

Technical Data sheet

Overview

This documentation of the OSEK¹ operating system describes the implementation for the Fujitsu microcontroller family F16LX. 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:	256
Maximum number of alarms:	256
Maximum number of priorities:	16
Maximum number of events per task:	16
Status levels:	STANDARD and EXTENDED
nested Interrupts:	possible
Timer resolution:	one system tick, selectable from 1 to 100 ms
Alarm range	1 to 65536 systemticks
Supported C-Compiler:	Fujitsu F ² MC-16 Family Softune C Compiler V3.0
Memory models:	small and medium
Supported CPUs	Fujitsu MB90590 and derivatives (MB90520, MB90540, MB90545, MB90550, MB90560, MB90580, MB90590, MB90594, MB90595)

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

Technical Data sheet

ROM-Requirements

Conformance Class	Standard Status	Extended Status
BCC1	2316 Bytes	3623 Bytes
ECC2	3372 Bytes	5079 Bytes

RAM- Requirements

Conformance Class BCC1

Variant	Standard Status	Extended Status
System	62 Bytes	62 Bytes
per Task	16 Bytes	16 Bytes

Conformance Class ECC2

Variant	Standard Status	Extended Status
System	64 Bytes	64 Bytes
per Task	18-22 Bytes	18-22 Bytes
per Activation	4 Bytes	4 Bytes

Timer Usage

The operating system makes use of Reload timer 0 within the F16LX CPU.

Technical Data sheet

Time-Requirements

Variant: Conformance class BCC1

Attributes:

CPU-clock 16 MHz / internal memory

Tasks/Events ≤ 16

This Version uses only non-preemptive basic tasks on highest possible priorities.

Compile Options: Optimization Speed, Level 4

Function	Standard Status	Extended Status
ActivateTask	55 µs / 84 µs (1)	63 µs / 91 µs (1)
TerminateTask	47 µs	57 µs
EnterISR	2 µs	2 µs
LeaveISR	2 µs	2 µs
EnableInterrupt	9 µs	23 µs
DisableInterrupt	7 µs	22 µs
SetRelAlarm	56 µs	71 µs
CancelAlarm	37 µs	47 µs
StartOS	151 µs	164 µs
ShutdownOS	4 µs	4 µs

1) basic task / higher prior task

Technical Data sheet

Variant: Conformance Class ECC2

Attributes:

CPU-clock 16 MHz / internal memory

Tasks/Events ≤ 16

This Version uses only non-preemptive basic tasks on highest possible priorities.

Compile Options: Optimization Speed, Level 4

Function	Standard Status	Extended Status
ActivateTask	66 μs / 67 μs / 96 μs (1)	77 μs / 78 μs / 105 μs (1)
TerminateTask	59 μs	70 μs
EnterISR	2 μs	2 μs
LeaveISR	2 μs	2 μs
EnableInterrupt	9 μs	23 μs
DisableInterrupt	7 μs	22 μs
GetResource	35 μs / 87 μs (3)	43 μs / 95 μs (3)
ReleaseResource	66 μs / 50 μs (2)	105 μs / 64 μs (2)
SetEvent	35 μs / 87 μs (3)	43 μs / 95 μs (3)
ClearEvent	27 μs	39 μs
GetEvent	33 μs	43 μs
WaitEvent	29 μs	43 μs
SetRelAlarm	56 μs	71 μs
CancelAlarm	37 μs	47 μs
StartOS	171 μs	183 μs
ShutdownOS	4 μs	4 μs

1) basic task / extended task / higher prior task

2) other resources / resource Scheduler

3) to lower prior task / to higher prior task