

User Manual

CANchKEDS

Version 2.2

English

Imprint

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1 Introduction

In this chapter you find the following information:

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	Access helps and conventions	
	Certification	
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1.1 About this user manual

1.1.1 Access helps and conventions








To find information quickly

The user manual provides you the following access helps:

- At the beginning of each chapter you will find a summary of the contents,
- in the header you can see in which chapter and paragraph you are,
- in the footer you can see to which version the user manual replies,
- at the end of the user manual you will find an index, with whose help you will quickly find information.

Conventions

In the two following charts you will find the conventions used in the user manual regarding utilized spellings and symbols.

Style	Utilization
bold	Blocks, surface elements, window- and dialog names of the software. Accentuation of warnings and advices. [OK] Push buttons in brackets File Save Notation for menus and menu entries
CANchkEDS	Legally protected proper names and side notes.
Source code	File name and source code.
Hyperlink	Hyperlinks and references.
<STRG>+<S>	Notation for shortcuts.
Symbol	Utilization
	Here you can obtain supplemental information.
	This symbol calls your attention to warnings.
	Here you can find additional information.
	Here is an example that has been prepared for you.
	Step-by-step instructions provide assistance at these points.
	Instructions on editing files are found at these points.
	This symbol warns you not to edit the specified file.

1.1.2 Certification

Certified Quality Management System Vector Informatik GmbH has ISO 9001:2000 certification. The ISO standard is a globally recognized standard.

1.1.3 Warranty

Restriction of warranty We reserve the right to change the contents of the documentation and the software without notice. Vector Informatik GmbH assumes no liability for correct contents or damages which are resulted from the usage of the documentation. We are grateful for references to mistakes or for suggestions for improvement to be able to offer you even more efficient products in the future.

1.1.4 Support

You need support? You can get through to our hotline at the phone number +49 711 80670-200 or you write an email to the [CANopen-Support](#).

1.1.5 Registered trademarks

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- Outlook, Windows, Windows XP, Windows 2000, Windows NT and MS Visual C++ are trademarks of the Microsoft Corporation.
- CANopen is a registered trademark of CAN in Automation e.V.
- CodeWright is a registered trademark of Premia Corporation

2 Basics

In this chapter you find the following information:

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2.2	References	page 10

2.1 Scope

CANopen

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.

CANchkEDS

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

2.2 References

References

/1/ CiA301, CANopen –Application Layer and Communication Profile Version 4.02 February 2002

/2/ CiA306, Electronic Data Sheet Specification for CANopen Revision 1.3 January 2005

/3/ Appendix to CiA301, Work Draft: Profile Database Specification for CANopen Revision 0.3 May 2000

/4/ Appendix to CiA301 V4.0, Test description for CANopen Devices Revision 0.1 August 1999

3 Usage

In this chapter you find the following information:

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3.3	Usage from IDEs	page 13
3.4	Multiple device modules	page 13
3.5	eds_repo.ini	page 13

3.1 How to start

The program is started with

```
canchkeds -e <EDS file name> [-o <TXT file name>] [-m <move
COBD objects>] [-d <COBD 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 COBD 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 <COBD 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 1000h (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
```

3.2 Usage without database

Usage without databases checks the correctness of the EDS according to [/2/](#) and [/4/](#). The usage of databases allows checking compatibility to objects defined in specifications such as [/1/](#) 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.

3.3 Usage from IDEs

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> :  
<errorDescription>
```

or

```
<fileName>(<lineNumber>) : warning<warningNumber> :  
<warningDescription>
```



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.

3.4 Multiple device modules

For EDS files 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.



Example:

If the profile for Drives and Motion Control is located at 6800h 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
```



Info:

Please note that only device profile objects (index 6000h – 6FFFh) are shifted.

3.5 eds_repo.ini

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

In this chapter you find the following information:

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4.1 General

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

4.2 Error messages

4.2.1 Error 1

Error message Section [...] not found.

