

# Solid Edge Electrical Routing

## Creating and routing wires and cables in a dedicated, process-driven environment

### Benefits

- Enable collaborative design by providing seamless integration between 2D ECAD and 3D MCAD domains
- Decrease product costs through improved communication
- Reduce the need for costly physical prototypes
- Make faster and more informed design decisions
- Improve service and maintenance documentation
- Reduce overall time-to-market

### Features

- Rats nest created from a net list (wire harness)
- Wire harness output to manufacturing
- Wire harness reports
- Evaluate effects of harnesses in assemblies
- Can perform weight calculations, interference, etc., for components
- Create harness tools with wires, cables, splices and bundles

### Summary

Solid Edge® software for electrical routing enables you to efficiently create, route and organize wires, cables and bundles. Links to Solid Edge Wiring and Harness Design modules allow electromechanical design teams to create complete and accurate digital mockups containing both mechanical and electrical components, eliminating the need for expensive physical prototypes. Design violations are constantly monitored as the harness is being designed. Correct cutting length information is easily accessible for manufacturing.

### Seamless collaboration

Solid Edge Electrical Routing is a dedicated, process-driven environment for the efficient creation, routing and organization of wires, cables and bundles in a Solid Edge assembly. Solid Edge Electrical Routing allows electrical and mechanical design teams to collaborate on designs to create complete and accurate digital mockups

containing both mechanical and electrical components, eliminating the need for expensive physical prototypes. Design violations, such as excessive physical bundle size or a too tightly routed bend radius, are constantly monitored as the harness is being designed, so the live feedback immediately displays any problems. Reporting of cable and wire cutting length and attributes (allowing for a slack percentage and wire stripping) are captured during the harness design process.

### Automatic wire harness design

Once electrical engineers have developed and proven their designs using digital electrical prototypes (a task which is becoming increasingly important as the size and complexity of electrical systems increase), mechanical engineers can use Solid Edge Harness Design software modules to automatically generate and route physical wires and cables. Harness details such as wires, connectors, terminals, splices and net lists are transferred and accessed with a simple click of Solid Edge 3D Design. Mechanical engineers can then work on the mechanical aspects of the design without worrying about changing associated wire harness information. Using the wizard in Solid Edge Electrical Routing, engineers can automatically establish a rats nest of wires from a predefined connector on one component to a corresponding connector on another. Once the design is complete, Solid Edge Electrical Routing exports ready-to-use net list files to the schematics so the wires can be annotated with lengths and used for electrical analysis, such as voltage drop.

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## Flexible routing tools

Companies without a dedicated electronic computer-aided design (eCAD) system can still enjoy the benefits of Solid Edge Electrical Routing. Efficient creation and editing tools are used to provide the best routing for cables and establish correct cable lengths. With the “create wire” command, both path and wire attributes are created in the same process. Solid Edge Electrical Routing uses smart-path technology to create wires in free space, quickly routing them around a design and accurately threading them through other components such as clips or trucking (conduits). Single wires can be collected together to form a cable. Cables and wires can be bundled together to form the harness, delivering the correct wire length and checking for design violations.

## Live feedback of design violations

Built-in design-error checkers provide persistent live feedback, warning of design violations, such as minimum bend radius violations or instances in which the bundle size of cables and wires exceed the maximum. Violations are relayed to the user by showing a graphical symbol next to the wire in the edgebar: Highlighting the wire tool tip prompts advice on how to fix the problem. A tool tip offers advice on how to fix the problem. Any design violations are easy to fix; components can be easily repositioned and wire paths can be adjusted using key-point curves and blue dots as required.

## Automatic placement and terminal assignment

When using the harness wizard with a predefined net-list file, electrical components and connection information is automatically assigned to preconfigured Solid Edge parts. If no mechanical parts are present in Solid Edge, the components can be selected and will be automatically placed using a predefined grid. Wires are automatically connected. Components can be easily positioned

using Solid Edge assembly tools. All wires remain connected to their original components, and wire length is updated in any manufacturing report. For electrical components that have not had terminals assigned or connection information attributed, users can assign this information on-the-fly while the harness is created, allowing customers to capture knowledge while they build their component libraries. Once electrical components have been assigned, the information is stored for future designs.

## Realistic wire representation for complete digital mockups

Wires created with Solid Edge Electrical Routing contain all of the information required for manufacturing, and do not require a 3D representation of the wire design. This approach speeds the initial design and editing of the wire harness. However, for a more realistic 3D mechanical view, or if a detailed drawing is required, designers can generate an associative 3D model of the wires, including individual wires, cables and bundles with colors. The automatic tangency of wire paths from terminals through wire clips enables wires to look natural as they are routed.

## Output to manufacturing

To build a nail board, mechanical properties not present in the electrical wire design and circuit simulation package, such as wire length, can be fed back to the eCAD system with additional information captured in Solid Edge.

## Hardware system requirements

### Recommended system configuration

- Windows 10 Enterprise or Professional (64-bit only) version 1709 or later
- 8 gigabytes (GB) random access memory (RAM) or more
- True color (32-bit) or 16 million colors (24-bit)
- Screen resolution: 1,280 x 1,024 or higher

### Minimum system configuration

- Any one of the following operating systems:
  - Windows 10 Enterprise or Professional (64-bit only) version 1709 or later
  - Windows 8.1 Pro or Enterprise (64-bit only)
  - Windows 7 Enterprise, Ultimate or Professional (64-bit only) with Service Pack 1
- 4 GB RAM or more
- 65K colors
- Screen resolution: 1,280 x 1,024 or higher
- 6.5 GB of disk space required for installation

Siemens PLM Software  
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