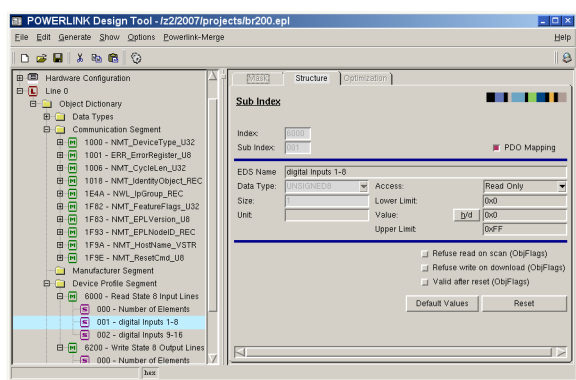# POWERLINK Design Tool

## Overview

The POWERLINK *Design Tool* is a tool for the rapid and cost-saving development of **Ethernet POWER-LINK** applications (devices). It administers device databases, from which an object dictionary and an initialization function in C-code, an Electronic Data Sheet (XML format) and the documentation are produced automatically. Furthermore it simplifies the configuration of the POWERLINK *Library* and of the *POWERLINK Driver Packages*.



## Description

With the POWERLINK *Design Tool* a tool is available, which frees the developer from error-prone and repetitive tasks. It guarantees the consistency of the implemented functionality, device documentation and XML Device Description (XDD). By default the POWERLINK communication profile is delivered with the tool.

In addition to the POWERLINK specific communication database other databases are provided for the CANopen device profiles CiA 401, CiA 402, CiA 406 and CiA 417. The object dictionary produced by the POWERLINK *Design Tool* supports numerous options of the POWERLINK *Library* from **port**, e.g. segmented structuring. A tree representation of all implemented parameters and data facilitates the maintenance of the device software. The POWERLINK *Design Tool* eases the first step into the POWERLINK protocol and device development is accelerated.

It is a tool with which device databases can be produced and processed. These databases contain information, which describe the interface for the POWERLINK network of the device. These parameters, control and status information that are accessible over the network are stored in the **Object dictionary**.

The major task of the POWERLINK *Design Tool* is to administer and create these data in an object database and to create code for the POWERLINK *Library* from it.

### Ethernet POWERLINK Object dictionary

The generated code, which contains the object dictionary is included into the user modules. This ensures that each user variable can be accessed directly via its index and sub index. The produced object dictionary represents the data interface between library and user appliction.

### Ethernet POWERLINK Library Configuration

To configure the POWERLINK *Library* a header file is created which contains the hardware settings and the configuration of the used POWERLINK services. These services are derived automatically from the object dictionary.

### XML Device Description File

A fourth result of the tool is the XML Device Description File (XDD). The XDD belongs to the standard documents that have to be supplied with a POWERLINK device. It is an XML text file according to ISO 15745, which contains all relevant information about the application (device). These files are used by configuration tools and control devices, in order to install POWERLINK devices into networks and configure them. The

### Documentation

On the generated object dictionary a documentation is created. Each device parameter is listed with its attributes and description. Output format is HTML and plain text. This documentation can serve as specification at the beginning of development and be brought into the user documentation, as well as into the marketing documents.

**Device Profiles**

Creating of device databases is very simple. The first step is determining the type of the device. If a standardized profile is to be implemented, then the device data can be loaded from a profile database. Furthermore it is possible to load data from device databases or already existing XDD or EDS files. CANopen EDS files can be imported.
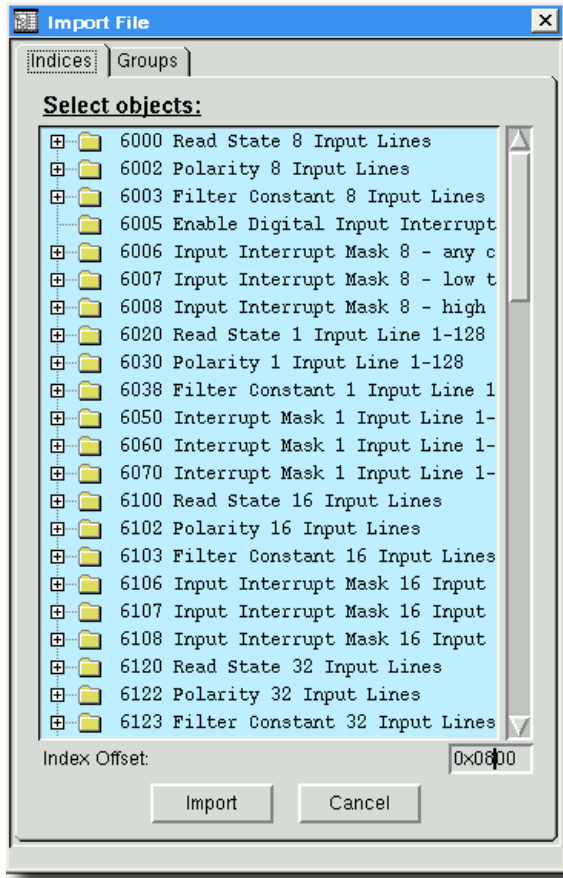


*Import mask for a profile database*

The second step is the parameterization of the objects. Pre-installed default values, limit values and access attributes have to be adapted to the application needs. For the communication parameters input masks facilitate the creation of the service objects and the configuration of partially bit-coded values like e.g. PDO settings.