Error description Section doesn't exist in the EDS because section name has wrong spelling or doesn't exist.

4.2.2 Error 2

Error message Incorrect brackets in section [...].

Error description Section has no or incorrect enclosing brackets.



Example:

```
[sectionname) or sectionname]
```

4.2.3 Error 3

Error message Illegal position of section name [...].

Error description Left bracket of a section isn't in the leftmost column.

4.2.4 Error 4

Error message Duplicate section [...].

Error description Two or more sections in the EDS have the same section name.



Example:

```
[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.
```

4.2.5 Error 5

Error message Insufficient entries in section [...].

Error description Value in the first entry is bigger than number of following entries.



Example:

```
[Comments]
Lines=2
```

4.2.6 Error 6

Error message Insufficient sub objects in main section [...].

Error description Number of sub objects in the main object is bigger than number of following sub objects.



Example:

```
[1004]
SubNumber=2
...
[1004sub0]
...
;section [1004sub1] is missing
```

4.2.7 Error 7

Error message Link [...] related to non-existent object.

Error description Linked section related to non-existent object.



Example:

```
[0001ObjectLinks]
...
;object [0001] doesn't exist
```

4.2.8 Error 8

Error message Access type in section [...] contradicts direction of PDO section [...].

Error description Access type contradicts direction of the PDO section. An object mapped to a transmitting PDO could have access type **ro**, **const** or **rwr**. An object mapped to a receiving PDO could have access type **wo** or **rww**.

**Example:**

```
;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
```

4.2.9 Error 9

Error message Mandatory section [...] not found.

Error description An object in the database is marked as mandatory but it doesn't exist in the EDS.

4.2.10 Error 10

Error message Index in section [...] appears also in section [...].

Error description Index in a fixed module section appears also in another non-module section.

**Example:**

```
[6000]
...

[M1Fixed6000]
...
;module section has same index 6000
```

4.2.11 Error 11

Error message Mapping parameter section [...] shall have no gaps in the sub object list.

Error description A mapping parameter section shall have no gaps in the list of sub objects.

**Example:**

```
[1600]
...

[1600sub0]
...

[1600sub2]
...
;if section [1600] has two sub objects, the sub objects must
```

```
;have sub index 0 and 1
```

4.2.12 Error 12

Error message Section name [...] has an illegal character (e.g. leading 0 or 0x is not allowed).

Error description 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 white spaces.



Example:

```
[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
```

4.2.13 Error 13

Error message Object ... linked in section [...] does not exist.

Error description A link points to an object, which doesn't exist.



Example:

```
[1281ObjectLinks]
ObjectLinks=1
1=10
;if object 10 does not exist, this error is generated
```

4.2.14 Error 14

Error message Section ... of structured object [...] not found.

Error description Sub object 0 of a structured object is missing.



Example:

```
[1600]
ParameterName=Receive PDO Mapping Parameter
ObjectType=0x9
SubNumber=0
;Structured object has no sub objects. But sub object 0 is
mandatory.
```

**Example:**

```
[1600]
ParameterName=Receive PDO Mapping Parameter
ObjectType=0x9
SubNumber=1

[1600sub1]
...
;Structured object has a sub object. But sub object 0 is
;missing
```

4.2.15 Error 21

Error message Illegal format of entry "..." in section [...].

Error description Value in entry has an illegal format.

**Example:**

```
SubNumber=1X
...
;value is no numerical number, so it can't be evaluated
```

**Example:**

```
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
```

**Example:**

```
OrderCode=
...
;if an entry is mandatory a value has to be ;declared.
;solution for this example: 'OrderCode=0x7'
```

4.2.16 Error 22

Error message Value in entry "..." in section [...] is outside of valid area.

Error description Value in entry is out of specific value range.

**Example:**

```
SubNumber=256
...
;value area of entry 'SubNumber' is unsigned8 and its value
;range is [0,255]
```

4.2.17 Error 23

Error message Too many characters in entry "..." in section [...].

