

CR-5000

Integrated Platform for Verification-Based
Electronic Product and PCB Design



If you want...

Increased design productivity and improved PCB performance through leading edge electronics design functionality

Right-first-time products through a constraints-driven design process with DFM throughout PCB design and manufacturing

Design technologies for multi-layer & high-speed PCBs, with integrated Signal Integrity and EMC analysis & optimization

Support of multi-user PCB designs worldwide, decisive for medium to large organizations

An object-oriented, database-driven PCB design software architecture

An intuitive graphical user interface and PCB design workflow

Built-in design variants support & version control

Easy integration with MCAD, PDM/PLM, or ERP systems



Automation solutions - Industrial Ethernet
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...then let us introduce
you to CR-5000



CR-5000 - Introduction

CR-5000 is Zuken's advanced modular and robust electronic systems and PCB design platform, created to manage the complete development and manufacturing preparation process on an enterprise-wide scale, specifically within medium to large organizations. CR-5000 offers highly sophisticated functionality for the design of multi-layer and high-speed boards, addressing design challenges such as Signal Integrity and EMC, while ensuring manufacturability. Its intuitive design flow, guiding users through the design process from design entry to production preparation, is supported by comprehensive database management. The performance of CR-5000, coupled with its modular and scalable design environment, provides product development teams across disciplines and country boundaries with flexibility and maximum collaboration opportunities for handling multi-user designs.

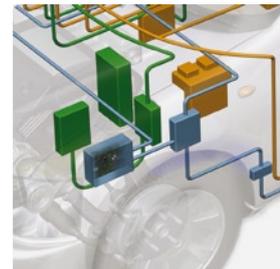
The seamlessly integrated tools within CR-5000 enable the interactive workflow required for a straightforward design process, and provide all the technologies required for efficient and complete electronics development in a single environment: system design and analysis, constraints management, co-design of FPGA and PCB, PCB layout and verification, high-speed and EMC analysis, and production preparation. All this is complemented by a sophisticated parts library management, powerful documentation system, and an extensive internet-accessible components library. CR-5000 further supports design collaboration with widely-used, powerful mechanical, electrical, and thermal design systems.

Fast and reliable design process

CR-5000 enables right-first-time design of electronic products through a constraints-driven design process. From design capture to manufacturing data preparation, PCB integrity is maintained by parallel design and verification, with co-simulation of both analog and digital functional blocks and programmable devices, Signal Integrity, Power Integrity and EMC optimization. Proven DFM techniques are applied in parallel to the design process.

Migration preserves legacy data

Migrating to CR-5000 from Cadence Allegro & OrCAD, Mentor Graphics Expedition, Board Station & PADS, or Altium Designer is simple. Users can move over all their data to CR-5000 from previous designs, re-using symbols, footprints and other supporting design data, and benefit from the ability to re-work legacy designs and component libraries.

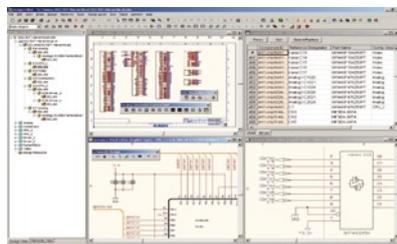


System Design

Designing an electronic product right-first-time and meeting tight delivery deadlines requires a specific premises. With Design Gateway, CR-5000 provides a complete solution for design creation, verification, and re-use: powerful schematic design editor, constraints management, a wide range of analog, digital, mixed-signal, and multi-technology simulators, FPGA and PCB co-design, parts library management and documentation system.

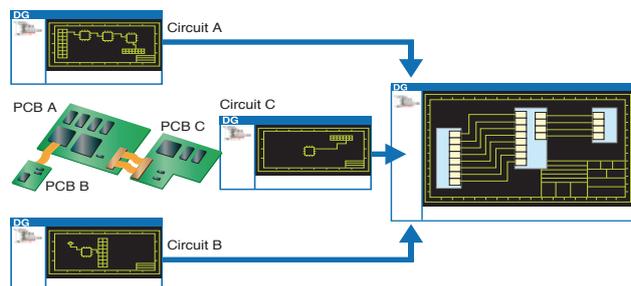
Design Creation

Design Gateway opens up the potential of complete system circuit planning and schematic design, and forms the core of the front-load design process of CR-5000. Design Gateway reduces design cost and time-to-market and eliminates unnecessary



Design Gateway

product prototypes and re-spins. Multiple schematic sheets can be edited simultaneously, and by multiple designers, facilitating efficient operation in large projects.



