

## Scope

Communication between Industrial Control Systems (ICS) and devices has been done over different physical media and using different protocols. Standardization on Ethernet and a protocol like TCP/IP has been helpful for machine builders, simplifying their architecture. For demanding applications, where hard-real time data transmission is necessary, POWERLINK has established itself as leading technology.

Hundreds of ICS manufacturers use the CODESYS control engine for programming. These controllers can be turned into POWERLINK Master controllers by implementing a set of software components.

## Functionality

The ICS integrates the CODESYS Control Runtime System and is programmed using the CODESYS Development System.

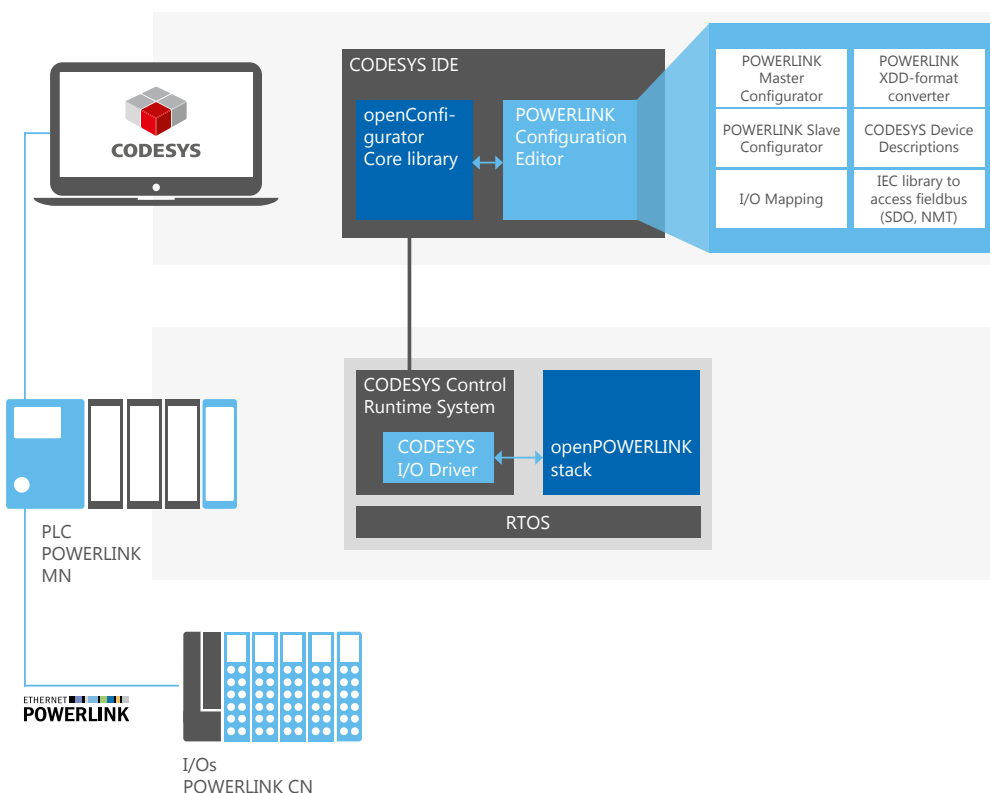
Supporting POWERLINK as Managing Node (MN), or Master, requires the implementation of the openPOWERLINK stack, a free open source software available at: [sourceforge.net/projects/openpowerlink](http://sourceforge.net/projects/openpowerlink).

The interfacing with the CODESYS Control Runtime System is done with one additional runtime component.

Configuration of the POWERLINK network, including MN configuration, Controlled Node (CN) configuration, I/O mapping, XDD/XDC import filter is done with the corresponding CODESYS Plug-In.

## Target Applications

- Factory Automation
- Mobile Automation
- Process Automation
- Energy production and distribution
- Building Automation



Integration of the POWERLINK stack and editor.