Error description 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.



Example:

```
;value of entry 'VendorName' must not have more than 244
;characters
```

4.2.18 Error 24

Error message Unknown entry "..." in section [...].

Error description Unknown entry in an info section.

4.2.19 Error 25

Error message Duplicate entry "..." in section [...].

Error description Two or more entries in a section have the same key name.

4.2.20 Error 26

Error message Entry "..." in section [...] not found.

Error description Mandatory entry doesn't exist in specific section.

4.2.21 Error 27

Error message Entry "..." in section [...] is not allowed.

Error description Entry is not allowed in specific section. Some object types do not support particular entries e.g. objects of type **VAR** must not have an entry **SubNumber**.

4.2.22 Error 28

Error message Value in entry "..." in section [...] is outside of valid object area.

Error description Object value of an entry is out of specific value range.



Example:

```
[OptionalObjects]
...
```

```
20=0x2000;  
;this index is outside of the valid index range for optional  
;objects
```

4.2.23 Error 29

Error message	Illegal value in entry "... "in section [...].
Error description	Value of an entry has wrong format or there is no value although the entry is mandatory.

4.2.24 Error 30

Error message	Value in entry "... "in section [...] is not equal to database (...).
Warning description	Value of an entry in the EDS differs from the value in the corresponding database entry.

4.2.25 Error 31

Error message	Complex data type in entry "... "in section [...] is not allowed.
Error description	A complex data type of object type DEFSTRUCT should not exist in an EDS.

4.2.26 Error 32

Error message	Data type in entry "... "in section [...] is reserved.
Error description	A reserved index pointing to a data type should not exist in an EDS.

4.2.27 Error 33

Error message	Database requires description of sub objects in section [...].
Error description	If the database defines a minimal number of elements, a description of sub objects is needed (SubNumber=... or CompactSubObj=...),

4.2.28 Error 34

Error message	Description of sub objects in section [...] is missing.
Error description	Object type is ARRAY, RECORD or DEFSTRUCT but object has no description of sub objects.

**Example:**

```
[1004]
ParameterName=PredefinedErrorField
ObjectType=0x8
;object type ARRAY
;entry SubNumber is missing

[1004sub1]
...
```

4.2.29 Error 35

Error message Mapped object [...] shall have value 1 in entry "PDOMapping".

Error description The object is mapped but value of entry **PDOMapping** is 0.

**Example:**

```
[1600sub1]
DefaultValue=0x62000108
...

[6200sub1]
PDOMapping=0
...
;object is mapped but have mapping value 0
```

4.2.30 Error 36

Error message Value in entry "DefaultValue" in section [...] is not identical to number of last sub object.

Error description Value of **DefaultValue** is unequal the highest sub index implemented.

**Example:**

```
[1026]
SubNumber=2
...

[1026sub0]
DefaultValue=1
...

[1026sub4]
...

;Default value in section [1026sub0] has to be 4
```

4.2.31 Error 37

Error message Duplicate index in entry "..." in section [...].

Error description Index in a section is multiple used.



Example:

```
[OptionalObjects]
NrOfEntries=2
1=1003
2=1003
;index 1003 is multiple used
```

4.2.32 Error 38

Error message Maximal number of sub objects of section [...] is smaller in database (...).

Error description Value of **SubNumber** is bigger than number of entry **MaxElements** in the database.



Example:

```
[1280]
SubNumber=5
...
;number of MaxElements in database is 4
```

4.2.33 Error 39

Error message Minimal number of sub objects in section [...] is bigger in database (...).

Error description Value of **SubNumber** is less than number of entry **MinElements** in the database.



Example:

```
[1280]
SubNumber=3
...
;number of MinElements in database is 4
```

4.2.34 Error 40

Error message Entry "..." in section [...] has no corresponding sub object.

Error description An entry in a name section has no corresponding sub object.



