

APM32E103xE

Errata Sheet

Version: V 2.2

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1 Introduction

This manual mainly introduces the limitations of the APM32E103xE series products during use. If you encounter the application scenarios described in the manual during the use of the product, please use the product according to the solutions provided in the manual; if no solution is provided, please avoid this application scenario.

2 Errata List

Table 1 Errata List

Category	Introduction	Product version	
		A2	A2X
GPIO	GPIO output	●	●
	USART3 and FSMC remapping	●	●
	<u>Alternate function of timer output pin will be affected by Timer output</u>	●	●
Clock	Precautions for obtaining accurate RTC calibration clock output from PC13	●	●
System	PWR sleep mode	●	●
	FPU functions	●	●
	Low-power mode	●	●
USB/CAN	Combined use of USB/CAN	●	●
	CAN2_IO remapping	●	●
Watchdog	Increase the servicing frequency and reduce the wake-up time	●	●
<u>Wake-up in Standby Mode</u>	<u>Operations before entering Standby mode</u>	●	●

Note: "●" indicates that this errata description is involved in this version; the 'X' indicates that it is not involved in this version.

3 GPIO

3.1 GPIO output

Problem description

When the GPIO port is configured as multiplexing push-pull output, the output voltage may be affected by external interference and is unable to output accurate levels; when configured as floating input to read the external I/O input values, it may be affected by external interference and is unable to read accurate values.

Solutions

When configured as multiplexing push-pull output, connect an external pull-up resistor; when configured as floating input, connect an internal pull-up resistor externally or configure it as a pull-up input.

3.2 USART3 and FSMC remapping

Problem description

USART_USART3 remapping PD8 and PD9 pins conflicts with FSMC clock. Specifically: when remapping PD8 and PD9 as serial pins, enable FSMC clock but the serial communication cannot be used normally.

Solutions

Choose either of the following solutions:

- Use partial remapping function or default configuration of USART3.
- When USART3_TX is remapped to PD8 as a serial port pin, disable the SMC function.

3.3 Alternate function of timer output pin will be affected by Timer output

Problem description

When the timer is enabled for output compare function, the timer output will interfere with other alternate functions of the same pin if it is configured for a different alternate function.

Solutions

When the timer output pin is configured for other alternate functions, disable the timer output compare function.

4 Clock

4.1 Precautions for obtaining accurate RTC calibration clock output from PC13

Problem description

When LSECLK is used as the clock source for RTC, after the ready flag bit of the external low-speed clock is set to 1, immediately configure RTC and PC13 to output the calibration clock signal. At this time, the output calibration clock may be delayed, and the output calibration clock will be accurate only after a period of time.

Solutions

When the ready flag bit of the external low-speed clock is set to 1, configure the PC13 to output the calibration clock signal after delay for a period of time, or wait for a period of time before measuring the calibration signal. It is important to note that the waiting time may vary with the parameters, temperature, and voltage differences of the crystal oscillator. The recommended delay reference time is 1s.

5 System

5.1 PWR sleep mode

Problem description

The PWR sleep mode `_WEF()` instruction is invalid and cannot enter the low-power mode.

Solutions

Choose either of the following solutions:

- It can be executed normally after it is reset through the reset pin.
- Set in the download interface of Keil (set the reset and run).
- The second WFE instruction can be executed normally.
- Modify the program, and use 1 WFI rather than WFE.

5.2 FPU functions

Problem description

The larger the input value of FPU is, the higher the probability of occurrence of errors is.

Solutions

Suggest controlling the FPU input value within $\pm 3\pi$. It is important to note that the operation acceleration effect of FPU only applies to the functions in the LIB library, and it has no significant acceleration effect on other operations such as +, -, ×, ÷, and matrix permutation.

5.3 Low-power mode

Problem description

When the FSMC clock is enabled, the power consumption is high when entering the Standby and Stop low-power modes.

Solutions

First turn off the FSMC clock, and then enter the Standby and Stop low-power modes.

6 USBD/CAN

6.1 Combined use of USBD/CAN

Problem description

USB1 and CAN2 can be used simultaneously, USB2 and CAN1 can be used simultaneously, USB1 and USB2 cannot be used simultaneously, and CAN1 and CAN2 can be used simultaneously.

Solutions

Use according to the recommendations of *Datasheet* and *User Manual*.

6.2 CAN2_IO remapping

Problem description

If CAN2 uses remapping pins (e.g., I/O initialization) and then performs other peripheral remapping operation, CAN2 will fail to remap.

Solutions

Perform CAN2 remapping (e.g., I/O initialization) operation after all peripheral remapping operations.

7 Watchdog

7.1 Increase the servicing frequency and reduce the wake-up time

Problem description

At low temperatures (-30°C), the LSI frequency offset becomes excessive, resulting in intermittent failure of the watchdog mechanism.

Solutions

Increase the servicing frequency by software and reduce the wake-up time, ensure that the watchdog servicing time remains effective even in the case of the maximum LSI offset error.

8 Wake-up in Standby Mode

Problem description

In Standby mode, the system supports multiple wake-up sources. These signals are combined (using a logical OR) before reaching the rising edge detector. When a valid edge is detected, a wake-up flag (WUEFLG) is generated. To ensure the MCU enter and stay in Standby mode, you must clear the WUEFLG flag first; otherwise, it will wake up immediately. Note that if any active wake-up source stays high while clearing the flag (setting the WUFLGCLR bit), the detector's input also stays high. As a result, it cannot detect new level changes, which masks future wake-up events and prevents the MCU from waking up properly.

Solution 1

To prevent this issue, follow these steps before entering Standby mode:

- (1) Disable all used wake-up sources.
- (2) Clear all related wake-up flags.
- (3) Reenable all used wake-up sources.

Solution 2

Keep only one wake-up source before entering Standby mode (for example, turn off the RTC alarm and leave only the PA0 WKUP function on).

9 Revision history

Table2 Document Revision History

Date	Version	Revision History
August 2024	1.0	● Initial release
June 2025	2.1	● Add Chapter 4.3 and Chapter 8
April 2026	2.2	● Delete Chapter 2: Product Version and Silk Screen Printing Instructions ● Add Chapter 8: Wake-up in Standby Mode

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8. Scope of Application

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