EDWinXP – An Integrated EDA Software Package

EDWinXP (Electronic Design For Windows) is a CAD/CAE Software package of seamlessly integrated, task oriented modules covering all stages of the electronic circuit design process—from capturing the idea of a circuit in the form of schematic diagram to generate a full set of documentation for manufacturing and assembly of PCBs. Additionally the package includes various validation tools ensuring correctness and integrity of designed circuits. Complete design information is stored in the integrated project database, simultaneously accessible by schematic diagram editor, analog/digital, mix-mode circuit simulator, PCB layout editor, board level analysis and fabrication output managers. Front and back annotation of all design changes is fully automatic. EDWinXP comes with extensive part library which may be updated, customized and enhanced with the help of library editor.

Modules (EDWinXP)

- Schematic Editor
- Library Editor
- Mixed Mode Simulator
- EDSpice Simulator (SPICE based simulator)
- 8051 Microcontroller Kit
- AVR Kit
- PIC Microcontroller Kit
- VHDL Co-Simulation and Model Generators
- PCB Layout Editor
- Thermal Analyzer
- Electromagnetic Analyzer
- Field Analyzer
- Signal Integrity Simulation
- Fabrication Manager
- 3D Editors and Viewers

Schematic Diagram Editor:
The schematic diagram editor contains a full set of manual and automated tools for placement of circuit elements on the diagram and for routing the connection. Additional graphical and textual information may be created in the form of design notes.

Features:
- Top down hierarchical circuits (99)
- Customizable component browser
- Definable connection and bus width
- Intelligent and interactive routing
- Auto packaging
- Instant packaging
- Smart auto placer
- Circuit DRC
- Filter designer
- Page/design notes
- Block diagram elements
- Truth table to diagram converter
- VHDL code to diagram converter
Circuit Simulator:
The functioning of the circuit may be tested with the help of integrated simulators in EDWinXP. Mixed mode simulator, the system’s native circuit level analyzer and EDSpice, the full implementation of XSPICE as defined by Georgia Tech are two simulators in EDWinXP. Mixed mode simulator supports TD, DC, AC, Parameter sweep, Fourier, Monte Carlo and sensitivity analyses of analog, digital, and mixed-signal circuits.

Features:
• Mixed mode Simulator
• EDSpice Simulator
• Logic Analyzer
• Multi channel Oscillograph
• EDSpice interactive Interpreter
• Circuit File Editor
• Instant Probes
• Model Generators
• VHDL to SPICE Model
• VHDL to Mixed Mode

SPICE Net list Generation from schematic:
Active low pass filter (Netlist View)

```
*  
V9 0 7 15  
V8 0 0 15  
R7 0 4 10k  
R5 1 0 10k  
X1 8 1 6.74 TL032_30  
C2 0 8 10n  
V3 0 AC SIN ( 0 1 100k 0 0 )  
R4 4 1 10k  
R6 8 5 22k  
*CODE MODEL DEFINITIONS

.END
```

Microcontroller simulation kit:
The Kit contains project databases designed to illustrate functionality of 8051, AVR AT 90S2313, PIC16CSX, and PIC16X84. It uses MMI technology that enables edition and compilation of programs in C and assembly language, and it also allows debugging the code in real time. The kit contains series of instrumental models such as memories, interrupt generators, serial/parallel pattern generators, 7-segment displays etc. for generating parallel and serial binary data patterns and asynchronous hardware interrupts.
VHDL Editor and Compiler:

VHDL source files (Level 0 syntax) may be created with VHDL editor. This may then be complied and imported to EDWinXP as a project. This project may then be exported to netlists of the format CUPL, XILINX, JEDEC etc.

PCB Layout Editor:

EDWinXP project supports design of 32-layer boards. Components are created automatically as a result of packaging executed while editing the schematic diagram of the circuit. Location and orientation of components is defined either by manual relocation to desired position or with the help of the auto placer. Traces may be routed manually with automatic via insertion whenever a routing layer is changed. Sixteen types of user defined via pads are supported. A dedicated “full board” auto router module is integrated with the PCB layout editor. Insertion of air gaps and the thermal pads on artworks is automatic. Design rules violation, clearance errors and missing or incomplete connections are also detected automatically.

All changes introduced in the circuit design are automatically back annotated to schematic diagram.

Features:
- 32 layers
- Smart auto placer
- Auto router
- Online trace clearance check
- Trace length and width trimming
- DRC
- Test point
- Connection check
- Automatic correction of selected clearance errors
- Automatic clearance correction after routing and rerouting
- Through holes and buried vias
- 3D view of layout
Board Analyzers:

**Thermal analyzer**
The temperature distribution on a finished PCB may be analyzed graphically with the help of thermal analyzers. The result of the analysis is displayed using isotherms or color mapping schemes.

**Electromagnetic field analyzer**
Electromagnetic analyzer presents graphically the predicted intensity of electromagnetic fields inside and outside board boundaries.

The signal integrity analyzer detects distortion noise and crosstalk for critical signals.

