Technical Data sheet

Overview

This documentation of the OSEK[1] operating system describes the implementation for the Fujitsu microcontroller family FR30. The implementation is based on the OSEK-OS-specification 2.00 described in the document „OSEK/VDX Operating System" Version 2.0 revision 1.

Overview of OSEK properties

Conformance classes:	BCC1, BCC2, ECC1, ECC2
Scheduling policy:	full-, non- and mixed-preemptive
Maximum number of tasks:	255
Maximum number of alarms:	65535
Maximum number of priorities:	255
Maximum number of events per task:	32
Status levels:	STANDARD and EXTENDED
nested Interrupts:	Possible
Timer resolution:	One system tick, selectable from 1 to 100 ms
Alarm range	1 to 2^{32} system ticks
Supported C-Compiler:	Fujitsu FR30 Family Softune C Compiler V3.0
Memory models:	-
Supported CPUs	MB91100 series MB91360 series

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[1] (Offene Systeme und deren Schnittstellen für die Elektronik im Kraftfahrzeug, Open Systems and their interfaces to the Electronic in motor vehicles)

ROM-Requirements

Conformance Class	Standard Status	Extended Status
BCC2	3218 Bytes	6096 Bytes
ECC1	3288 Bytes	6574 Bytes

RAM- Requirements

Conformance Class BCC2

Variant	Standard Status	Extended Status
System	142 Bytes	149 Bytes
per Task	32 Bytes	32 Bytes

Conformance Class ECC2

Variant	Standard Status	Extended Status
System	121 Bytes	133 Bytes
per Task	28-36 Bytes	28-36 Bytes

Timer Usage

The operating system makes use of Reload timer 2 within the MB91100 and MB91360 CPUs.

Time-Requirements

Variant: Conformance class BCC2

Attributes:

CPU-clock	50 MHz / 2 Waitstates
Tasks/Events	≤ 32
Cache	enabled
KernelLockedIntoCache	true

Function	Standard Status	Extended Status
ActivateTask	9.8 μs / 28.4 μs (1)	19.2 μs / 41.6 μs (1)
TerminateTask	20.3 μs	36 μs
EnterISR	5.2 μs	5.8 μs
LeaveISR	6.0 μs	7.4 μs
EnableInterrupt	1.8 μs	2.8 μs
DisableInterrupt	1.4 μs	1.2 μs
SetRelAlarm	28.2 μs	44.8 μs
CancelAlarm	9.4 μs	13.4 μs
StartOS	56.2 μs	66.2 μs
ShutdownOS	5.0 μs	5.0 μs

1) basic task / higher prior task

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Variant: Conformance Class ECC1

Attributes:

CPU-clock	50 MHz / 2 Waitstates
Tasks/Events	≤ 32
Cache	enabled
KernelLockedIntoCache	true
Scheduling	mixed
Stackcheck	disabled

Function	Standard Status	Extended Status
ActivateTask	14.1 µs / 29.2 µs (1)	24.0 µs / 49.0 µs (1)
TerminateTask	29.8 µs	44.0 µs
EnterISR	7.4 µs	7.4 µs
LeaveISR	8.6 µs	9.2 µs
EnableInterrupt	1.8 µs	2.8 µs
DisableInterrupt	1.4 µs	1.2 µs
GetResource	7.2 µs	19.4 µs
ReleaseResource	38.6 µs	65.2 µs
SetEvent	9.4 µs	11.8 µs
ClearEvent	6.8 µs	9.6 µs
GetEvent	6.8 µs	11.4 µs
WaitEvent	6.6 µs	14.4 µs
SetRelAlarm	28.2 µs	44.8 µs
CancelAlarm	9.4 µs	13.4 µs
StartOS	56.2 µs	66.2 µs
ShutdownOS	5.0 µs	5.0 µs

1) basic task / higher prior task