Use TestOScope to plot ADC data

Example Code Introduction for 32-bit NuMicro® Family

Information

Application	Use TestOScope to plot ADC data
BSP Version	Nano100B Series BSP CMSIS v3.03.000
Hardware	NuTiny-EVB-Nano130-LQFP128 v1.1

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1 Function Description

1.1 Introduction

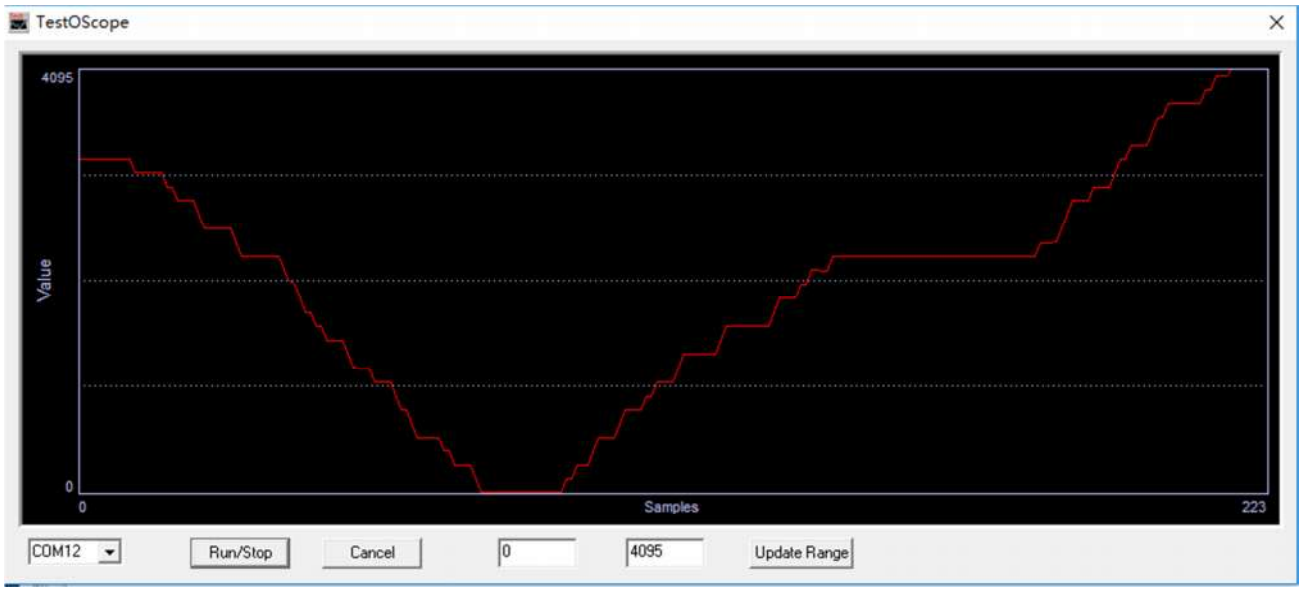
Sometimes we use the serial port to send the ADC data to the PC for analysis. TestOScope is the computer software, which will capture the serial port data to the user through the image, which is convenient for observing the trend of data changes.

1.2 Principle

The UART0 TX pin of MCU is PB.1 and the ADC input pin of MCU is PA.0.
When the serial port of the MCU is connected to the serial port of the PC, click the Run/Stop button of TestOScope, and the TestOScope will draw the graphic as long as the serial port of the MCU has data.

1.3 Demo Result

The red line in the figure below is the trend of the data of the captured ADC data between 0 and 4095.



2 Code Description

The implementation of the code is very simple. First, start the ADC conversion. After the conversion is completed, send the data to the PC twice through the serial port. The serial port sends low byte first and then high byte.

```
void ADC_Measure()
{
    uint16_t  u16ConversionData;
    uint8_t     u8DataH, u8DataL;

    /* Start A/D conversion */
    ADC_START_CONV(ADC);

    /* Wait ADC conversion */
    while (g_u8ADF == 0) {};

    /* Get the conversion result of the ADC channel 0 */
    u16ConversionData = ADC_GET_CONVERSION_DATA(ADC, 0);

    /* Get low byte to transmit */
    u8DataL = u16ConversionData;

    /* Get high byte to transmit */
    u8DataH = u16ConversionData >> 8;

    /* Show ADC Raw Data on UI */
    UART_WRITE(UART0, u8DataL);

    UART_WRITE(UART0, u8DataH);

    /* Stop A/D conversion */
    ADC_STOP_CONV(ADC);
}
```

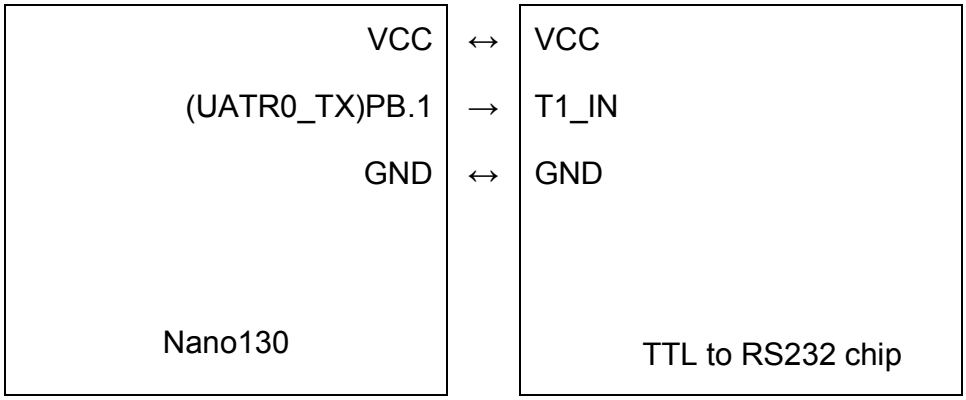
3 Software and Hardware Environment

Software Environment

- BSP version
  - Nano100B Series BSP CMSIS v3.03.000
- IDE version
  - Keil uVersion 5.26

Hardware Environment

- Circuit components
  - NuTiny-EVB-Nano130-LQFP128 v1.1
  - TTL to RS232 chip
- Diagram



4 Directory Information

- EC_Nano100B_ADC_RawData_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 Nano100B_ADC_RawData.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
Nov. 13, 2019	1.00	1. Initially issued.

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