

# CANchkEDS

## Manual

Version 2.1.0

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## Certified Quality Management System

The Quality Management of Vector Informatik GmbH has been certified throughout since 1998-08-19:

- 2001-11-27  
according to DIN EN ISO 9001:2000-12  
Certificate number: 70 100 1498
- 1998-08-19  
according to DIN EN ISO 9001:1994-08  
Certificate number: 70 100 F 1498 TMS

## Typographic Conventions

<b>Note:</b>	Identifies important notes
•	Identifies enumerations (bullet items)
➔ '1.0 Introduction'	Identifies references to further chapters of this manual
<b>[OK]</b>	Notation for buttons in dialogs
<TAB>	Notation for keys on the computer keyboard
<Ctrl>+<Z>	Notation for keys of the computer keyboard which should be pressed simultaneously
<b>Add...</b> <b>File   Save as...</b>	Notation for menu, command and dialog names
on message 0x100	Notation for MS-DOS syntax or program code

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## Revision history of this document

Version	Editor	Description
0.1.0 dated 2000-05-17	Gw, Vector	initial revision
1.0.0 dated 2000-06-14	KI, Vector	Initial official revision
1.0.1 dated 2000-07-07	KI, Vector	Special handling for Sub-Index 0 of Mapping Tables
1.0.3 dated 2000-09-04	Gw, Vector	New error message 12
1.0.4 dated 2000-10-02	Gw, Vector	New error messages 54 and 55
1.0.5 dated 2002-12-04	KI, Vector	Better error messages for object links. Hint to revision history
1.1.0 dated 2001-02-27	KI, Vector	Changes of CiA Test specification
1.2.0 dated 2001-04-02	KI, Vector	Included extensions of CiA DSP-405 V2
1.2.1 dated 2001-08-14	KI, Vector	Check for version. New error code 41
1.2.2 dated 2001-12-17	Gw, Vector	New warning code 22
1.3.0 dated 2002-03-14	Gw, Vector	New error messages 14, 64, 65 and 66
1.3.1 dated 2002-12-05	Gw, Vector	New warning code 24
1.4.0 dated 2003-10-17	Gw, Vector	Revised document layout Support of profile and manufacturer specific data types New error messages 67 - 72 and 130 New warning messages 6, 50 and 26
1.5.0 dated 2004-06-15	Gw, Vector	New command line parameter -m New command line parameter -a Creation of a test result repository after each EDS check
2.0.0 dated 2006-08-27	Gw, Vector	New command line parameter -c New error message 42, 74 - 76 and 1600
2.1.0 dated 2007-02-02	Gw, Vector	New command line parameter -f New error message 131 New warning message 100

## 1 Scope

The usage of devices in communication networks requires configuration of the device parameters and communication facilities. CANopen defines a standardised way to access these parameters via the object dictionary.

To handle the complexity of CANopen systems Software Tools are required. This reduces the complexity of planning, configuration and analysis process and significantly increases the security of the system.

For this purpose Software Tools use the standardised file format EDS which describe CANopen devices. CANchkEDS is a program to check such EDS files. It detects different kinds of errors and writes them in a text file or to the standard output stream.

## **2 References**

- /1/: CiA DS-301, CANopen –Application Layer and Communication Profile  
Version 4.02 February 2002
- /2/: CiA DS-306, Electronic Data Sheet Specification for CANopen  
Revision 1.3 January 2005
- /3/: Appendix to CiA DS-301, Work Draft: Profile Database Specification for  
CANopen  
Revision 0.3 May 2000
- /4/: Appendix to CiA DS-301 V4.0, Test description for CANopen Devices  
Revision 0.1 August 1999



### 3 Usage

The program is started with

```
canchkeds -e <EDS file name> [-o <TXT file name>] [-m <move  
COBDB objects>] [-d <COBDB file name>] [-s <data type section>]  
[-v]
```

-e <EDS file name>	specifies EDS file to check.
-o <TXT file name>	specifies output ASCII file. If no output file is given, the messages are written to the standard output stream (optional).
-m <move COBDB objects>	all device profile objects (6000h-6FFFh) of the next specified CANopen profile database are shifted with this integer value (optional). This is useful for Multiple Device Modules.
-d <COBDB file name>	specifies CANopen profile database(s) (optional).
-a <auto base path>	specifies path of CANopen profile databases. The tool selects the necessary databases automatically by examination of object 0x1000 (optional).
-s <data type section>	section name of device profile or manufacturer specific data types. Because /2/ does not specify the location of those data types in the EDS, CANchkEDS use this section name. If no section name is given, the section [TypeDefinitions] is used (optional).
-c	specifies a single condition variable and its value (e.g. "- c testCond=1").
-v	print database object records in the standard output stream (optional). This is only for interest for database writers.
-f	enable DCF mode. If this mode the DCF specific sections and entries cause no error or warning.

