

AT32Fxx 1MHz Max Frequency

Introduction

This sample code demonstrates how to achieve AT32Fxx series' 1MHz maximum frequency.

MCU system clock can only be provide by HICK, HEXT or PLL, through which its minimum clock can be as low as 4MHz. For application scenarios, in order to achieve lower power consumption like 1MHz or below, a divided clock by AHB is considered a solution in this regard.

This sample code demonstrates how to sustain 1 MHz of system clock in run mode, and use in Deepsleep mode.

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	AT32F4xx
----------------	----------

List of major peripherals used:

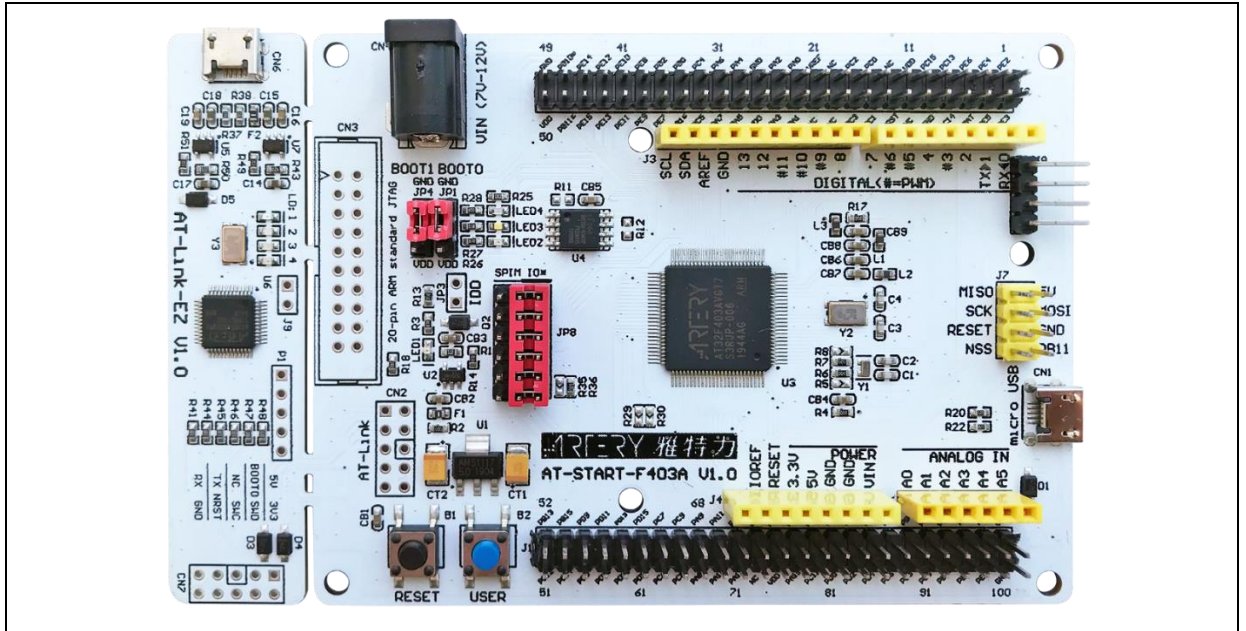
Peripherals	USART1
-------------	--------

1 Quick start

1.1 Hardware resources

- 1) AT-START-F403A V1.0 evaluation board
- 2) LED & Key: LED-related IOs

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



1.2 Software resources

Clock state

- Run mode (HEXT as a SCLK clock source, AHB/8)
- Before entering deepsleep mode, HEXT is used as a SYSCLK clock source, and no AHB division
- Enter deepsleep mode, LICK is used as a SCLK clock source, and no AHB division
- Leave deepsleep mode, and enter run mode, HEXT as a SCLK clock source, AHB/8

Source code

- sysclk_1mhz_demo

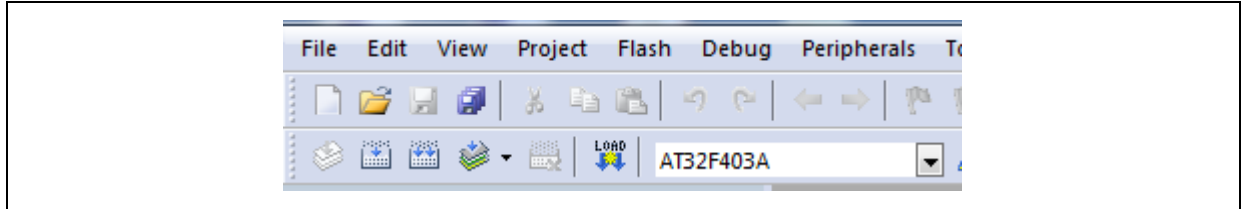
Note: To ensure that Deepsleep mode can be woke up, it is necessary to ensure that Deepsleep mode must be entered with no AHB division.

Note: All of projects are built based on Keil 5. For the need to run 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) Open sysclk_1mhz_demo, compile and download it to the evaluation board
- 2) AT-START-F403A V1.0 evaluation board is used here, so we select AT32F403A project

Figure 2. Keil project selection



- 3) Reset the board, and wake up Deepsleep mode periodically through RTC clock. LEDs indicate MCU operating mode.

2 Revision history

Table 1. Document revision history

Date	Revision	Changes
2021.12.06	2.0.0	Initial release

IMPORTANT NOTICE – PLEASE READ CAREFULLY

Purchasers are solely responsible for the selection and use of ARTERY's products and services, and ARTERY assumes no liability whatsoever relating to the choice, selection or use of the ARTERY products and services described herein

No license, express or implied, to any intellectual property rights is granted under this document. If any part of this document deals with any third party products or services, it shall not be deemed a license granted by ARTERY for the use of such third party products or services, or any intellectual property contained therein, or considered as a warranty regarding the use in any manner of such third party products or services or any intellectual property contained therein.

Unless otherwise specified in ARTERY's terms and conditions of sale, ARTERY provides no warranties, express or implied, regarding the use and/or sale of ARTERY products, including but not limited to any implied warranties of merchantability, fitness for a particular purpose (and their equivalents under the laws of any jurisdiction), or infringement on any patent, copyright or other intellectual property right.

Purchasers hereby agree that ARTERY's products are not designed or authorized for use in: (A) any application with special requirements of safety such as life support and active implantable device, or system with functional safety requirements; (B) any aircraft application; (C) any aerospace application or environment; (D) any weapon application, and/or (E) or other uses where the failure of the device or product could result in personal injury, death, property damage. Purchasers' unauthorized use of them in the aforementioned applications, even if with a written notice, is solely at purchasers' risk, and Purchasers are solely responsible for meeting all legal and regulatory requirements in such use.

Resale of ARTERY products with provisions different from the statements and/or technical characteristics stated in this document shall immediately void any warranty grant by ARTERY for ARTERY's products or services described herein and shall not create or expand any liability of ARTERY in any manner whatsoever.

© 2023 Artery Technology -All rights reserved