



## SPECIAL FUNCTIONALITY IN E<sup>3</sup>.Functional Design

- Supports functional units of symbols
- Functional schematics of modules
- Functional system block diagrams
- Define valid connection pathways between functional blocks
- Place functional units in functional blocks
- Automatic signal routing between functional blocks
- Define internal connections in functional blocks
- Generate additional pins on functional blocks
- Define connector and pin configurations
- Automatically check unused ports
- Assign functional blocks to real components
- Reuse functional design for wiring diagram

## E<sup>3</sup>.Functional Design - Concept design to detailed wiring

### Introduction

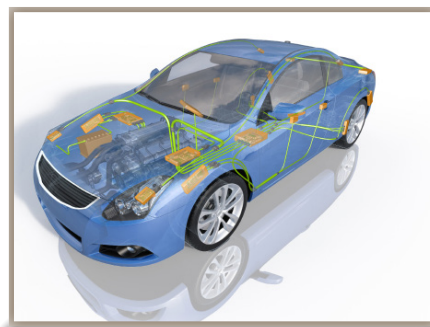
Zuken's E<sup>3</sup>.series is used for documenting and detailing electrical and fluid design projects. Its flexibility supports the entire process from definition and design, through manufacturing and maintenance. Its unique object-oriented architecture ensures all stages of the design are fully synchronized.

E<sup>3</sup>.Functional Design is an add-on module to E<sup>3</sup>.cable that supports the development of the first sketches used to drive the detailed wiring. In the early development phases, block diagrams are created and connected through specified communication channels. Then functional units containing signal properties are placed in dynamic components. After the desired functional units of a dynamic component are correctly assigned, the dynamic component is replaced by a standard component from the library.

These standard components include the additional information needed to complete the project, such as connector, mating connector, and connector pin terminals. Additionally, they inherit defined connection information from the functional design. This enables the schematic/wiring and fluid diagrams to be created quickly and easily.

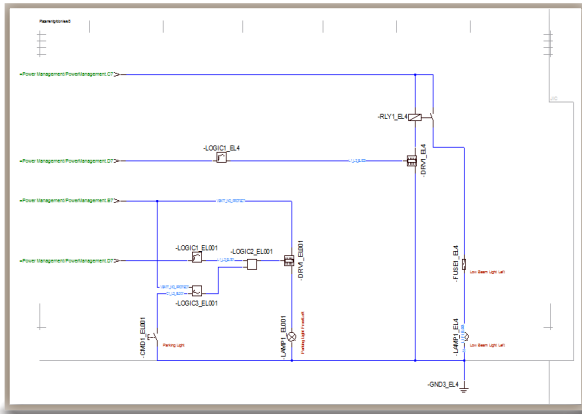
### Supported industries

E<sup>3</sup>.Functional Design is ideally suited for all transportation industries.



## Functional design

Historically, functional systems are developed in isolation of the product design – either on paper or using non-intelligent drafting tools. E<sup>3</sup>.Functional Design allows systems engineers to work in a dedicated CAD tool where any information added upfront will pass through the engineering workflow process and integrate with the harness design.

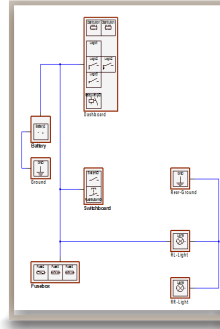


Functional schematic

## Functional schematic

The functional schematic contains functional units and provides a quick overview of a product's behavior for internal and external communication purposes. It can assist in initial calculations and in the bidding process.

## Functional block design

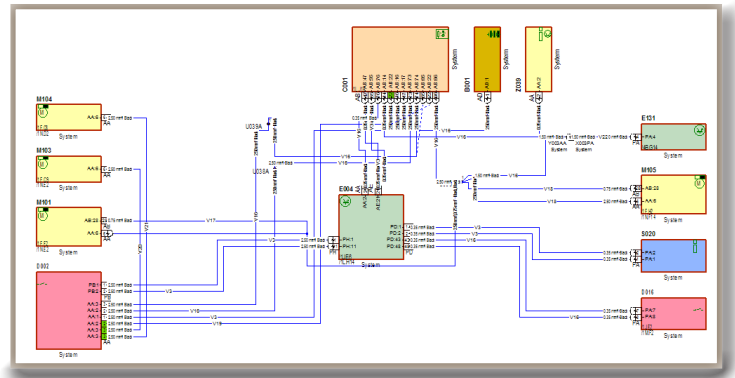


Functional block

Functional units laid out in the schematic are added to functional blocks on a non-scaled topological plan. Signal pathways are added between the functional blocks to determine physical interconnectivity. Blocks can be modified in order to accommodate all signal logic.

## Wiring diagram

As the overall design progresses, functional units are converted into physical components. These components will contain all pin-out detail and signal logic defined previously. New views of the functional units are placed in the wiring diagram and signal logic shows which pins need connecting; physical wiring can then be added.



## Additional E<sup>3</sup>.series options

### E<sup>3</sup>.cable

Enhanced functionality for designing cables and cable harnesses. Different views of the design enable specific documents to be created for production, start-up and service.

### E<sup>3</sup>.panel

For general arrangement drawings of cabinet enclosures. Work in either 2D or 3D, place devices, cable ducts and mounting rails and prepare panels for manufacture.

### E<sup>3</sup>.formboard

Creates build-to-print detailed 1:1 harness designs; linked dynamically to E<sup>3</sup>.cable drawings.

### E<sup>3</sup>.3D Routing Bridge

Transfer wire, cable and cable harness information to 3D M-CAD systems. After routing, the individual wire lengths can be transferred back to E<sup>3</sup>.series.

### E<sup>3</sup>.redliner

Mark up documents in a protected read-only copy of the design. Playback and jump to all recommended changes in the master design.

### E<sup>3</sup>.schematic

The core module of the E<sup>3</sup>.series suite enables the creation of schematic diagrams for electrical control systems.

### E<sup>3</sup>.view

Free-of-charge viewer for all E<sup>3</sup>.series projects and special viewer files.