Example:

```
[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
```

4.2.35 Error 41

Error message Entry EDSVersion in section [FileInfo] missing or value<4.0.

Error description The check relates to EDS files of version 4.0 or higher.

4.2.36 Error 42

Error message Data type of section [...] differs from other data types in the array.

Error description The sub objects of an array must have the same data type. Otherwise this error is reported.



Example:

```
[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
```

4.2.37 Error 51

Error message Module description "..." points to fixed and extended objects too.

Error description A module description points to fixed and extension objects too.



Example:

```
[M1FixedObjects]
...
[M1SubExtends]
```

```
...
;it is not allowed to define fixed and extended objects for the
;same index (here:1).
```

4.2.38 Error 52

Error message Fixed or extended object description [...] not found.

Error description A fixed or extension module description is expected but not found.



Example:

```
[SupportedModules]
NrOfEntries=2;

[M2SubExtends]
...
;section [M1FixedObjects] or [M1SubExtends] is missing
```

4.2.39 Error 53

Error message Multiple used object [...] differs in entry "...".

Error description If several modules contain the same fixed objects, their attributes shall be equal.



Example:

```
[M1Fixed6423]
...
DataType=0x0007
...
[M5Fixed6423]
...
DataType=0x0008
...
;the same fixed object has different data types
```

4.2.40 Error 54

Error message Module list [1027] is missing.

Error description If the section [SupportedModules] exists, object [1027] shall exist too.

4.2.41 Error 55

Error message Module list [1027] is redundant.

Error description If the object [1027] exists, section [SupportedModules] shall exist too.

4.2.42 Error 61

Error message There is no suitable PDO for section [...].

Error description If no RxPDO or no TxPDO exists, an object with entry **PDOMapping=1** only shall have corresponding access types.
This error is also reported if the granularity is 0 and not all mappable objects are assigned to existing PDOs.



Example:

```
;condition: in the EDS exist no Transmit PDO
;Mapping Parameter.
[6000sub1]
...
AccessType=ro
PDOMapping=1
...
;for these attributes no PDO is available
```

4.2.43 Error 62

Error message Number in entry "..." in section [DeviceInfo] differs from number of supported PDOs.

Error description If no compact PDOs exist, the number of PDOs given in section [DeviceInfo] differs from the number of existing PDOs.



Example:

```
[DeviceInfo]
NrOfTXPDO=0;
...
[1A00]
;Transmit PDO Mapping Parameter
...
;a PDO exists although NrOfTXPDO is null
```

4.2.44 Error 63

Error message Mapped object "..." does not exist.

Error description A mapped object doesn't exist in the EDS file.



Example:

```
;Receive PDO Mapping Parameter
[1600sub1]
DefaultValue=0x62000108
...
;if mapped section [6200sub1] doesn't exist, his error is
;reported
```

4.2.45 Error 64

Error message Total length of mapped objects in section [...] is bigger than 8 Byte.

Error description The total length of mapped objects is bigger than 8 Byte.



Example:

```
[1600]
...

[1600sub0]
...

[1600sub1]
DefaultValue=0x50000040
...

[1600sub2]
DefaultValue=0x50020001
...
;total length of 65 Bit is too big
```

4.2.46 Error 65

Error message Object length in section [...] doesn't match data type of mapped object.

Error description The object length doesn't match data type of mapped object.



Example:

```
;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.
```

4.2.47 Error 66

Error message Data type in section [...] is not mappable.

Error description The given data type is not mappable but the object is mapped.



Example:

```
[1600sub1]
DefaultValue=0x50030020
...
```

```
[5003]
DataType=0x0009
;data type 'Visible String' is not mappable
```

4.2.48 Error 67

Error message Access type in section [...] is writable although sub object 0 is constant or read-only.

Error description 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.