Example:

```
canchkeds -e myeds.eds -d v301.codb -d v401.codb
```

Usage without databases checks the correctness of the EDS according to /2/ and /4/. The usage of databases allows to check compatibility to objects defined in specifications such as /1/ DS-301 or the Device Profiles. CAN in Automation e.V. provides such databases. Exemplars are in the delivery scope of CANchkEDS. For an official test always the databases of CiA should be used.

CANchkEDS can be called on the command line of a shell. But it also can be embedded into Integrated Development Environments such as MS Visual C++® or CodeWright®. For this purpose it uses the following output format:

```
<fileName>(<lineNumber>) : error<errorNumber> : <errorDe-  
scription>
```

or

```
<fileName>(<lineNumber>) : warning<warningNumber> : <warning-  
Description>
```

Example:

```
myeds.eds(2) : error 26: Entry "EDSVersion" in section  
[FileInfo] not found.
```

Most IDEs can be configured to interpret this output in order to directly jump to such error lines in the EDS file.

For EDS of Multiple Device Modules the object range 6000h to 67FFh of a single device is shifted with 800h. Therefore parameter m has to be used before the database of the shifted area is specified. Please note that only device profile objects (index 6000h – 6FFFh) are shifted.

E.g. if the profile for Drives and Motion Control is located at 0x6800 in the EDS we have to shift the database objects of v402.codb by 800h:

```
... -d v301.codb -d v401.codb -m 0x800 -d v402.codb
```

After an EDS check a test result repository is created. CANchkEDS creates a file ("eds\_repo.ini") in the directory of the EDS, containing the results of all EDS files in that directory.

## 4 Errors and Warnings

CANchkEDS generates different error and warning messages, which are written to the standard output stream or into the ASCII output file.

### 4.1 Error Messages

Nr.	Error message	Error description
1	Section [...] not found.	Section doesn't exist in the EDS because section name has wrong spelling or doesn't exist.
2	Incorrect brackets in section [...].	Section has no or incorrect enclosing brackets. e.g.    [sectionname) OR sectionname]
3	Illegal position of section name [...].	Left bracket of a section isn't in the leftmost column.
4	Duplicate section [...].	Two or more sections in the EDS have the same section name.  e.g.    [1004ObjectLinks] ObjectLinks=1; 1=1004;  [1004ObjectLinks] ObjectLinks=1; 1=1007;  ;an error is produced because two identical ;sections exist. Here the function reading ;the EDS overwrite value '1004' of the entry ;with value '1007'. This could produce ;additional confusing errors.
5	Insufficient entries in section [...].	Value in the first entry is bigger than number of following entries.  e.g.    [Comments] Lines=2 Line1=second comment line 'Line2' is missing

Nr.	Error message	Error description
6	Insufficient sub objects in main section [...].	<p>Number of sub objects in the main object is bigger than number of following sub objects.</p> <p>e.g.    [1004]                 SubNumber=2                 ...                 [1004sub0]                 ...                 ;section [1004sub1] is missing</p>
7	Link [...] related to non-existent object.	<p>Linked section related to non-existent object.</p> <p>e.g.    [0001ObjectLinks]                 ...                 ;object [0001] doesn't exist</p>
8	Access type in section [...] contradicts direction of PDO section [...].	<p>Access type contradicts direction of the PDO section. An object mapped to a transmitting PDO could have access type <i>ro</i>, <i>const</i> or <i>rww</i>. An object mapped to a receiving PDO could have access type <i>wo</i> or <i>rww</i>.</p> <p>e.g.    ;Receive PDO Mapping Parameter                 [1600sub1]                 DefaultValue=0x62000108                 ...                 [6200sub1]                 AccessType=RO                 PDOMapping=1                 ...                 ;object mapped to the receive PDO shall have                 ;access type wo or rww</p>
9	Mandatory section [...] not found.	An object in the database is marked as mandatory but it doesn't exist in the EDS.
10	Index in section [...] appears also in section [...].	<p>Index in a fixed module section appears also in another non-module section.</p> <p>e.g.    [6000]                 ...                 [M1Fixed6000]                 ...                 ;module section has same index 6000</p>
11	Mapping parameter section [...] shall have no gaps in the sub object list.	<p>A mapping parameter section shall have no gaps in the list of sub objects.</p> <p>e.g.    [1600]                 ...                 [1600sub0]                 ...                 [1600sub2]                 ...                 ;if section [1600] has two sub objects, the                 ;sub objects must have sub index 0 and 1</p>

