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Road vehicles — Open interface for embedded automotive applications —

Part 2: OSEK/VDX specifications for binding OS, COM and NM

Véhicules routiers — Interface ouverte pour applications automobiles embarquées —

Partie 2: Spécifications OSEK/VDX des liens OS, COM et NM

Reference number
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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
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Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 17356-2 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 3, *Electrical and electronic equipment*.

ISO 17356 consists of the following parts, under the general title *Road vehicles — Open interface for embedded automotive applications*:

— *Part 1: General structure and terms, definitions and abbreviated terms*

— *Part 2: OSEK/VDX specifications for binding OS, COM and NM*

— *Part 3: OSEK/VDX operating system (OS)*

— *Part 4: OSEK/VDX Communication (COM)*

— *Part 5: OSEK/VDX network management (NM)*

— *Part 6: OSEK/VDX implementation language (OIL)*

Road vehicles — Open interface for embedded automotive applications —

Part 2:
OSEK/VDX specifications for binding OS, COM and NM

1 Scope

This part of ISO 17356 gives the OSEK/VDX specifications for binding the OS (operating system), COM (communications) and NM (network management) of the open interface for embedded automotive applications. Its purpose is to prevent divergences from those ISO 17356 specifications — given in ISO 17356-3, ISO 17356-4 and ISO 17356-5 — by making it possible to refer to a single document. It specifies the variables (error codes, status types, etc.) programmable by the user to ensure that implementation of OS, COM and NM are coherent between each other.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 17356-1, *Road vehicles — Open interface for embedded automotive applications — Part 1: General structure and terms, definitions and abbreviated terms*

ISO 17356-3, *Road vehicles — Open interface for embedded automotive applications — Part 3: OSEK/VDX operating system (OS)*[1)]

ISO 17356-4, *Road vehicles — Open interface for embedded automotive applications — Part 4: OSEK/VDX Communication (COM)*[1)]

ISO 17356-5, *Road vehicles — Open interface for embedded automotive applications — Part 5: OSEK/VDX network management (NM)*[1)]

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17356-1 and the following apply.

3.1
binding
act of ensuring the coherence of implementations between the OS, COM and NM using specifications

NOTE These are referred to as *binding specifications*.

1) To be published.

4 Binding specifications

4.1 Definition of error codes

The various parts of ISO 17356 specify return codes of system functions to indicate different conditions which can arise during performing the system function. These return codes of type *StatusType* are defined as define-variables in the respective documentation. These return codes cannot be seen locally (e.g. they are used as input parameter to *ShutdownOS*); therefore unique values must be defined across the different specifications.

To accommodate this, ranges of error code values shall be defined which are assigned to the different parts of the specification. Each range consists of 32 values. Within each range, the first 16 values are consecutively defined as standard return values. Starting with the second half of the range, the second 16 values may be defined consecutively to inform about detection of implementation specific additional errors (stack overflow, corruption of internal lists, etc.).

Within the first range, the value “0” (E_OK) has a special meaning, indicating the successful completion of a system function without any specific return indication.

The ranges shall be assigned as follows:

0	**E_OK**
1 to 31	ISO 17356-3 — OS error codes
32 to 63	ISO 17356-4 — COM error codes
64 to 95	ISO 17356-5 — NM error codes
96 to 255	RESERVED

4.2 Definition of StatusType

The data type *StatusType* is used within all parts of ISO 17356. In order to be able to combine different parts of ISO 17356 from different suppliers — e.g. ISO 17356-4 COM from Supplier A and ISO 17356-5 NM from Supplier B — the definition of this type shall be handled with care to avoid conflicts.

Conflicts can arise if the definitions are different between the different parts of ISO 17356. Moreover, even if the definitions are the same, the compiler will create an error if the same type is defined more than once in one translation unit.

The definition of *StatusType* and of the constant E_OK shall be as follows in all parts of ISO 17356:

```
#ifndef  STATUSTYPEDEFINED

#define STATUSTYPEDEFINED

typedef unsigned char StatusType;

#define E_OK 0

#endif
```

These definitions shall be in the header files supplied provided by the suppliers of the respective parts.

NOTE If *StatusType* is not set to “unsigned char”, there is no guarantee that implementations of OS, COM and NM (see ISO 17356-3, ISO 17356-4, ISO 17356-5), used with software made by car manufacturers without verification of good fit between different sources, will be coherent between themselves.

4.3 Support of internal communication

The definition of messages for *internal*, *external* and *internal–external* communication shall be consistent and guaranteed. To cope with the situation where both kernels, i.e. COM and OS, are linked within a system, the following rules have been set up to clarify which kernel is to handle *internal* communication.

— If both COM and OS kernels are present, but one of CCCA or CCCB only is to be supported (no application message uses *external* communication) then the ISO 17356-3 OS kernel shall provide the functionality to handle internal messages, i.e. those using *internal* communication. CCCA and CCCB are defined in ISO 17356-4.

— If both COM and OS kernels are present but one of CCC0 onwards is to be supported to handle *external* communication *in addition* to internal communication, then the ISO 17356-4 COM kernel shall provide the functionality to handle internal messages, i.e. those using *internal* communication. CCC0 is defined in ISO 17356-4.

NOTE CCC stands for communication conformance classes.

Thusly it is guaranteed that definitions of data types used within internal and external message handling are consistent within a system.

To internally assure that the stated rules are followed, a #define symbol LOCALMESSAGESONLY is defined. Internal communication within ISO 17356-3 OS shall be implemented if this define-variable is set.

The #define symbol LOCALMESSAGESONLY shall be defined by the tool which generates a system out of an OIL file (see ISO 17356-6).

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