Example:

```
[1600sub0]
AccessType=ro
...

[1600sub1]
AccessType=rw
;access type have to be const or ro because object does not
;support variable mapping.
```

4.2.49 Error 68

Error message Access type in section [...] is constant or read-only although sub object 0 is writeable.

Error description 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.



Example:

```
[1600sub0]
AccessType=rw
...

[1600sub1]
AccessType=ro
;access type have to be writable too.
```

4.2.50 Error 69

Error message Entry "Granularity" in section [DeviceInfo] has to be 0 because all PDOs support constant mapping.

Error description

No PDO parameter object supports variable mapping. Therefore the granularity has to be 0.

**Example:**

```
;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.
```

**Info:**

This error is not generated if some PDOs support variable mapping and others don't support it because this case is not specified clearly.

4.2.51 Error 70**Error message**

Entry "Granularity" in section [DeviceInfo] has to be bigger than 0 because all PDOs support variable mapping.

Error description

All PDO parameter objects supports variable mapping. Therefore the granularity has to be bigger than 0.

**Example:**

```
;all sub-indexes of PDO mapping parameter objects are writable

[DeviceInfo]
Granularity=0
;granularity has to be bigger than 0 because mapping is
;modifiable.
```

**Info:**

This error is not generated if some PDOs support variable mapping and others don't support it because this case is not specified clearly.

4.2.52 Error 71**Error message**

Number of Rx/TxPDOs in entry "DefaultValue" in section [1004sub0] differs from number of Rx/TxPDOs in section [DeviceInfo].

Error description

In object 1004h 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].

**Example:**

```
[DeviceInfo]
NrOfRxPDO=3
NrOfTxPDO=2
...
```



```
[1004sub0]
DefaultValue=0x30003
...
;the LSB of the default value defines the number of TxPDOs and
;the LSB defines the number of RxPDOs. Therefore the correct
;value must be 0x30002.
```

4.2.53 Error 72

Error message Number of Rx/TxPDOs in entry "DefaultValue" in section [1004subX] is bigger than number of Rx/TxPDOs in section [DeviceInfo].

Error description In object 1004h 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].



Example:

```
[DeviceInfo]
NrOfRxPDO=1
NrOfTxPDO=2
...

[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.
```

4.2.54 Error 73

Error message Entry "GroupMessaging" in section [DeviceInfo] has to be set to 1 because there are multiplexed PDOs.

Error description There are multiplexed PDOs (MPDOs) in the object dictionary. Therefore entry [GroupMessaging] has to be set to 1.



Example:

```
[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.
```

4.2.55 Error 74

Error message Invalid use of dummy mapping in TxPDO section [...].

Error description Dummy mapping is used in a Tx PDO.



Example:

```
[1a00sub1]
...
DefaultValue=0x00020008
...
;it is not allowed to use dummy mapping in a Tx PDO
```

4.2.56 Error 75

Error message Object length in section [...] is smaller than granularity.

Error description The length of a mapped object is smaller than the granularity of the device.



Example:

```
[DeviceInfo]
...
Granularity=64
[1a00sub1]
...
DefaultValue=0x20000120

[2000sub1]
...
DataType=0x0007

;granularity is 64 but a object with data type UNSIGNED32 is
;mapped
```

4.2.57 Error 76

Error message Length of selected dummy mapping entry "DummyXXX" in section [DummyUsage] is smaller than granularity.

Error description Dummy mapping of a data type smaller than granularity is enabled.



Example:

```
[DeviceInfo]
Granularity=8
...

[DummyUsage]
Dummy0001=1
...
```

```
;It is not allowed to use map to map a BOOLEAN if granularity
;is 8.
```

4.2.58 Error 130

Error message Entry "DefaultValue" in section [1018subX] differs from value "..." of section [DeviceInfo].

Error description The values **VendorNumber** and **ProductNumber** of section [DeviceInfo] must agree with the values in object 1018h.



Example:

```
[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].
```

4.2.59 Error 131

Error message Major revision version number of entry "..." in section [...] differs from major revision number of entry "RevisionNumber" in section [DeviceInfo].