Nr.	Error message	Error description
12	Section name [...] has an illegal character (e.g. leading 0 or 0x is not allowed).	<p>Section name has an illegal character. Note that a leading "0x" and leading "0" is not allowed for index and sub index. Also not allowed are whitespaces.</p> <p>e.g.</p> <pre>[0x1000] ; "0x" is not allowed  [1600sub01] ;leading "0" is not allowed for the sub index  [1600 sub2] ;whitespace is not allowed  [M01Comments] ;leading "0" is not allowed for module number</pre>
13	Object ... linked in section [...] does not exist."	<p>A link points to an object, which doesn't exist.</p> <p>e.g.</p> <pre>[1281ObjectLinks] ObjectLinks=1 l=10 ;if object 10 does not exist, this error is ;generated</pre>
14	Section ... of structured object [...] not found.	<p>Sub object 0 of a structured object is missing.</p> <p>e.g.</p> <pre>[1600] ParameterName=Receive PDO Mapping Parameter ObjectType=0x9 SubNumber=0 ;Structured object has no sub objects. But ;sub object 0 is mandatory</pre> <p>e.g.</p> <pre>[1600] ParameterName=Receive PDO Mapping Parameter ObjectType=0x9 SubNumber=1  [1600sub1] ... ;Structured object has a sub object. But ;sub object 0 is missing</pre>
21	Illegal format of entry "... " in section [...].	<p>Value in entry has an illegal format.</p> <p>e.g.</p> <pre>SubNumber=1X ... ;value is no numerical number, so it can't be ;evaluated</pre> <p>e.g.</p> <pre>DefaultValue=018 ... ;the leading zero describes an octal number. ;But value is no octal number because octal ;numbers does not contain single numbers ;bigger than 7. ;solution for this example: DefaultValue=020</pre> <p>e.g.</p> <pre>OrderCode= ... ;if an entry is mandatory a value has to be ;declared. ;solution for this example: 'OrderCode=0x7'</pre>

Nr.	Error message	Error description
22	Value in entry "..." in section [...] is outside of valid area.	Value in entry is out of specific value range. e.g.     SubNumber=256 ... ;value area of entry 'SubNumber' is unsigned8 ;and its value range is [0,255]
23	Too many characters in entry "..." in section [...].	Value in entry has too many characters. Number of characters of key name plus number of characters of value has to be less than 255.  e.g.     value of entry 'VendorName' must not have ;more than 244 characters
24	Unknown entry "..." in section [...].	Unknown entry in an info section.
25	Duplicate entry "..." in section [...].	Two or more entries in a section have the same key name.
26	Entry "..." in section [...] not found.	Mandatory entry doesn't exist in specific section.
27	Entry "..." in section [...] is not allowed.	Entry is not allowed in specific section. Some object types do not support particular entries e.g. objects of type <i>VAR</i> must not have an entry <i>SubNumber</i>
28	Value in entry "..." in section [...] is outside of valid object area.	Object value of an entry is out of specific value range. e.g.     [OptionalObjects] ... 20=0x2000; ;this index is outside of the valid index ;range for optional objects
29	Illegal value in entry "..." in section [...].	Value of an entry has wrong format or there is no value although the entry is mandatory.
30	Value in entry "..." in section [...] is not equal to database (...).	Value of an entry in the EDS differs from the value in the corresponding database entry.
31	Complex data type in entry "..." in section [...] is not allowed.	A complex data type of object type <i>DEF-STRUCT</i> should not exist in an EDS.
32	Data type in entry "..." in section [...] is reserved.	A reserved index pointing to a data type should not exist in an EDS.
33	Database requires description of sub objects in section [...].	If the database defines a minimal number of elements, a description of sub objects is needed ( <i>SubNumber=...</i> or <i>CompactSubObj=...</i> )