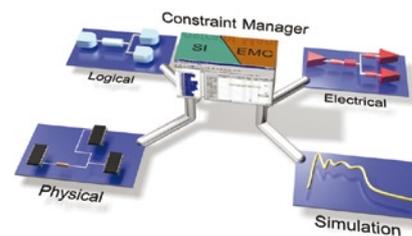
Multiple PCBs design

Library Tools

CR-5000 Components Manager facilitates sophisticated parts library management. An extensive symbols and components library is provided with CR-5000, and custom versions can be generated through the symbol and component wizards.

Constraints Management

CR-5000 Constraint Manager guides users through a fully integrated, constraints-driven design methodology to meet high-speed performance requirements, eliminating unnecessary prototypes and re-engineering cycles. It provides an easy-to-use spread-sheet-like GUI, supporting constraints information sharing and updating, and cross-probing to schematics and layout.



Constraint Manager

Parallel System Design & Analysis

CR-5000 Lightning enables circuit timing and Signal Integrity simulation from Design Gateway schematics. Additionally, a wide range of analog, digital, mixed-signal, and multi-technology simulators interface directly with Design Gateway. Interfaces are available for HSPICE, PSpice, ADS, Active-HDL, ModelSim or Saber, supporting co-simulation of analog and digital functional blocks and programmable devices.

FPGA & PCB Design

CR-5000 Graphical Pin Manager offers a straightforward FPGA and PCB co-design flow, from top level HDL description to schematic symbols, as well as to the physical I/O information for layout, thus reducing design cycle time and optimizing system performance. It interfaces directly with state-of-the-art FPGA design tools Altera Quartus II, Xilinx ISE, Actel Libero, and Lattice ispLEVER.

Documentation

CR-5000 provides a documentation system for creating hierarchical PDF documents from Design Gateway schematics, customized to company requirements, with automatically generated bookmarks/hyperlinks for all parts.



Physical Design

CR-5000 includes intuitive layout tools, fully integrated with system design and analysis as well as layout verification, enabling an interactive workflow between schematic entry and board layout. The powerful placement and routing tools of CR-5000 are optimized for speed and accuracy, tackling today's complex PCB design challenges with creativity and intelligent automation.

Layout

CR-5000 Board Designer facilitates the intelligent and smooth development of schematics into layout, allowing the designer to quickly and easily create, re-use or adapt designs. Everyday tasks are made intuitive and efficient for complex placement patterns, speeding up the most challenging implementations.

Placement & Routing

CR-5000 includes advanced interactive placement and routing tools, providing component push-aside and spring-back functions, giving the user ultimate control when designing boards with complex power distribution and testability requirements. Also available is fast automatic concurrent placement of components on the PCB, based on constraints specified in the schematic, such as component grouping and clustering. The automatic router masters simultaneous routing of multiple nets, including differential pairs, with true 45° routing. Routing rules and constraints ensure correct design implementation through automatic length balancing, impedance matching, overshoot and crosstalk limiting, and route shielding. BGA escape routing is highly effective, considering rules by area, with trace width and clearances changing automatically when within such areas.

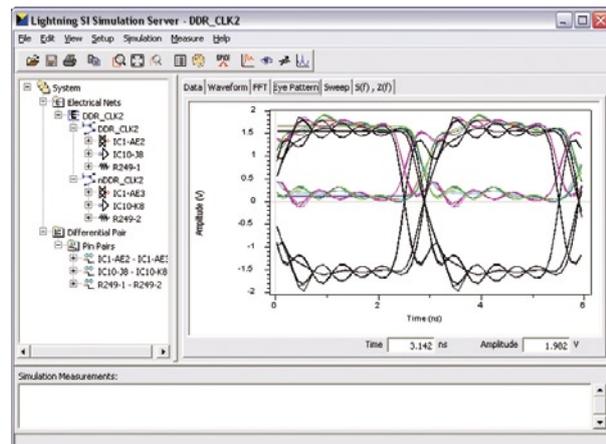


Board Designer – automatic length-balanced routing

Analysis & Verification

Parallel Design & Verification

CR-5000 Lightning provides a fully integrated, complete Signal Integrity simulation toolset, with the Constraint Manager at its core. The same simulation tools are available within both schematic entry and board layout. Selected blocks and areas can be analyzed, evaluating electrical performance, reflection and crosstalk effects, and interconnect timing information.