**Generation**

After an automatic check of the data for consistence, missing entries or incompatible data types the following files are created:

- the object dictionary (**objects.h**),
- the configuration file (**epl_conf.h**),
- the XML Device Description file
- and documentation as HTML and plain text.

## Profile Databases

The profile databases contain the objects of the corresponding profile. Each object is configured according to the standard and is explained in detail. By importing these prefabricated objects into the own project the development time can be reduced and the risks of a manual implementation are minimized.
The following profile databases currently available:

- CiA401 - Device Profile for Generic I/O Devices
- CiA402 - Device Profile for Drives and Motion Control
- CiA417 - Application Profile for Lift Control Systems

## POWERLINK-Merge

The optionally available POWERLINK-Merge PlugIn is a tool to compare and to merge POWERLINK *Design Tool* projects. A detailed presentation of each attribute of indices and sub indices and comfortable editing facilities simplify the handling of multiple projects. The integrated diff report generator generates expressive diff reports in XML.
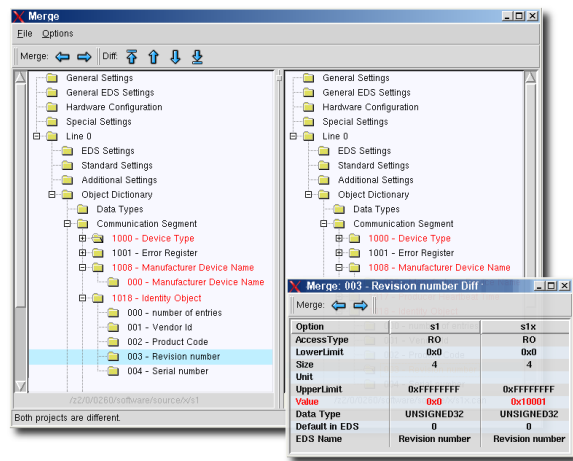


POWERLINK-Merge shows its strength especially when dealing with large projects or with large development teams.

## Advantages

- acceleration of the development by avoidance of double work
- error prevention during creation of the object dictionary and XDD
- consistent documentation to the respective device version
- reuse of the data for similar devices
- optimized configuration of the POWERLINK *Library* according to the implemented POWERLINK services
- optional CSV import PlugIn available

## System Environment

The POWERLINK *Design Tool* runs on PC's with

- Operating System: Windows™ 2000, XP, Vista, Win7 and LINUX™
- Processor: Pentium III or later
- RAM: > 256 MB, HD > 20 MB free

## Ordering Information

| | |
|---|---|
| 1760/10 | POWERLINK-DT-W (Full Version Windows™) |
| 1760/20 | POWERLINK-DT-L (Full Version LINUX™) |
| 0640/11 | CANopen-DT-P401 profile database for CiA401 |
| 0640/12 | CANopen-DT-P402 profile database for CiA402 |
| 0640/13 | CANopen-DT-P406 profile database for CiA406 |
| 0640/30 | CANopen-DT-P417 profile database for CiA417 |
| 0640/24 | CANopen-DT-P405 Profildatenbank for CiA405 |
| 0640/26 | CANopen-DT-P410 Profildatenbank for CiA410 |
| 0640/28 | CANopen-DT-P418 Profildatenbank for CiA418 |
| 0640/29 | CANopen-DT-P419 Profildatenbank for CiA419 |
| 0640/30 | CANopen-DT-P417 Profildatenbank for CiA417 |
| 0640/32 | CANopen-DT-P447 Profildatenbank for CiA447 |
| 0640/33 | CANopen-DT-P452 Profildatenbank for CiA452 |
| 0640/49 | CANopen-DT-CAN-Merge CAN-Merge PlugIn |
| 0640/52 | CANopen-DT-CSV CSV-Import PlugIn |

Functional demo versions of the software tools are available for download on *www.port.de/shop*.

### Engineering Services

*port* is providing engineering services and trainings for our business activities:

- CAN and CAN-based protocols: CANopen, J1939
- Industrial Ethernet Protocols: POWERLINK, Ether-Net/IP, EtherCAT PROFINET
- Implementation of devices according to CANopen device profiles
- VHDL based solutions for industrial applications
- application specific implementations or enhancements
- embedded LINUX projects

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