Nr.	Error message	Error description
34	Description of sub objects in section [...] is missing.	Object type is ARRAY, RECORD or DEF-STRUCT but object has no description of sub objects.  e.g. <pre>[1004] ParameterName=PredefinedErrorField ObjectType=0x8 ;object type ARRAY ;entry SubNumber is missing  [1004sub1] ...</pre>
35	Mapped object [...] shall have value 1 in entry "PDOMapping".	The object is mapped but value of entry <i>PDO-Mapping</i> is 0.  e.g. <pre>[1600sub1] DefaultValue=0x62000108 ...  [6200sub1] PDOMapping=0 ... ;object is mapped but have mapping value 0</pre>
36	Value in entry "DefaultValue" in section [...] is not identical to number of last sub object.	Value of <i>DefaultValue</i> is unequal the highest sub index implemented.  e.g. <pre>[1026] SubNumber=2 ...  [1026sub0] DefaultValue=1 ...  [1026sub4] ...  ;Default value in section [1026sub0] has to ;be 4</pre>
37	Duplicate index in entry "..." in section [...].	Index in a section is multiple used.  e.g. <pre>[OptionalObjects] NrOfEntries=2 1=1003 2=1003 ;index 1003 is multiple used</pre>
38	Maximal number of sub objects of section [...] is smaller in database (...).	Value of <i>SubNumber</i> is bigger than number of entry <i>MaxElements</i> in the database.  e.g. <pre>[1280] SubNumber=5 ... ;number of MaxElements in database is 4</pre>

Nr.	Error message	Error description
39	Minimal number of sub objects in section [...] is bigger in database (...).	Value of <i>SubNumber</i> is less than number of entry <i>MinElements</i> in the database. e.g. <pre>[1280] SubNumber=3 ... ;number of MinElements in database is 4</pre>
40	Entry "..." in section [...] has no corresponding sub object.	An entry in a name section has no corresponding sub object. e.g. <pre>[6000] ... CompactSubObj=2  [6000Name] ... 2=NameofSubindex2  ;only sub object 0 and 1 are defined. So a ;name for the unknown entry 2 is not correct</pre>
41	Entry EDSVersion in section [FileInfo] missing or value<4.0.	The check relates to EDS files of version 4.0 or higher.
42	Data type of section [...] differs from other data types in the array	The sub objects of an array must have the same data type. Otherwise this error is reported. e.g. <pre>[1003] ParameterName=Pre-defined Error Field ObjectType=0x8 SubNumber=3  [1003sub0] ...  [1003sub1] ... DataType=0x0006  [1003sub2] ... DataType=0x0007  ;data types of [1003sub1] and [1003sub1] ;are different</pre>
51	Module description "..." points to fixed and extended objects too.	A module description points to fixed and extension objects too. e.g. <pre>[M1FixedObjects] ... [M1SubExtends] ... ;it is not allowed to define fixed and ;extended objects for the same index ;(here:1).</pre>



Nr.	Error message	Error description
52	Fixed or extended object description [...] not found.	<p>A fixed or extension module description is expected but not found.</p> <p>e.g.    [SupportedModules]           NrOfEntries=2;</p> <p>          [M2SubExtends]           ...           ;section [M1FixedObjects] or [M1SubExtends]           ;is missing</p>
53	Multiple used object [...] differs in entry "...".	<p>If several modules contain the same fixed objects, their attributes shall be equal.</p> <p>e.g.    [M1Fixed6423]           ...           DataType=0x0007           ...           [M5Fixed6423]           ...           DataType=0x0008           ...           ;the same fixed object has different data           ;types</p>
54	Module list [1027] is missing.	If the section [SupportedModules] exists, object [1027] shall exist too.
55	Module list [1027] is redundant.	If the object [1027] exists, section [SupportedModules] shall exist too.
61	There is no suitable PDO for section [...].	<p>If no RxPDO or no TxPDO exists, an object with entry <i>PDOMapping=1</i> only shall have corresponding access types.</p> <p>e.g.    ;condition: in the EDS exist no Transmit PDO           ;Mapping Parameter.           [6000sub1]           ...           AccessType=ro           PDOMapping=1           ...           ;for these attributes no PDO is available</p> <p>This error is also reported if the granularity is 0 and not all mappable objects are assigned to existing PDOs.</p>
62	Number in entry "..." in section [DeviceInfo] differs from number of supported PDOs.	<p>If no compact PDOs exist, the number of PDOs given in section DeviceInfo differs from the number of existing PDOs.</p> <p>e.g.    [DeviceInfo]           NrOfTXPDO=0;           ...           [1A00]           ;Transmit PDO Mapping Parameter           ...           ;a PDO exists although NrOfTXPDO is null</p>

