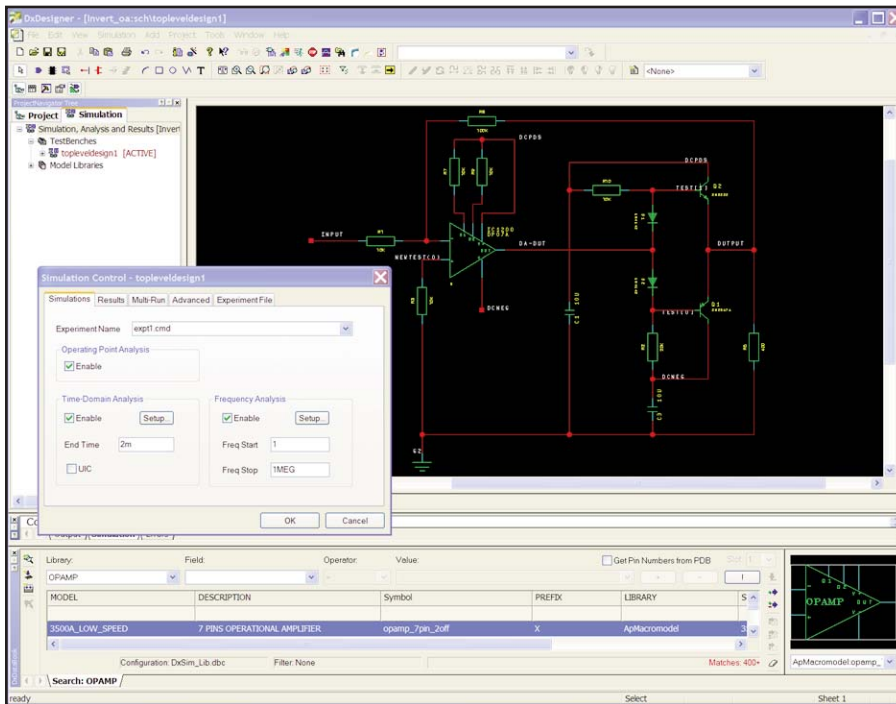


# HyperLynx Analog Expedition

## PCB Design

### D A T A S H E E T



*HyperLynx Analog provides a complete simulation environment integrated into the PCB design flow. HyperLynx Analog allows the user to prepare all aspects of simulation for both basic and complex analysis while seamlessly driving the ePCB layout design system.*

## Overview

HyperLynx Analog is a board-level simulation analysis and verification environment that is integrated into Mentor Graphics® DxDesigner™ board-design environment. HyperLynx Analog provides a truly scalable solution for board-level simulation, allowing the designer to satisfy their requirements by tailoring the solution through a choice of simulation options. This scalability, coupled with the ability to use a common schematic editor for simulation and PCB entry, significantly shortens the overall development cycle.

## Easy-to-Use Environment

During the design phase engineers need the ability to continuously evaluate the circuit, whether due to value changes to discrete components or to the inclusion of a new device. During this process the engineer must have access to a variety of capabilities to aid the process. In this easy-to-use environment the analog engineer will find:

## Major product benefits:

- Integrates with DxDesigner for board-level simulation with a single entry point for PCB schematic capture and simulation
- Sophisticated environment for hierarchical design methodologies and multi-sheet schematics; easily managed through an intuitive user interface and an advanced project navigator
- Scalable simulation environment giving access from one common single User Interface to the best-in-class analog and mixed-signal simulators.
- Multiple abstraction levels support through the industry-standard languages Edo/SPICE, Verilog, VHDL and their mixed-signal flavors Verilog-A(MS) and VHDL-AMS, C
- Basic DC, frequency and time-domain analysis extended to advanced parametric sweep and statistical Monte Carlo analysis to ensure design quality and manufacturability
- A series of advanced analyses such as stress and sensitivity enable the designer to simulate all aspects of the circuit operating environment
- Comprehensive and interactive waveform post-processing functions with a wide range of display formats

**Walk-through simulation** - The engineer is guided through the simulation process by the simple, data-centric toolbar.

**Drag ‘n’ Drop** - The drag ‘n’ drop feature allows the designer to quickly try new devices. Once a model has been downloaded, they can simply select the model file in the browser and drag it into the schematic. HyperLynx Analog then automatically creates a fully functional symbol ready for simulation. Once the designer has completed the what-if stage, they can then add it to the library if required.