Fabrication Manager:
All CAM functions of EDWinXP are grouped in this module. The user has the option to add targets, coupons, thieving and venting areas. Copper pour areas are checked for possible shorts or area isolated by air gaps. Automatic or manual copper removal is also implemented. Final artworks are prepared for photo plotting.

Exports:
- ODB++ Export
- DXF output
- EDIF version 2.0
- Export CNC data in G-CODE
- Spectra and maxroute auto routers
- Xilinx netlist
- JEDEC netlist
- GERBER and many others

Imports:
- ODB++ import
- DXF
- SPICE netlist (SPICE3F5 & XSPICE)
- VHDL (Level ‘0’ syntax)
- Geber ASCII (Reverse Engg)
- OrCAD PCB II wirelist and many others
3D Editor and viewer:
EDWinXP may present designed PCB in “real life” three dimensional views. In order to make it possible, 3D views of component packages (created according to IPC, JEDEC and EIA standards) are included in the system part library. Tools are provided in library editor to create and edit 3D views for newly created packages.

Library Editor:
EDWinXP component libraries may be updated, customized or enhanced with the help of library editor. Functionality of this module allows definition of graphical representation of components in schematic diagram (symbol editor) and on printed circuit board (package Editor). These elements are included then in the component description, which also contains the packaging information, thermal parameters and link to simulation modules.
### Partial List of Educational Institutes Using EDWinXP in India

<table>
<thead>
<tr>
<th>Institute Name</th>
<th>Location</th>
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<tbody>
<tr>
<td>IIIMT Engineering College, Greater Noida</td>
<td>Greater Noida</td>
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<td>IIIMT Engineering College, Meerut</td>
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<tr>
<td>College of Engineering &amp; Technology, ILM Academy</td>
<td>Greater Noida</td>
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<td>For Higher Learning Greater Noida</td>
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<td>G.L. Bajaj, Greater Noida</td>
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<td>KNGD, Ghaziabad</td>
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<td>H.R. Inst, Ghaziabad</td>
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<td>Lord Krishna College of Engineering</td>
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<tr>
<td>SRM University Modinagar Campus</td>
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<td>R.K. G.E.C., Pilkhua, Utter Pradesh</td>
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<td>K.P. Engineering College, Aggra</td>
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<td>HMFA, Allahabad</td>
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<tr>
<td>Bhagwan Parsuram Institute of Tech, Rohini</td>
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<td>R.N. Modi, Kota</td>
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<td>Pacific Institute of Technology, Udaipur</td>
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<td>Jyoti Vidya Peeth Women's University, Jaipur</td>
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<tr>
<td>Bansal School of Engg &amp; Tech, Jaipur</td>
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<td>Kiit, Gurgaon, Haryana</td>
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<td>Tek Chand Mann College of Engg, Sonepat</td>
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<td>Shanti Niketan Engineering College, Hissar</td>
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<td>Rao Pahlad Singh College of Engg, Mohindergar</td>
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<td>Koustuv Inst of Self Domain, Bhubhneshwar</td>
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<td>College of Engg, Bhubhneshwar</td>
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<td>Chhattisgarh Institute of Technology, Raja Nandgaon</td>
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<td>M.M. Foundation, Raipur</td>
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<tr>
<td>Shri Shankracharya Group of Colleges, Bhilai</td>
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<tr>
<td>Dr. C.V. Ramani University, Bilaspur</td>
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<td>Guru Ghasidas Vishwavidyalaya, Bilaspur</td>
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<td>Dev Bhoomi Institute of Technology, Dehradun</td>
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<td>IIIT Design and Manufacturing, Jabalpur</td>
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<tr>
<td>Somaya College of Engineering, Mumbai</td>
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<tr>
<td>Saraswati College of Engineering, Navi Mumbai</td>
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<tr>
<td>Ramrao Adik Inst of Tech, Navi Mumbai</td>
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<tr>
<td>Dr. D.Y. Patil College of Engineering, Pimpri, Pune</td>
<td>Pune</td>
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<tr>
<td>Singlad College of Engineering, Pune</td>
<td>Pune</td>
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<tr>
<td>K. J. Somaya, Shelum, Mumbai</td>
<td>Mumbai</td>
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</tbody>
</table>

And Growing...
International Customers List

Volvo, Sweden
Ericsson, Sweden
Nokia, Sweden
Siemens, Sweden
Alcatel, Sweden
Bofors, Sweden
FCC (US FCC authority)
PCB Technologies, Italy
Delta Control Systems Canada
Unicraft, Japan
Technologia Tecom S.L, Spain
R.K System, Poland
West Test, Germany
Mercure Telecom, France
Jeppson, Sweden
Industry Electronics, Czech Republic
Software Sistemas Especializados Ltda, Colombia
Elecsys, Korea
VESL Technologies, Tanzania
Test & Rework Solutions (Pty) Ltd, South Africa
Swifteurotech, U.K
Whingate, U.K
Toyota, Japan

List of Companies in India Using EDWinXP

DRDO, Bangalore
DRDE, Gwalior, Madhya Pradesh
HAL, Bangalore
TATA Institute of Fundamental Research, Mumbai
CDAC, Bangalore

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