Nr.	Error message	Error description
63	Mapped object "..." does not exist.	A mapped object doesn't exist in the EDS file.  e.g.     ;Receive PDO Mapping Parameter [1600sub1] DefaultValue=0x62000108 ...  ;if mapped section [6200sub1] doesn't exist, ;this error is reported
64	Total length of mapped objects in section [...] is bigger than 8 Byte.	The total length of mapped objects is bigger than 8 Byte.  e.g.     [1600] ...  [1600sub0] ...  [1600sub1] DefaultValue=0x50000040 ...  [1600sub2] DefaultValue=0x50020001 ... ;total length of 65 Bit is too big
65	Object length in sec- tion [...] doesn't match data type of mapped object.	The object length doesn't match data type of mapped object.  e.g.     ;Receive PDO Mapping Parameter [1600sub1] DefaultValue=0x50010040 ...  [5001] DataType=0x0007 ... ;data type of mapped object is Unsigned32 and ;object length in the mapping parameter is ;64 bit.
66	Data type in section [...] is not mappable.	The given data type is not mappable but the object is mapped.  e.g.     [1600sub1] DefaultValue=0x50030020 ...  [5003] DataType=0x0009 ;data type 'Visible String' is not mappable

Nr.	Error message	Error description
67	Access type in section [...] is writable although sub object 0 is constant or read-only.	<p>For changing the PDO mapping first the PDO has to be deleted, the sub-index 0 must be set to 0 (mapping is deactivated). Then the objects can be remapped. If the access type of sub-index 0 of a PDO mapping parameter object is constant or read-only no variable mapping is supported and therefore the access type of further sub-indexes have to be constant or read-only.</p> <p>e.g.</p> <pre>[1600sub0] AccessType=ro ...  [1600sub1] AccessType=rw ;access type have to be const or ro because ;object does not support variable mapping.</pre>
68	Access type in section [...] is constant or read-only although sub object 0 is writeable.	<p>For changing the PDO mapping first the PDO has to be deleted, the sub-index 0 must be set to 0 (mapping is deactivated). Then the objects can be remapped. If the access type of sub-index 0 of a PDO mapping parameter object is writable then variable mapping is supported and therefore the access type of further sub-indexes have to be writable too.</p> <p>e.g.</p> <pre>[1600sub0] AccessType=rw ...  [1600sub1] AccessType=ro ;access type have to be writable too.</pre>
69	Entry "Granularity" in section [DeviceInfo] has to be 0 because all PDOs support constant mapping.	<p>No PDO parameter object supports variable mapping. Therefore the granularity has to be 0.</p> <p>e.g.</p> <pre>;access type all sub-indexes of PDO mapping ;parameter objects is ro or const  [DeviceInfo] Granularity=8 ;granularity has to be 0 because mapping is ;not modifiable.</pre> <p>Note: This error is not generated if some PDOs support variable mapping and others don't support it because this case is not specified clearly.</p>

Nr.	Error message	Error description
70	Entry "Granularity" in section [DeviceInfo] has to be bigger than 0 because all PDOs support variable mapping.	<p>All PDO parameter objects supports variable mapping. Therefore the granularity has to be bigger than 0.</p> <p>e.g.     ;all sub-indexes of PDO mapping parameter           ;objects are writable</p> <p>[DeviceInfo] Granularity=0 ;granularity has to be bigger than 0 because ;mapping is modifiable.</p> <p>Note: This error is not generated if some PDOs support variable mapping and others don't support it because this case is not specified clearly.</p>
71	Number of R/TxPDOs in entry "DefaultValue" in section [1004sub0] differs from number of R/TxPDOs in section [DeviceInfo].	<p>In object 0x1004 the default value of sub index 0 describes the overall number PDOs supported. This value has to be equal to the number of PDOs in section [DeviceInfo].</p> <p>e.g.     [DeviceInfo]           NrOfRxPDO=3           NrOfTxPDO=2           ...</p> <p>[1004sub0] DefaultValue=0x30003 ... ;the LSB of the default value defines the ;number of TxPDOs and the MSB defines the ;number of RxPDOs. Therefore the correct ;value must be 0x30002.</p>
72	Number of R/TxPDOs in entry "DefaultValue" in section [1004subX] is bigger than number of R/TxPDOs in section [DeviceInfo].	<p>In object 0x1004 the default value of sub index 1 describes the number of synchronous PDOs and sub index 2 the number of asynchrony PDOs. These values have to be smaller or equal to the number of PDOs in section [DeviceInfo].</p> <p>e.g.     [DeviceInfo]           NrOfRxPDO=1           NrOfTxPDO=2           ...</p> <p>[1004sub1] DefaultValue=0x10003 ... ;the LSB of the default value defines the ;number of synchronous TxPDOs and the MSB ;defines the number of asynchronous RxPDOs. ;Therefore the correct value must be 0x10002, ;0x10001, 0x10000, 2, 1 or 0.</p>