Error description The major revision number of value **RevisionNumber** (Bit 16-31) of section [DeviceInfo] must agree with the major revision number in object 1018h.



Example:

```
[DeviceInfo]
RevisionNumber=0x00010000
...
```

```
;Revision number
[1018sub3]
DefaultValue=0x00020000
...
```

```
;major revision number 0x0002 of 1018sub3 is not equal to major
;revision number in [DeviceInfo].
```

4.2.60 Error 1600

Error message Condition of CODB description in invalid syntax (... , ... , ...)

Error description Syntax of the CODB description has invalid syntax.

4.3 Warning messages

General 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.

4.3.1 Warning 1

Warning message Unknown or not used section [...]

Warning description After all checks a section is found which has not been checked, because this section is unknown or not used.



Example:

```
[Tools]
...
;This section is unknown and produce this warning
```



Example:

```
[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.
```

4.3.2 Warning 2

Warning message Redundant sub object [...]

Warning description More entries are found than expected.



Example:

```
[1010]
SubNumber=2
...
[1010sub0]
...
[1010sub1]
```

```
...
[1010sub2]
...
;the last sub-object is redundant and causes the warning
```

4.3.3 Warning 3

Warning description Enumeration is not correct.



Example:

```
[Comments]
Lines=2
Line1=correct line
Line3=incorrect enumeration. Has to be 'Line2=..'
```

4.3.4 Warning 4

Warning message Access type in section [...] has no clear mapping direction

Warning description Object is mappable and access type is **rw**. This could possibly cause mapping problems. Instead of **rw** attributes **rwr** or **rww** should be used.



Example:

```
[6000sub1]
...
AccessType=rw
PDOMapping=1
...
;instead rw the arguments rwr or rww should be used.
```

4.3.5 Warning 5

Warning message Access type in section [...] has no clear mapping direction concerning PDO section [...]

Warning description Access type in mapped section has no clear mapping direction concerning the PDO section.



Example:

```
;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.

4.3.6 Warning 6

Warning message There are dynamic channels although entry "DynamicChannels-Supported" in section [DeviceInfo] is 0.

Warning description There is a section [DynamicChannels] although the device does not support dynamic channels (according to entry DynamicChannels-Supported of section [DeviceInfo]).



Example:

```
[DeviceInfo]
DynamicChannelsSupported=0
...
[DynamicChannels]
...

;There are dynamic channels defined although the device doesn't
;support them.
```

4.3.7 Warning 21

Warning message Unknown or not used entry "..." in section [...].

Warning description After all checks an entry is found which has not been checked, because this entry is unknown or not used.

4.3.8 Warning 22

Warning message Reserved entry "..." in section [...].

Warning description For compatibility reasons, the entries **ProductVersion**, **LMT_ManufacturerName**, **LMT_ProductName**, **Extended-BootUpMaster**, **ExtendedBootUpSlave** and **ProductRevision** in section [DeviceInfo] are reserved.

4.3.9 Warning 23

Warning message Data type in entry "..." in section [...] can't be checked.

Warning description Manufacturer specific data types and device profile specific standard data types can't be checked.

4.3.10 Warning 24

Warning message Entry "..." in section [...] not found.

Warning description An important but not mandatory entry doesn't exist in specific section. This message is shown e.g. if entry **DefaultValue** is missing in sub object 0.

4.3.11 Warning 25

Warning message Value in entry "DefaultValue" in section [...] is not identical to number of last sub object.

Warning description This warning is generated for PDO Mapping parameters if the value of **DefaultValue** is unequal the highest sub index implemented and it granularity is 0 (no variable mapping).



Example:

```
[DeviceInfo]
Granularity=0
...
1600]
SubNumber=2
...
[1600sub0]
DefaulValue=0
...
[1600sub1]
...

```

4.3.12 Warning 26

Warning message Access type of section [...] is writable although COB-ID of PDO [...] is constant or read-only.

Warning description 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.



Example:

