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Spec No: 002-04882

Spec Title: AN204882 - F2MC-FM3 MB9BFXXX WITH EMBEDDED OS

Replaced by: None

AN204882

F²MC-FM3 MB9BFXXX with Embedded OS

This application note gives overview about available operation systems for Cypress ARM Cortex M3 microcontroller series.

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1 Introduction

This application note gives an overview about available operation systems for Cypress ARM Cortex M3 Microcontroller series.

Available Embedded Operation Systems are:

- Avix-RT
- Segger embOS
- Free RTOS
- Keil RTX Real-Time Kernel
- Micrium-µC/OS-II/OS-III Kernel

Overview:

Feature	Avix	Segger embOS	Free RTOS	Keil RTX	Micrium-µC
Free of charge	No, Demo only	No, Demo only	Yes	Yes	No, Demo only
Example	Starter kits: SK-FM3-100PMC IAR KSK-MB9BF506 Environment: IAR Keil	Starter kits: SK-FM3-100PMC IAR KSK-MB9BF506 Environment: IAR	Starter kit: SK-FM3-100PMC SK-FM3-64PMC Environment: IAR Keil	Environment: Keil	Starter kits: IAR KSK-MB9BF506 Environment: IAR
Real time Debugging	Yes	Yes	No	Yes	Additional
ROM Usage (min. Example)	6 Kbytes	8 Kbytes	7,5 Kbytes	5 Kbytes	6 Kbytes

2 Detailed Description

2.1 Avix-RT

2.1.1 Features

- Hybrid RTOS - Segmented Architecture
- Fast and small footprint
- True Zero Latency Interrupt Support
- Without ever disabling interrupts
- Hard Real Time and Real Time Tracing Facility
- Energy Saving Capabilities supporting Low-Power-Modes of the MCU
- Fully CMSIS based

2.1.2 Real time debugging

- AVIX RTOS Viewer
- Plug-In for Keil µVision
- Needs µVision 4.12 or newer

2.1.3 Documentation:

Very good tutorial with OS example using: Pipes, Semaphores, etc.

2.1.4 Software Examples

Two examples for SK-FM3-100PMC

2.1.5 Versions

- Demo (30min run time)
- Basic
- Standard
- Extended

2.1.6 Website

http://www.avix-rt.com

2.2 Segger Emboss

2.2.1 Features

- Zero interrupt latency time
- Nested interrupts are permitted
- High-performance RTOS
- Minimum memory consumption in both RAM/ROM
- Real time kernel viewer (embOSView) included
- Core written in assembly language
- All API functions can be called from C /C++/assembly
- Compatible with IAR

2.2.2 Real time debugging

- JTAG support (J-Link) for Real time OS debugging
- Compatible with IAR 5.x and 6.x

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- CPU Load
- Memory Usage
- Run Count
- Time Slice

2.2.3 Software Examples

Examples for SK-FM3-100PMC and IAR KSK-MB9BF506.

2.2.4 Website

http://www.segger.com/cms/embos.html

2.3 FreeRTOS

2.3.1 Features

- Open source
- Royalty free
- Mini Real Time Kernel
- Supports commercial applications
- Pre-configured example applications available
- Support is provided by an active user community

2.3.2 Software Examples

Examples for SK-FM3-100PMC and SK-FM3-64PMC.

2.3.3 Website

http://www.freertos.org/

2.4 Keil RTX Real-Time Kernel

2.4.1 Features

- Royalty-free, deterministic RTOS with source code
- Specifically designed for ARM and Cortex-M CPUs
- Flexible scheduling: round-robin, pre-emptive, and collaborative
- High-Speed real-time operation with low interrupt latency
- Small footprint for resource constrained systems
- Unlimited number of tasks each with 255 priority levels
- Unlimited number of mailboxes, semaphores, mutex, and timers
- Support for multithreading and thread-safe operation
- Kernel aware debug support in MDK-ARM
- Dialog-based setup using µVision Configuration Wizard

2.4.2 Realtime debugging

- Integrated in µVision

2.4.3 Software Examples

- Blinky

2.4.4 Website

http://www.keil.com/arm/rl-arm/kernel.asp

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2.5 Micrium µC/IS-II/OS-III Kernel

2.5.1 Features

- Large number of supported processor architectures
- Scalable size
- Sufficiently robust to meet rigorous safety-critical system requirements
- Complete ANSI C source code is available for a 30-day trial use

2.5.2 Real time debugging

- µC/Probe

2.5.3 Software Examples

Example for IAR KSK-MB9BF506.

2.5.4 Website

http://www.micrium.com/page/products/rtos/os-ii

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3 Document History

Document Title: AN204882 - F²MC-FM3 MB9BFXXX with Embedded OS

Document Number: 002-04882

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	-	MSCH	10/06/2011	Initial Release
*A	5053159	MSCH	12/16/2015	Migrated Spansion Application Note from MCU-AN-300405-E-V10 to Cypress format
*B	5572974	WOFR	01/03/2017	Spec obsoleted – no further updates planed

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