## Features and benefits

### Open source technology

The openPOWERLINK stack is an open source technology, free of any patents and released under BSD license ⇒ lowest cost of ownership

### Maximum performance

Shortest cycle times and system synchronization in the 100ns range allow high data throughput with the smallest cycles ⇒ suitable for most demanding applications

### CANopen over Ethernet

POWERLINK uses the same object dictionaries and communication mechanisms as CANopen (PDOs, SDOs, NMT) ⇒ easy migration to Ethernet based protocol

### Stack portability

The openPOWERLINK stack is available as plain ANSI C source code, facilitating different implementation architectures i.e. running on an FPGA ⇒ best use of hardware

### Enduser friendly editor

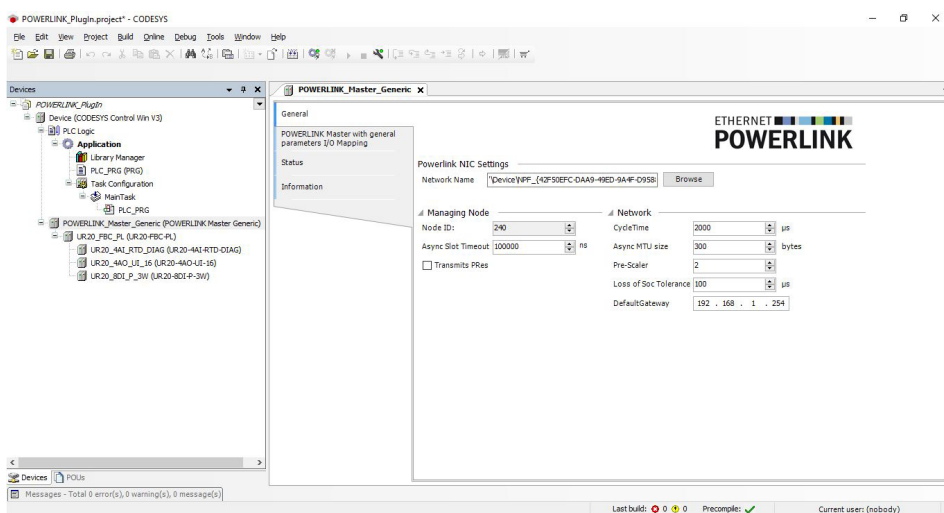
The POWERLINK configuration editor plug-in was developed to meet the usability of other editors in CODESYS. A course for the configurator is available on the BE.educated® e-learning platform ([www.be-educated.net](http://www.be-educated.net)) ⇒ quick learning phase

### Reuse of standards

The integration of CODESYS is based on the openPOWERLINK stack and all supported features i.e. asynchronous data, poll response chaining, topology support, etc... can be accessed by the additional runtime component and plug-in ⇒ full scope of functionality available

### Expertise for support and integration

BE.services can be contracted for development, extension or integration services ⇒ time and cost saving through 3rd party expertise



POWERLINK MN Configuration

## Engagement model

One stop shopping, support and optional integration services.

How to get?

Technology	Manufacturer	Part No.	Sales Contact
POWERLINK for CODESYS	BE.services GmbH <a href="http://www.be-services.net">www.be-services.net</a>	0230002	info@be-services.net
Configuration Plug-In	BE.services GmbH <a href="http://www.be-services.net">www.be-services.net</a>	0230003	store.codesys.com

BE.services offers the complete integration of POWERLINK as optional services.

## Delivery includes

- openPOWERLINK stack
- CODESYS Runtime Component
- CODESYS Plug-in configuration editor
- 1 license POWERLINK e-learning course on BE.educated®

## Technical data

General system requirements		Performance data				
Supported CPUs	X86, ARM, ARM Cortex, PowerPC, Others on demand	# of CNs	1	2	3	4
Supported operating systems	Linux, Windows, Others on demand	input size (bytes)	86	150	157	178
		output size (bytes)	48	80	112	122
		ARM Cortex A9	0.7 ms	0.9 ms	1.39 ms	1.49 ms
		FPGA	0.4 ms	0.45 ms	1.1 ms	1.3 ms

Test hardware: Xilinx Zynq ZC702

## Featured Manufacturers



## Support

Please contact [info@be-services.net](mailto:info@be-services.net)

Usefull links for POWERLINK: [www.ethernet-powerlink.com](http://www.ethernet-powerlink.com)

Usefull links for CODESYS: [www.codesys.com](http://www.codesys.com)