Lightning – layout SI analysis

Scenario Editor provides a scratchpad for experiments with different design strategies, while powerful parameter sweep simulation makes it possible to explore design limits and optimize circuit constraints. For nets that have not yet been routed, estimates of interconnect length and impedance are automatically considered during simulation to provide complete, realistic information for early design review. Straightforward what-if analysis for layer stack changes, different track widths or track-to-track spacing mean it is easy to optimize single-ended or differential signal routing to meet sophisticated electrical constraints.

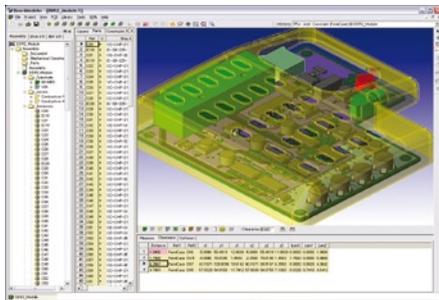
Manufacturing

Power Integrity & EMC Verification

CR-5000 Lightning facilitates PCB Power Integrity through power distribution analysis and advice on sufficient power and ground connections, thus limiting power supply noise and ground bounce. EMC analysis is provided, based on differential & common mode simulation. Effects from external or supplementary components, can be included in the analysis. Potential EMI sources can be individually identified, so EMI problems can be fixed prior to fabricating a prototype PCB, and doing EMI measurements. CR-5000 EMC Advisor is a flexible and comprehensive rules-based EMC analysis system. PCB designers gain high visibility of possible EMC problems caused by design features including de-coupler placement, routing of traces across slits or gaps, and open and closed trace loops.

Parallel Mechanical & PCB Design

CR-5000 Board Modeler provides an optimized environment for the verification of PCB layouts in their mechanical environment, avoiding re-spins and costly production delays. It automatically back-annotates any board and placement changes into the PCB design, whether new or imported, so any required layout action such as re-routing can be done easily. Board Modeler also interfaces with numerical simulation systems, like Abaqus, Ansys, Cradle, and Flomerics, enabling in-depth simulation of mechanical or thermal stresses of a PCB.



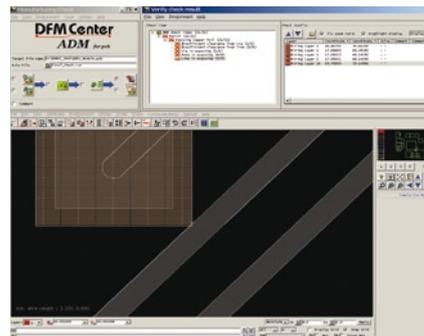
Board Modeler – housing collision checking

CR-5000 Board Interchanger provides all the functionality of Board Modeler integrated within CATIA. For users of NX/Unigraphics, PCB Exchange for CR-5000 is available.

The constraints-driven design process of CR-5000 can be complemented with parallel DFM techniques throughout design and manufacturing. Design rule checking (DRC) within the layout process, and also as a final check before manufacturing data creation, is a cost-effective way to improve the yield in board manufacturing. CR-5000 also provides production preparation tools for processes such as panelization, offering the choice of either handling manufacturing data optimization directly, or delegating it to the board manufacturer.

Advanced Design Rule Checks

CR-5000 DFM Center ADM is Zuken's DRC system, docking into Board Designer, and providing manufacturability checking in parallel to the layout process. DFM Center ADM comes with a design rule manager and a large set of proven design rules for rigid board, flexible board, and package board checking. Check results are listed in a spread-sheet-like GUI, which allows users to select each DRC warning/error and automatically zoom in to the relevant area of the layout.



DFM Center ADM – design and manufacturing rules checking results

Production Preparation

CR-5000 Board Producer provides manufacturing pre-processing functionality including panel creation. Manufacturing data can be written in all relevant formats, such as extended Gerber (RS274X), extended NC Drill (Excellon), ODB++, IPC356-D, or IPC-2581. Simple or complex bills of material (BOMs) can be created for the complete design or each design variant.



