

# CircuitMaker Documentation

Modified by Phil Loughhead on Aug 7, 2015

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CircuitMaker delivers a powerful design solution for electronics makers, hobbyists, and members of academia, who enjoy, and indeed excel, at creating cool and innovative new designs. With a streamlined interface built atop a powerful PCB Design engine, CircuitMaker gives you all you'll ever need to turn your creative ideas into physical reality.

CircuitMaker gives you all the tools to think big and make cool stuff, with features and functionality to facilitate creation of diverse and challenging designs. And while it's a desktop application, a standout attraction of CircuitMaker is that it facilitates the philosophy of *community-based design*, with components and design projects managed within a dedicated, cloud-based *Community Vault*. In the true spirit of open source, components and designs can be freely shared amongst other users.

Armed with a powerful component search facility, courtesy of Ciiva integration, along with access to reusable design elements built up over time by a legion of other *circuit makers*, you can quickly build your own designs, and release new versions of existing components - satisfying your own need to design, while contributing to a communal design vault, for the benefit of all others in the community.

## Getting Started

[Installing CircuitMaker](#)

[Exploring CircuitMaker](#)

[From Idea to Manufacture - Driving a PCB Design through CircuitMaker](#)

[CircuitMaker FAQs](#)

## Video Vault

Grab a coffee, tea, or bottle of water, then sit back and relax while receiving a visual tour of CircuitMaker's features and functionality. This area of the documentation provides a listing of the official YouTube-based videos for CircuitMaker. Short, sweet, and to the point, these videos will get you up and running with the concepts of the software, without unduly impacting on your design time!

[CircuitMaker Video Vault](#)

# Design Components

CircuitMaker employs online management of design components, facilitated through the integration of the Ciiva electronic parts database. Containing millions of unique parts across various manufacturers and distributors, you can get pricing, stock information, datasheets, and more, directly from within CircuitMaker.

Hundreds of thousands of the components in the Ciiva database have a CircuitMaker component bound to them. These components reside in the secure, cloud-based Community Vault. And for those parts in the database that don't have an associated component, you can create one - with schematic symbol and PCB footprint, as required. You can even create custom components that don't exist anywhere in the Ciiva database!


And while the original version of a component - the base version as it were - is always available for use and, for the most part will be sufficient, the community has the option of revising it. Any CircuitMaker user is able to build a new version of an existing component. And with potentially tens of thousands of such users in the CircuitMaker community, the ability to *rate* a version of a component is supported. In this way, the most popular versions of components bubble to the surface, as voted by the community members themselves.

A user can simply search for a part in the Ciiva database - directly from within CircuitMaker's *Libraries* panel - and then choose which version of the associated Community Vault component they want to use in their design. No more libraries stored locally on a hard drive - rather an impressive catalog of components built-upon, and ratified by, the design collective. You can even save frequently used versions of components to your own *Favorites* library!

[Component Management in CircuitMaker](#)

## Resource Reference

CircuitMaker's unified design environment consists of various *Servers* plugged into a core platform. Together with the core platform itself, these servers provide the resources of the software - its features and functionality. These are delivered in the form of commands, dialogs, panels, and the like. These resources are documented and collated by server. Use the following methods to locate information on a particular resource:

- Within the software, hover over a Ribbon button, menu command, dialog, panel, or design object, and press **F1**.
- Within the documentation, either:
  - Use the pop-up navigation tree to the left of this text (accessed by clicking the  button at the top-left of a page) to browse for the resource required across the various servers (under the Resource Reference section of the tree).
  - Use the **Search** field at the top-right.



Within CircuitMaker, the **F1** shortcut is definitely worth getting acquainted with. Hover the mouse over anything inside CircuitMaker - a button, command, dialog, panel, or design object - and press **F1** to access documentation for it. **F1** also works for specific pages in the *Preferences* dialog, and specific rule constraint pages in the *PCB Rules and Constraints Editor* dialog. And if you're running a command, say you're placing a component and you're not sure how to rotate it, press **F1** for a list of command-dependent shortcuts.

The following sections highlight, and provide quick navigation to, some key areas within the resources documentation.

## **Design Environment**

[System Panels](#)

[System Preferences](#)

## **Schematic Capture**

[Design Objects](#)

[Commands](#)

[Editor-Specific Panels](#)

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[Dialogs](#)

## **PCB Design**

[Design Objects](#)

[Commands](#)

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## **Text Editing**

[General Editing](#)

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[Preferences](#)

## **PCB Design Rules Reference**

CircuitMaker's PCB Editor uses the concept of *Design Rules* to define the requirements of a design. These rules collectively form an 'instruction set' for the PCB Editor to follow. They cover every aspect of the design - from routing widths, clearances, plane connection styles, routing via styles, and so on, and many of the rules can be monitored in real-time by the online Design Rule Checker (DRC).

Design rules target specific objects and are applied in a hierarchical fashion. Multiple rules of the same type can be set up. It may arise that a design object is covered by more than one rule with the same scope. In this instance, a contention exists. All contentions are resolved by a priority setting. The system goes through the rules from highest to lowest priority and picks the first one whose scope(s) match the object(s) being checked.

With a well-defined set of design rules, you can successfully complete board designs with varying and often stringent design requirements. And as the PCB Editor is rules-driven, taking the time to set up the rules at the outset of the design will enable you to effectively get on with the job of designing, safe in the knowledge that the rules system is working hard to ensure that success.

The following categories of design rules are available:

[Electrical](#)

[Routing](#)

[Mask](#)

[Plane](#)

[Placement](#)

## **Project Compiler Violations Reference**

The process of compiling is integral to producing a valid netlist for a project. In fact it is the process of compilation that yields the unified data model of a design - the single model of the data that is accessible across the design domains in CircuitMaker's unified design environment. Connectivity awareness in your schematic diagram can be verified during compilation according to rules defined as

part of the options for the design project - on the **Error Reporting** and **Connection Matrix** tabs respectively.

This area of the CircuitMaker documentation provides a comprehensive reference describing each of the possible electrical and drafting violations that can exist in source documents when compiling a project. The various categories of violation are:

[Violations Associated with Buses](#)

[Violations Associated with Components](#)

[Violations Associated with Documents](#)

[Violations Associated with Harnesses](#)

[Violations Associated with Nets](#)

[Violations Associated with Others](#)

[Violations Associated with Parameters](#)



Compiler violations are reported in the *Messages* panel.

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**Source URL:** <http://documentation.circuitmaker.com/display/CMAK/CircuitMaker+Documentation>