NANO100通過I2C驅動MLX90614

NuMicro® 32 位系列微控制器範例代碼介紹

文件資訊

代碼簡述	本範例代碼使用 NANO100 的 I2C 接口驅動 MLX90614
BSP 版本	Nano100B_Series_BSP_CMSIS_v3.03.000
開發平台	NuTiny-EVB-Nano130-LQFP128 V1.0

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1 功能介紹

1.1 簡介

本範例代碼使用NANO100系列通過I2C接口驅動MLX90614，獲取溫度值。

1.2 執行結果

執行結果打印數據如下：

```
Core Clock = 42000000 Hz

+------------------------------------------------------+
|   Nano100 Series I2C Sample Code with MLX90614       |
+------------------------------------------------------+
Temperature = 28 °C

Temperature = 28 °C

Temperature = 28 °C

Temperature = 28 °C
```

2 代碼介紹

初始化 MLX90614：

```
void I2C0_Init(void)
{
    /* Set GPA8,9 multi-function pins for I2C0 SDA and SCL */
    SYS->PA_H_MFP |= (SYS_PA_H_MFP_PA8_MFP_I2C0_SDA | SYS_PA_H_MFP_PA9_MFP_I2C0_SCL);

    /* Reset I2C0 */
    SYS_ResetModule(I2C0_RST);

    /* Enable I2C0 clock */
    CLK_EnableModuleClock(I2C0_MODULE);

    I2C_Open(I2C0, 100000);

    /* Enable I2C0 interrupt */
    I2C_EnableInt(I2C0);

    NVIC_EnableIRQ(I2C0_IRQn);
}
```

讀取溫度值：

```
if(I2C0_Read(MLX90614_ADDR, 0x07, 2, au8Data) == 1)
{
    u16Temp = (au8Data[1] << 8) + au8Data[0];
    u16Temp = u16Temp / 50 - 273;

    printf("Temperature = %d °C\n\n", u16Temp);
}
```

3 軟體與硬體環境

● 軟體環境

- ■ BSP 版本
  - ◆ Nano100B_Series_BSP_CMSIS_v3.03.000
- ■ IDE 版本
  - ◆ Keil uVersion4.74

● 硬體環境

- ■ 電路元件
  - ◆ NuTiny-EVB-Nano130-LQFP128 V1.0
  - ◆ MLX90614
- ■ 示意圖

NANO100 使用 I2C 接口對 MLX90614 進行初始化，獲取溫度值。

VDD	↔	VIN
I2C0_SCL (PA.9)	↔	SCL
I2C0_SDA (PA8)	↔	SDA
GND	↔	GND
NANO100		MLX90614

4 目錄資訊

EC_NANO100_I2C_MLX90614_V1.00	
Library	Sample code header and source files
CMSIS	Cortex®Microcontroller Software Interface Standard (CMSIS) V4.5.0 definitions 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 如何執行範例程式

1. 根據目錄資訊章節進入 ExampleCode 路徑中的 KEIL 資料夾，雙擊 I2C_MLX90614.uvproj。
2. 進入編譯模式介面
   a. 編譯
   b. 下載代碼至記憶體
   c. 進入 / 離開除錯模式
3. 進入除錯模式介面
   a. 執行代碼

6 修訂紀錄

Date	Revision	Description
Oct.10, 2019	1.00	1. 初始發布.

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