NANO100通过I2C驱动MLX90614

NuMicro® 32 位系列微控制器范例代码介绍

文件信息

代码简述	本范例代码使用 NANO100 的 I2C 接口驱动 MLX90614
BSP 版本	Nano100B_Series_BSP_CMSIS_v3.03.000
开发平台	NuTiny-EVB-Nano130-LQFP128 V1.0

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1 功能介绍

1.1 简介

本范例代码使用NANO100系列通过I2C接口驱动MLX90614，获取温度值。

1.2 执行结果

执行结果打印数据如下：

```
Core Clock = 42000000 Hz

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

Temperature = 28 °C

Temperature = 28 °C

Temperature = 28 °C
```

2 代码介绍

初始化 I2C0：

```
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);
}
```

读取温度值：

```
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 软件与硬件环境

- 软件环境
  - BSP 版本
    - Nano100B_Series_BSP_CMSIS_v3.03.000
  - IDE 版本
    - Keil uVersion4.74
- 硬件环境
  - 电路组件
    - NuTiny-EVB-Nano130-LQFP128 V1.0
    - MLX90614
  - 示意图

NANO100 使用 I2C 接口控制 MLX90614，获取温度值。

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

4 目录信息

- 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 如何执行范例程序

1. 根据目录信息章节进入 ExampleCode 路径中的 KEIL 文件夹，双击 I2C_MLX90614.uvproj。
2. 进入编译模式接口
   a. 编译
   b. 下载代码至内存
   c. 进入 / 离开除错模式
3. 进入除错模式接口
   a. 执行代码

6 修订纪录

Date	Revision	Description
Oct.10, 2019	1.00	1. 初始发布.

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