

AT32_TMR Quadrature PWM Waves

Introduction

This sample code is based on AT32F403A demonstrating how to use AT32 TMR to generate certain number of quadrature PWM waves.

In this example, TMR3_CH1 (PA6) and TMR3_CH2 (PA7) are used to generate quadrature PWM waves. Select OVERFLOW as a trigger signal from TMR3 (master timer) to TMR4 (slave timer). In this way, as long as TMR3 is updated, TMR4 will count once, so as to generate quadrature PWM waves at specified number.

If users need to only output continuous number of PWM waves, just need to configure TMR3 of this sample code.

Note: This sample code is written based on Artery's V2.x.x BSP. For other versions of BSP, users should pay attention to the differences in use.

Applicable products:

Product series	AT32 all series
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List of major peripherals used:

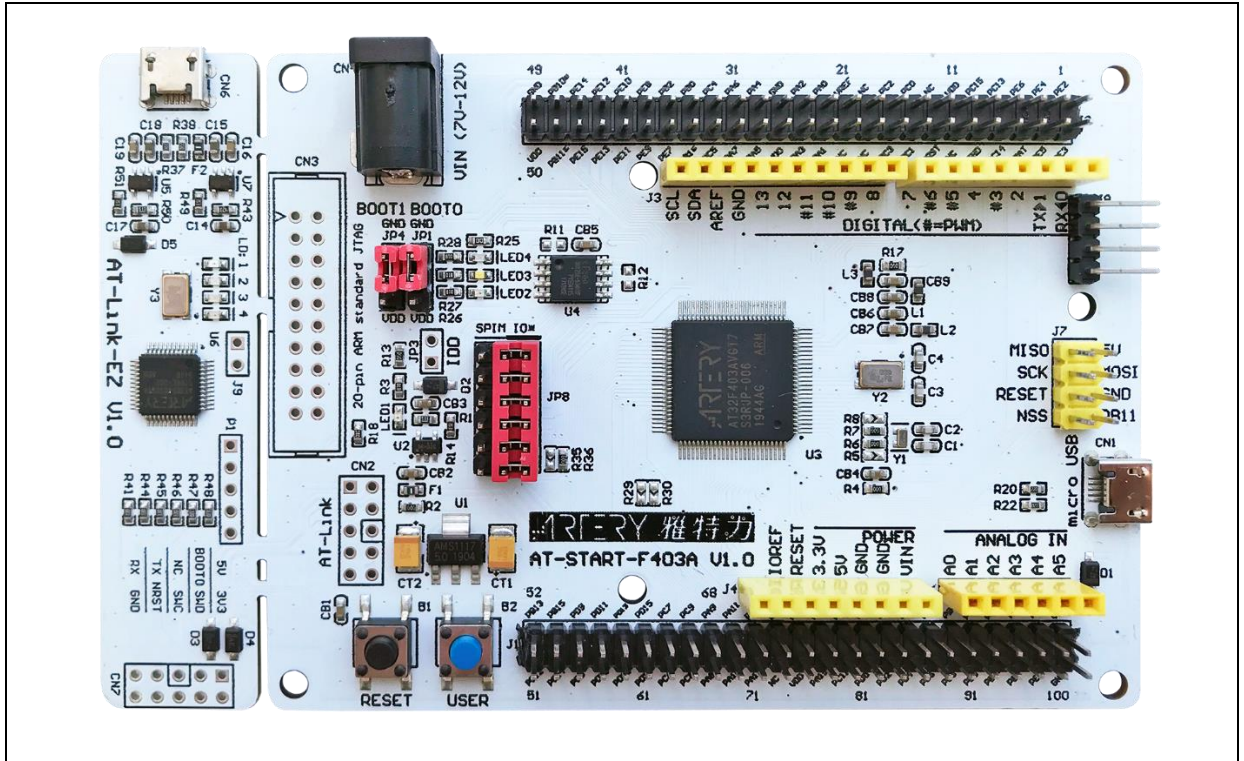
Peripherals	TIMER
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1 Quick start

1.1 Hardware resources

- 1) AT-START-F403A V1.x evaluation board
- 2) Logic analyzer or oscilloscope

Figure 1. AT-START-F403A V1.0 evaluation board



1.2 Software resources

- 1) AT32F403A, and AT32F403A_407_Firmware_Library_V2.0.6 (BSP)
- 2) TMR settings:
 - Set TMR3 channel 1 (PA6) and channel 2 (PA7) to generate quadrature PWM waves.
 - Set OVERFLOW as trigger signal from TMR3 (master timer) to TMR4 (slave timer).
Set TMR4 slave timer mode as Suspend mode.
Set IS2(STIS=010) as TMR4's trigger input selection, that is, an internal trigger from TMR3.
 - Enable TMR4 overflow interrupt
- 3) User can modify "#define Output_Freq 500000" and "#define PWM_Num 20" in main.c to configure the desired PWM frequency and the number of quadrature PWM waves.

Note: All of projects are built based on Keil 5. For the need to run them in other compiling environments, user can make simple adjustments according to AT32xxx_Firmware_Library_V2.x.x\project\at_start_xxx\templates.

1.3 Example case

- 1) Connect PA6 (TMR3_CH1) and PA7 (TMR3_CH2) to logic analyzer or oscilloscope
- 2) Open SourceCode\SC0062_SourceCode\utilities\SC0062_Demo\mdk_v5\PWM_Ware.uvprojx, compile and download it to the board
- 3) Capture PA6/PA7 waveforms

Figure 2. LA-captured waveforms



2 Revision history

Table 1. Document revision history

Date	Revision	Changes
2022.01.24	2.0.0	Initial release

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