

# IEC60730B\_CM4\_CM7\_3.0\_Release\_Notes

## 1. Introduction

IEC60730B\_CM4\_CM7\_3.0 is the third version of the core self-test library for NXP CM4 devices coupled with CM7 devices. The library is certified by UL. It is dedicated for use in applications compliant with safety class B/class 1 standard (specified by IEC 60730, UL 60730, UL 1998).

The library is released in a precompiled format, together with functional example projects and documentation describing the respective tests.

As before, the release was created in close cooperation with the application team, who have vast experience in customer projects. We also took the feedback from our customers into consideration.

## Contents

1. Introduction .....	1
2. What is new .....	2
3. Description .....	2
4. Released files .....	4



## 2. What is new

When compared to the previous version of the library, the main changes are:

- New devices are added: MIMXRT10xx, K32W0x.
- MK0x, MK1x, and MK2x were removed from the list. They are certified only with the older versions of the library.
- Extended tests of digital input/output.
- Support for two more IDEs: Keil, MCUXpresso.
- Improved functional examples.

## 3. Description

The supported devices are:

- MKV3x.
- MKV4x.
- MKV5x.
- MKE1xF.
- MK32W0x.
- MIMXRT10xx.

The supported IDEs are:

- IAR v8.0 and higher.
- Keil  $\mu$ Vision V5.23 and higher.
- MCUXpresso IDE V10.0 and higher.

The tested components are:

- CPU registers.
- Program counter.
- Variable memory (RAM).
- Invariable memory (flash).
- Clock.
- Digital I/O.
- Analog I/O.
- Stack.
- Watchdog.

For a complete list of functions, see the library architecture document.

Optimizations, improvements, and changes:

- The library:
  - The AIO test for KV4x was added.
  - The second (asynchronous) version of the clock test was removed.
  - A common file for the assembler macros was created.
  - The DIO tests have a different API to shorten the size and execution time. The user must specify the tested pin in the test structure that is passed to the functions.
  - Extended DIO tests were created to test the short-circuit conditions (between the tested pin and the supply voltage, ground, and adjacent pin).
  - Modified the API of the existing flash test functions. The address of the hardware CRC module is passed to the function as an input parameter.
  - Two new 32-bit flash test functions dedicated for the MIMXRT10xx devices were created.
  - The FPU registers' tests were moved from the standalone library to the common one.
- Documentation:
  - Only formal updates.
- Example projects:
  - The examples are now more unified than in the previous versions. The unification was done through the device types and IDEs.
  - The post-build steps to calculate the CRC in the Keil and MCUXpresso IDEs were assembled.
  - A dual-core project (IAR only) for the MK3232W0x was created.

## 4. Released files

Precompiled object files:

- IEC60730\_Kinetis\_CM4\_CM7\_Class\_B\_IAR\_v3\_0.a
- IEC60730\_Kinetis\_CM4\_CM7\_Class\_B\_KEIL\_v3\_0.lib
- IEC60730\_Kinetis\_CM4\_CM7\_Class\_B\_MCUX\_v3\_0.a

Source and header files:

- IEC60730\_B\_CM4\_CM7.h
- IEC60730\_B\_CM4\_CM7\_aio.h
- IEC60730\_B\_CM4\_CM7\_clock.h
- IEC60730\_B\_CM4\_CM7\_dio.h
- IEC60730\_B\_CM4\_CM7\_dio\_ext.h
- IEC60730\_B\_CM4\_CM7\_flash.h
- IEC60730\_B\_CM4\_CM7\_pc.h
- IEC60730\_B\_CM4\_CM7\_ram.h
- IEC60730\_B\_CM4\_CM7\_reg.h
- IEC60730\_B\_CM4\_CM7\_Stack.h
- IEC60730\_B\_CM4\_CM7\_wdg.h
- asm\_mac\_common.h
- IEC60730\_B\_CM4\_CM7\_wdg.c
- IEC60730\_B\_CM4\_CM7\_pc\_object.S
- linker\_symbols.S

Documents:

- IEC60730\_B\_AIO\_test\_for\_CM4\_CM7\_rev3\_0
- IEC60730\_B\_Clock\_Test\_for\_CM4\_CM7\_rev3\_0
- IEC60730\_B\_CPU\_test\_for\_CM4\_CM7\_rev3\_0
- IEC60730\_B\_DIO\_test\_for\_CM4\_CM7\_rev3\_0
- IEC60730\_B\_Invariable\_Memory\_test\_for\_CM4\_CM7\_rev3\_0
- IEC60730\_B\_Library\_architecture\_CM4\_CM7\_rev3\_0
- IEC60730\_B\_PC\_test\_for\_CM4\_CM7\_rev3\_0
- IEC60730\_B\_Stack\_test\_for\_CM4\_CM7\_rev3\_0
- IEC60730\_B\_Variable\_Memory\_test\_for\_CM4\_CM7\_rev3\_0
- IEC60730\_B\_Watchdog\_test\_for\_CM4\_CM7\_rev3\_0

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