Nr.	Error message	Error description
73	Entry "GroupMessaging" in section [DeviceInfo] has to be set to 1 because there are multiplexed PDOs.	<p>There are multiplexed PDOs (MPDOs) in the object dictionary. Therefore entry [GroupMessaging] has to be set to 1.</p> <p>e.g.</p> <pre>[DeviceInfo] GroupMessaging=0 ...  [1600sub0] DefaultValue=255 ... ;if the default value of sub object 0 of a ;PDO mapping parameter is 254 or 255 then ;this PDO is a multiplexed PDO.</pre>
74	Invalid use of dummy mapping in TxPDO section [...].	<p>Dummy mapping is used in a Tx PDO</p> <p>e.g.</p> <pre>[1a00sub1] ... DefaultValue=0x00020008 ... ;it is not allowed to use dummy mapping in a ;Tx PDO</pre>
75	Object length in section [...] is smaller than granularity.	<p>The length of a mapped object is smaller than the granularity of the device.</p> <p>e.g.</p> <pre>[DeviceInfo] ... Granularity=64  [1a00sub1] ... DefaultValue=0x20000120  [2000sub1] ... DataType=0x0007  ;granularity is 64 but a object with data ;type UNSIGNED32 is mapped</pre>
76	Length of selected dummy mapping entry "DummyXXX" in section [DummyUsage] is smaller than granularity.	<p>Dummy mapping of a data type smaller than granularity is enabled.</p> <p>e.g.</p> <pre>[DeviceInfo] Granularity=8 ...  [DummyUsage] Dummy0001=1 ...  ;It is not allowed to use map to map a ;BOOLEAN if granularity is 8.</pre>

Nr.	Error message	Error description
130	Entry "DefaultValue" in section [1018subX] differs from value "..." of section [DeviceInfo].	<p>The values <i>VendorNumber</i> and <i>ProductNumber</i> of section [DeviceInfo] must agree with the values in object 0x1018.</p> <p>e.g.</p> <pre> [DeviceInfo] VendorNumber=5 ProductNumber=2 ...  ;Vendor ID [1018sub1] DefaultValue=5 ... ;Product code [1018sub2] DefaultValue=2 ...  ;default values in 1018sub1 and 1018sub2 are ;not equal to vendor and product number in ;[DeviceInfo]. </pre>
131	Major revision version number of entry "..." in section [...] differs from major revision number of entry "Revision-Number" in section [DeviceInfo].	<p>The major revision number of value <i>Revision-Number</i> (Bit 16-31) of section [DeviceInfo] must agree with the major revision number in object 0x1018.</p> <p>e.g.</p> <pre> [DeviceInfo] RevisionNumber=0x00010000 ...  ;Revision number [1018sub3] DefaultValue=0x00020000 ...  ;major revision number 0x0002 of 1018sub3 is ;not equal to major revision number in ;[DeviceInfo]. </pre>
1600	Condition of CODB description in invalid syntax (... , ... , ...)	Syntax of the CODB description has invalid syntax.

## 4.2 Warning Messages

Warning messages can be ignored in regarding the conformance test. They are useful hints to possible problems in the EDS, that may lead to conflicts in device configuration.

