ETHERNET
POWERLINK

Ethernet POWERLINK

XML Header for Firmware Files

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Pre. 2　　Contribution

The following persons contributed to this document:

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Pre. 3   History

Vers.	Date	Author / Filename		short description
0.0.1	2011-06-03	Stephan Kirchmayer	B&R	created
0.0.2	2011-11-07	Stephan Kirchmayer	B&R	Feedback from TWG meeting 10/11
0.0.3	2012-08-16	Stephan Kirchmayer	B&R	Editorial changes
0.0.4	2021-04-02	Stephan Kirchmayer	B&R	XML header example corrected
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Pre. 4   Content

Pre. 5   Tables

Pre. 6   Figures

Es wurden keine Einträge für das Inhaltsverzeichnis gefunden.

Pre. 7   Definitions and Abbreviations

Pre. 7.1   Definitions

Pre. 7.2   Abbreviations

SDO	Service Data Object
XDD	XML Device Description

Pre. 8   References

[1]   EPSG Draft Standard 301 (EPSG DS 301), Ethernet POWERLINK, Communication Profile Specification

1   Introduction

So far the communiction profile specification of POWERLINK only defines the mechanism for transferring firmware / software files to a device. This is done by SDO transfer to object 1F50h.

However the communication profile does not specifiy the naming and identification of a firmware file. All this is covered by this specification.

A firmware file complying with this specification may be assigned to a device easily just from its name comprising the Vendor ID, device name and revision number. Inside the file a XML header contains more detailed information.

2   File naming convention

The firmware file name shall be the same as the XDD file name. Additionally the revision number may be added.

i.e. The file name shall have the format

"vendorID"_"device name"<_"revision number">.fw.

The vendor ID shall be in hex format without a leading "0x". The device name shall not contain spaces.

e.g. 0100006C_X20BC0083.fw or 010006C_X20BC0083_1.fw

3   XML Header

3.1   File format

A POWERLINK firmware file consists of a binary file prefixed by a header. This header is in XML format and terminated by a 0-byte (0-terminated).

`<Firmware/>0-byte … (binary file)`

Additional information is specified by XML attributes.

3.2   Header

A firmware file header always starts with the keyword

`<Firmware …`

and shall contain the following attributes mentioned in Tab. 1

Attribute	Description	Example	Mandatory / optional	Datatype
Ven	Vendor ID	Ven="0x0100006C"	mandatory	hexadecimal 8 digits plus 2 digits for "0x"
Dev	Device-ID = product code The same value as in the IdentResponse frame	Dev="7966"	mandatory	decimal
Ver	Version number	Ver="50"	mandatory	decimal
Use	Usage fixed value	Use="fw"	mandatory	-
Fct	Function fixed value	Fct="_"	mandatory	-
Var	Variant = Revision number The same value as in the IdentResponse frame	Var="1"	mandatory	decimal
Len	Length of the payload data	Len="23418"	mandatory	decimal
Chk	Checksum of the payload data.	Chk="0xaf3d"	optional	hexadecimal 4 digits plus 2 digits for "0x"
Mat	Order reference (ASCII text)	Mat="X20BC0083"	mandatory	string, max. 18 characters
Date	File creation date	Date="24.12.2011"	optional	string in format dd.mm.yyyy
Rem	Remarks	Rem="Testversion"	optional	string
ApplSwDate	Application software date as defined in EPSG DS301	ApplSwDate="1000"	mandatory	UINT32 (decimal)
ApplSwTime	Application software time as defined in EPSG DS301	ApplSwTime="10"	mandatory	UINT32 (decimal)
KeepXmlHeader	If true, the firmware download includes	KeepXmlHeader="1"	optional	BOOL (1 character)

	this XML header			

Tab. 1   XML attributes

The checksum shall be calculated in the following way: All bytes of the binary data (i.e. XML header not included) are added without overflow in a 16 bit value. From this sum the complement on two is calculated (i.e. invert all bits and add 1).

The XML header shall be terminated by />0-byte followed by the payload data (binary file).

Example:

```
<Firmware  Ven="0x0100006C"  Dev="7966"  Ver="50"  Use="fw"  Fct="_"  Var="1"  Len="23418"
Chk="0xaf3d"  Mat="X20BC0083"  Date="24.12.2011"  Rem="Testversion"  ApplSwDate="1000"
ApplSwTime="10" KeepXmlHeader="1"/>0-byte … (binary data of firmware file)
```