

# SPI 21MHz Clock Data Transmission

Example Code Introduction for 32-bit NuMicro® Family

## Information

Application	Demonstrates SPI data transmission for a 21MHz clock.
BSP Version	Nano100B Series BSP CMSIS V3.03.000
Hardware	NuTiny-EVB-Nano130-LQPF128

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# 1 Function Description

## 1.1 Introduction

Demonstrates SPI data transmission for a 21MHz clock.

## 1.2 Principle

Set HCLK to be a 42MHz PLL.

Then set the SPI clock to HCLK/2 and the SPI will generate a 21MHz clock.

## 1.3 Demo Result

DSO-X 3024A, MY53280145, Wed Jul 31 10:34:39 2019



## 2 Code Description

Set HCLK to be a 42MHz PLL :

```
CLK->PWRCTL |= CLK_PWRCTL_HIRC_EN; // Enable HIRC
CLK->CLKDIV0 = 1; // Set HCLK Divider
CLK->PLLCTL = CLK_PLLCTL_PLL_SRC_HIRC | PLL_IN_DIV8 + PLL_MULTY(Multiply);
while((CLK->CLKSTATUS & CLK_CLKSTATUS_PLL_STB) == 0);
CLK->CLKSEL0 = CLK_CLKSEL0_HCLK_S_PLL; // HCLK clock source select PLL
```

Configuration SPI and set SPI clock :

```
SPI0->CTL = (1 << 12) // Suspend Interval 1 SPI_CLK
           | SPI_CTL_FIFOM_Msk // Enable FIFO mode
           | (0x8u1 << SPI_CTL_TX_BIT_LEN_Pos) // Set transmit bit length
           | SPI_CTL_TX_NEG_Msk; // Transmit at Negative Edge
SPI0->SSR = SPI_SSR_AUTOSS_Msk | (0x1u1 << SPI_SSR_SSR_Pos); // Automatic Slave
Selection
SPI0->CLKDIV = Div-1;
```

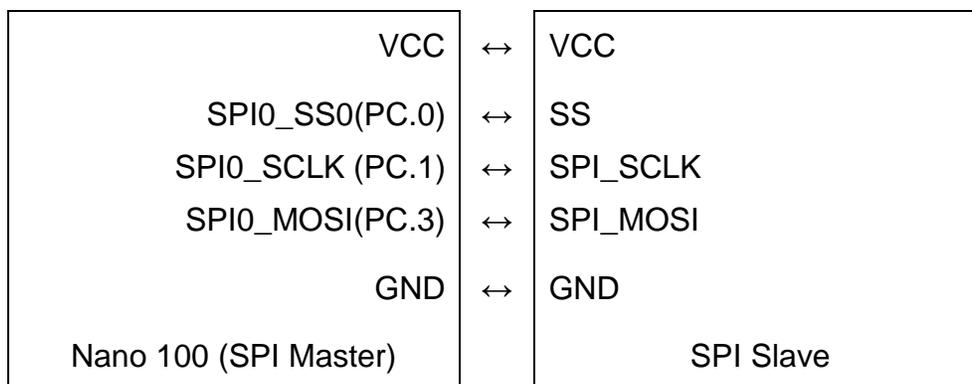
### 3 Software and Hardware Environment

- **Software Environment**

- BSP version
  - ◆ Nano100B Series BSP CMSIS V3.03.000
- IDE version
  - ◆ Keil uVersion 5.26

- **Hardware Environment**

- Circuit components
  - ◆ NuTiny-EVB-Nano130-LQPF128
- Diagram



## 4 Directory Information

 EC\_Nano100\_SPI\_Data\_Transmission\_With\_21MHz\_Clock\_V1.00

-  **Library**                      Sample code header and source files
  -  **CMSIS**                      Cortex<sup>®</sup> Microcontroller Software Interface Standard (CMSIS) by Arm<sup>®</sup> 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 Nano100\_SPI\_Data\_Transmission\_With\_21MHz\_Clock.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
Apr. 24, 2019	1.00	1. Initially issued.

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