Nr.	Warning message	Warning description
1	Unknown or not used section [...].	<p>After all checks a section is found which has not been checked, because this section is unknown or not used.</p> <p>e.g.    [Tools]                 ...                 ;This section is unknown and produce this warning</p> <p>e.g.    [1010]                 SubNumber=1                 ObjectType=0x7;                 ...                 [1010sub0]                 ...                 ;an error message reports that entry                 ;'SubNumber' is not allowed, because object                 ;type is VAR. Therefore no sub objects are                 ;checked and section [1010sub0] is not                 ;checked.</p>
2	Redundant sub object [...].	<p>More entries are found than expected.</p> <p>e.g.    [1010]                 SubNumber=2                 ...                 [1010sub0]                 ...                 [1010sub1]                 ...                 [1010sub2]                 ...                 ;the last sub-object is redundant and causes                 ;the warning</p>
3	Illegal enumeration in section [...].	<p>Enumeration is not correct.</p> <p>e.g.    [Comments]                 Lines=2                 Line1=correct line                 Line3=incorrect enumeration. Has to be                 ;'Line2=..'</p>
4	Access type in section [...] has no clear mapping direction.	<p>Object is mappable and access type is <i>rw</i>. This could possibly cause mapping problems. Instead of <i>rw</i> attributes <i>rwr</i> or <i>rww</i> should be used.</p> <p>e.g.    [6000sub1]                 ...                 AccessType=rw                 PDOMapping=1                 ...                 ;instead of <i>rw</i> the arguments <i>rwr</i> or <i>rww</i>                 ;should be used.</p>

Nr.	Warning message	Warning description
5	Access type in section [...] has no clear mapping direction concerning PDO section [...].	Access type in mapped section has no clear mapping direction concerning the PDO section. e.g. <pre>;Receive PDO Mapping Parameter [1600sub1] DefaultValue=0x62000108 ...  [6200sub1] AccessType=rw PDOMapping=1 ... ;object mapped to the receive PDO shall have ;access type wo or rww. If access type is rw ;the mapping direction is not clear and ;possibly can cause mapping problems.</pre>
6	There are dynamic channels although entry "Dynamic-Channels-Supported" in section [DeviceInfo] is 0.	There is a section [DynamicChannels] although the device does not support dynamic channels (according to entry <i>DynamicChannels-Supported</i> of section [DeviceInfo]). e.g. <pre>[DeviceInfo] DynamicChannelsSupported=0 ...  [DynamicChannels] ... ;There are dynamic channels defined although ;the device doesn't support them.</pre>
21	Unknown or not used entry "..." in section [...].	After all checks an entry is found which has not been checked, because this entry is unknown or not used.
22	Reserved entry "..." in section [...].	For compatibility reasons, the entries <i>Product-Version</i> , <i>LMT_ManufacturerName</i> , <i>LMT_ProductName</i> , <i>Extended-BootUpMaster</i> , <i>ExtendedBootUpSlave</i> and <i>ProductRevision</i> in section [DeviceInfo] are reserved.
23	Data type in entry "..." in section [...] can't be checked.	Manufacturer specific data types and device profile specific standard data types can't be checked.
24	"Entry "..." in section [...] not found.	An important but not mandatory entry doesn't exist in specific section. This message is shown e.g. if entry <i>DefaultValue</i> is missing in sub object 0.



Nr.	Warning message	Warning description
25	Value in entry "DefaultValue" in section [...] is not identical to number of last sub object.	<p>This warning is generated for PDO Mapping parameters if the value of <i>DefaultValue</i> is unequal the highest sub index implemented and it granularity is 0 (no variable mapping).</p> <p>e.g.</p> <pre>[DeviceInfo] Granularity=0 ...  [1600] SubNumber=2 ...  [1600sub0] DefaultValue=0 ...  [1600sub1] ...</pre>
26	Access type of section [...] is writable although COB-ID of PDO [...] is constant or read-only.	<p>For changing the PDO mapping first the PDO has to be deleted, the sub-index 0 must be set to 0 (mapping is deactivated). Then the objects can be remapped. After all objects are mapped sub index 0 is set to the valid number of mapped objects. Finally writing to its communication parameter COB-ID will create the PDO.</p> <p>e.g.</p> <pre>[1400sub1] AccessType=ro ... ;communication parameter COB-ID is constant  [1600sub0] AccessType=rw ... ;because associated COB-ID is constant it ;makes no sense to allow write access to the ;mapping parameter object.</pre>
50	Number of RxPDOs and TxPDOs in section [DeviceInfo] is 0 but compact PDOs are defined.	<p>Although it is denoted that the device supports compact PDOs the number of PDOs is zero.</p> <p>e.g.</p> <pre>[DeviceInfo] CompactPDO=3 NrOfRXPDO=0 NrOfTXPDO=0</pre>
130	Minor revision version number of entry "..." in section [...] differs from major revision number of entry "RevisionNumber" in section [DeviceInfo].	<p>The minor revision number of value <i>RevisionNumber</i> (Bit 0-15) of section [DeviceInfo] must agree with the major revision number in object 0x1018.</p> <p>e.g.</p> <pre>[DeviceInfo] RevisionNumber=0x00010000 ...  ;Revision number [1018sub3] DefaultValue=0x00010001 ...</pre>

