize the serial port for printing data and initializing the I2C interface, and read the device ID：

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

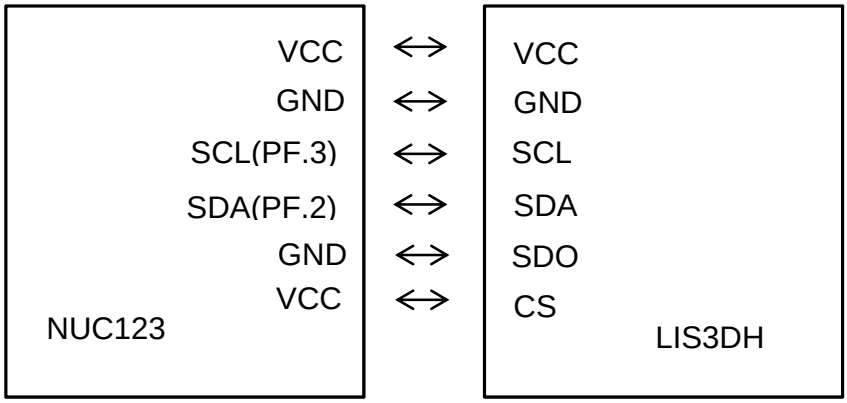
MCU obtains LIS3DH data through I2C interface function：

```
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 Software and Hardware Environment

- **Software Environment**
  - BSP Version
    - NUC123Series_BSP_CMSIS_v3.01.001
  - IDE Version
    - Keil uVersion 4.6
- **Hardware Environment**
  - Circuit Components
    - NuTiny-EVB-123-LQFP64
    - LIS3DH
  - Diagram

NUC123 control LIS3DH sensor and reads acceleration values in three directions by I2C interface .



4 Directory Information

- 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 How to Execute Example Code

1. Browsing into sample code folder by Directory Information (section 4) and double click NUC123_3-axis_Sensor_LIS3DH_Driver.uvproj.
2. Enter Keil compile mode
   a. Build
   b. Download
   c. Start/Stop debug session
3. Enter debug mode
   a. Run

6 Revision History

Date	Revision	Description
Sep.25, 2019	1.00	1. Initially issued.

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