About Zuken

The Challenge

More quality, more functionality, in less time, with less cost; it's a common story in today's market place. The increased competition and requirement to operate on a global scale, makes these end-user demands ever more challenging to meet. So companies need to be innovative and dynamic to stay one step ahead of the game – this is where Zuken can help.

What We Do

Zuken works globally with leading companies to optimize their electrical and electronic engineering design and related manufacturing processes through the provision of leading-edge software and consulting services. Our unique combination of proven experience, technological expertise and agility creates best in class solutions. Our transparent working practices and belief in integrity in all aspects of business produce long lasting and successful customer partnerships.

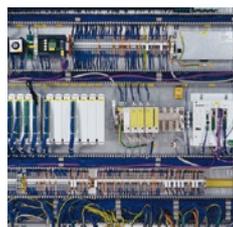
Security of Solid Foundations

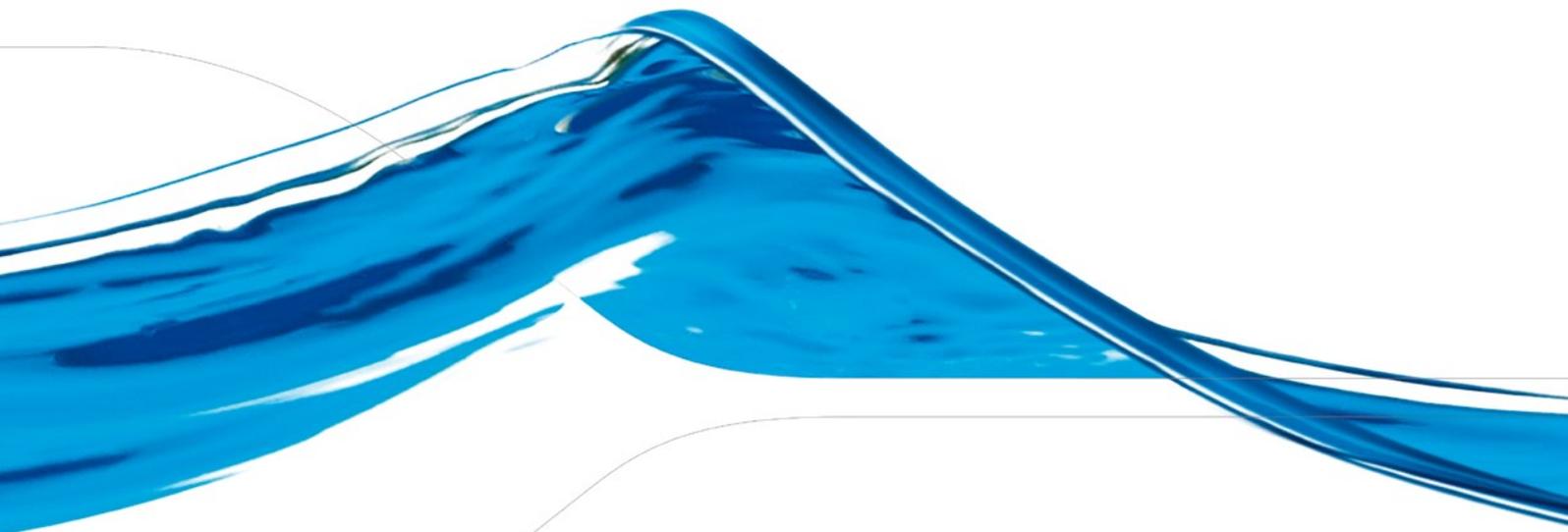
Zuken's robust market position is reinforced by an established position in the industry with over 30 years experience, and solid financial foundations. As a stable multinational company, listed on Tier 1 of the Tokyo Stock Exchange, Zuken is able to remain focused on being a long-term innovation and growth partner.

The security of an investment by partnering with Zuken is further reinforced by the company's people – the foundation of Zuken's success. Coming from a wide range of industry sectors, specializing in many different disciplines and advanced technologies, Zuken's people are able to relate to and understand each company's unique requirements.



Software Solutions for
Electrical & Electronic Engineering
Our focus, Your benefit





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