		<pre>;minor revision number 1 of 1018sub3 is ;not equal to major revision number in ;[DeviceInfo].</pre>
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## 5 Test remarks

The test procedure follows closely the CiA test specification /4/ and EDS specification /2/. In some cases the specification gave no clear way to do the test. In the following additional procedures are described.

### 5.1 Entry Value Interpretation

A short view about possible entries

- a) [empty]                      missing entry
- b) keyname=                    an entry without value is interpreted the same way as a missing entry
- c) keyname=value              entry with value

### 5.2 Checking value ranges of data types

Specification:              Area of data types is 0x001 – 0x025F

CANchkEDS:                Differentiation between several types

Index area	Kind of data type	Message
0x0020 – 0x0023 0x0080 – 0x009F	complex data types	Error: Complex data types are not allowed in EDS objects
0x0040 – 0x007F	specific data types	Since version 1.4.0 of CANchkEDS specific data types are supported.
0x000E 0x0017 0x001C – 0x001F 0x0024 – 0x003F	reserved data types	Error: Reserved data types are not allowed

### 5.3 Test for presence of entries in object sections

Specification:

According to the object type the entries in object sections are mandatory (m), optional (o) or not supported (n).

	<b>DEFTYPE VAR</b>	<b>DEFSTRUCT* ARRAY* RECORD*</b>	<b>DEFSTRUCT** ARRAY** RECORD**</b>	<b>DOMAIN</b>
<i>Parameter-Name</i>	m	m	m	m
<i>ObjectType</i>	o	m	m	m
<i>DataType</i>	m	n	m	o
<i>AccessType</i>	m	n	m	o
<i>DefaultValue</i>	o	n	o	o
<i>PDOMapping</i>	o	n	o	o
<i>SubNumber</i>	n	m	n	o
<i>LowLimit</i>	o	n	o	o
<i>HighLimit</i>	o	n	o	o
<i>ObjFlags</i>	o	o	o	o
<i>CompactSubObj</i>	n	n	m	n

\* without CompactSubObj

\*\* with non-zero CompactSubObj

CANchkEDS:

If an object is checked, first the entry *ObjectType* is read. Based on this value, other entries are checked for presence.

In principle it is possible, that a list of sub-objects does not have consecutive Sub-Indexes. If entry *DefaultValue* of Sub-Index 0 exists and its value doesn't store the highest Sub-Index implemented, an error is generated. There is no error, if entry *DefaultValue* doesn't exist (and according to the database does not need to exist).

#### 5.4 Identical entries in different databases

Often several databases are used. If the same object exists in different databases, the values of the last declared database are used. The values of the other databases are ignored. Therefore the databases should be ordered by their specialisation. For example first v301.codb, then v401.codb.

## 5.5 Module Description

For a section of extension objects [MxSubExtxxxx] the description of the object type is redundant, because all objects have to have object type ARRAY. The comparison of database and EDS is done with the database sub object having sub index 1.

## 5.6 Formula

If an object doesn't exist in the database, a formula of the accompanying object entry is not checked. Otherwise the formula string of the database entry is compared with the string of the EDS entry and if the strings are not identical an error messages is generated.

## 5.7 Object Links

CANchkEDS checks whether an index in the section name of an object link points to an existing object. Otherwise an error is reported.

## 5.8 Gaps

According to the EDS specification /2/ it is possible to leave gaps in the sub object list. CANchkEDS does not allow gaps in mapping parameter objects (0x1600-0x17FF and 0x1A00-0x1BFF).

## **6 Appendix**

### **6.1 Revision History**

The revision history of the software is reported in the file README.TXT.

### **6.2 Trademarks**

CANopen is a registered trademark of CAN in Automation e.V.

MS-Windows is a registered trademark of the Microsoft Corp.

MS Visual C++ is a registered trademark of the Microsoft Corp.

CodeWright is a registered trademark of Premia Corporation

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