ISO 17356-3:2005-11 (E)

Road vehicles - Open interface for embedded automotive applications - Part 3: OSEK/VDX Operating System (OS)

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Architecture of the operating system "OS" 1
3.1 Processing levels 1
3.2 Conformance classes 3
3.3 Relationship between OS and OSEKtime OS 4

4 Task management 5
4.1 Task concept 5
4.2 Task state model 5
4.3 Activating a task 8
4.4 Task switching mechanism 8
4.5 Task priority 8
4.6 Scheduling policy 9
4.7 Termination of tasks 12

5 Application modes 12
5.1 General 12
5.2 Scope of application modes 12
5.3 Start-up performance 13
5.4 Support for application modes 13

6 Interrupt processing 13
6.1 General 13

7 Event mechanism 14

8 Resource management 16
8.1 General 16
8.2 Behaviour during access to occupied resources 16
8.3 Restrictions when using resources 17
8.4 Scheduler as a resource 17
8.5 General problems with synchronization mechanisms 17
8.6 Priority Ceiling Protocol 18
8.7 Priority Ceiling Protocol with extensions for interrupt levels 19
8.8 Internal resources 21

9 Alarms 22
9.1 General 22
9.2 Counters 22
9.3 Alarm management 22
9.4 Alarm-callback routines 23

10 Messages 24

11 Error handling, tracing and debugging 24
11.1 Hook routines 24
11.2 Error handling 25
11.3 System start-up 26
11.4 System shutdown 28
11.5 Debugging 28

12 Description of system services 29
12.1 Definition of system objects 29
12.2 Conventions 29

13 Specification of OS services 31
13.1 Basics 31
13.2 Common data types 32
13.3 Task management 33
13.4 Interrupt handling 38
13.5 Resource management 41
13.6 Event control 43
13.7 Alarms 46
13.8 OS execution control 50
13.9 Hook routines 51

14 Implementation- and application-specific topics 54
14.1 General 54
14.2 Implementation hints 54
14.3 Application design hints 56
14.4 Implementation-specific tools 60