```
[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.

```

4.3.13 Warning 50

Warning message Number of RxPDOs and TxPDOs in section [DeviceInfo] is 0 but compact PDOs are defined.

Warning description Although it is denoted that the device supports compact PDOs the number of PDOs is zero.



Example:

```
[DeviceInfo]
CompactPDO=3
NrOfRXPDO=0
NrOfTXPDO=0
```

4.3.14 Warning 51

Warning message Mapped object in section [...] is missing.

Warning description The mapping parameter contains no reference to a mapped object although the mapping parameter is valid.

4.3.15 Warning 130

Warning message Minor revision version number of entry "..." in section [...] differs from major revision number of entry "RevisionNumber" in section [DeviceInfo].

Warning description The minor revision number of value **RevisionNumber** (Bit 0-15) of section [DeviceInfo] must agree with the major revision number in object 1018h.



Example:

```
[DeviceInfo]
RevisionNumber=0x00010000
...
```

```
;Revision number
```

```
[1018sub3]
DefaultValue=0x00010001
...
```

```
;minor revision number 1 of 1018sub3 is not equal to major
;revision number in [DeviceInfo].
```

5 Test remarks

In this chapter you find the following information:

5.1	General	page 40
5.2	Entry Value Interpretation	page 40
5.3	Checking value ranges of data types	page 40
5.4	Test for presence of entries in object sections	page 40
5.5	Identical entries in different databases	page 41
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5.8	Object links	page 42
5.9	Gaps	page 42

5.1 General

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.

5.2 Entry Value Interpretation

A short view about possible entries

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

5.3 Checking value ranges of data types

Specification area of data types is 001h – 025Fh

CANchkEDS differentiation between several types

Index area	Kind of data type	Message
0020h - 0023h 0080h - 009Fh	complex data types	Error: Complex data types are not allowed in EDS objects.
0040h - 007Fh	specific data types	Since version 1.4.0 of CANchkEDS specific data types are supported.
000Eh 0017h 001Ch - 001Fh 0024h - 003Fh	reserved data types	Error: Reserved data types are not allowed.

5.4 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).

	DEFTYPE VAR	DEFSTRUCT ARRAY RECORD*	DEFSTRUCT ARRAY RECORD**	DOMAIN
ParameterName	m	m	m	m
ObjectType	o	m	m	m
DataType	m	n	m	o
AccessType	m	n	m	o
DefaultValue	o	n	o	o

	DEFTYPE VAR	DEFSTRUCT ARRAY RECORD*	DEFSTRUCT ARRAY RECORD**	DOMAIN
PDOMapping	o	n	o	O
SubNumber	n	m	n	o
LowLimit	o	n	o	o
HighLimit	o	n	o	o
ObjFlags	o	o	o	o
CompactSubObj	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).

5.5 Identical entries in different databases

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`.

5.6 Module description

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.

5.7 Formula

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.

5.8 Object links

Objekt links

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

5.9 Gaps

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 (1600h-17FFh and 1A00h-1BFFh).

6 Appendix A: Contact us

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7 Appendix B: Revision History

Software

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

Document

Version	Editor	Description
0.1.0 dated 2000-05-17	Gw, Vector	initial revision
1.0.0 dated 2000-06-14	Kl, Vector	Initial official revision
1.0.1 dated 2000-07-07	Kl, 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	Kl, Vector	Better error messages for object links. Hint to revision history
1.1.0 dated 2001-02-27	Kl, Vector	Changes of CiA Test specification
1.2.0 dated 2001-04-02	Kl, Vector	Included extensions of CiA DSP-405 V2
1.2.1 dated 2001-08-14	Kl, 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
2.1.1 dated 2007-10-25	Kn, Vector	Revised document layout
2.1.2 dated 2008-02-26	Kn, Vector	Insert contact address of Vector Korea

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