**Model Editing** - From within the HyperLynx Analog environment the designer can easily edit using the syntax-sensitive text editor. To edit a model, the user simply selects a symbol in the schematic and pushes it into the model, or selects the model in the library browser.

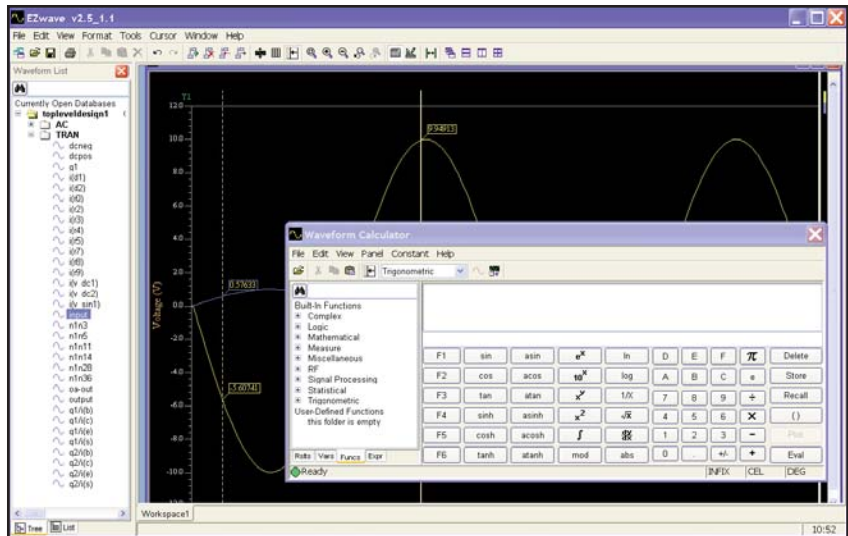
**Project Browser** - The HyperLynx Analog environment also includes a well-structured design data storage area with quick access through the project browser. The designer can easily view or edit all aspects of the design, such as the testbench simulation setup, models, included files and results.

## Complete Modeling Solution

By maintaining SPICE standards, HyperLynx Analog lets designers import device vendor models, thereby effectively expanding their simulation environment. The vast majority of vendor models, supplied freely over the Internet, are either Pspice models or are in PSpice format and HyperLynx Analog provides an easy method to leverage this source.

## Scalable Simulation Options

Managing diversity is one thing but doing it efficiently requires the appropriate simulation engine. HyperLynx Analog provides a flexible solution, adapted to your needs, from an embedded SPICE simulator for quick analyses, to the Eldo SPICE-based simulation engine for more complex, pure analog or simple mixed-signal design verification. The ADVanced MS (ADMS) single kernel, mixed-mode, engine is also available to provide an even higher level of abstraction.



*The intuitive Waveform Viewer allows the designer to explore all aspects of the simulation results.*

## Board-Level Unique Co-Simulation Capabilities

Today’s PCB designs comprise digital, analog, and even RF circuits that are interwoven on one substrate. This complexity requires the ability to manage a heterogeneous simulation environment at the board-level. With the ADMS kernel the designer is able to easily manage multiple levels of abstraction as well as multiple languages and models. The designer is free to perform either full-board or partial-board simulation.

For full co-simulation capability, two high-performance simulation engines are combined in one efficient single-kernel solution: This unique solution provides a full-featured analog simulation capability for large-signal and frequency-domain simulations, while also providing all the features required for digital simulations. With this option the designer can take advantage of complete language support including C, VHDL, Verilog, VHDL-AMS, Verilog-AMS and SPICE.

## Advanced Design Analysis

Analysis of complex simulation results requires a sophisticated solution. The waveform viewer is an interactive measurement tool for design analysis and verification that works on a unified waveform database with digital and analog simulation data saved in a single compact and efficient representation.

The waveform analyzer provides support for single or multiple, flat or hierarchical databases through multiple graph windows.

Measurements between transition points through the use of multiple cursors and interactive event search, creation of special diagrams and charts (Eye diagram, smith chart, XY plot, ...), and waveform post-processing using built-in (complex, logic, mathematical, trigonometric, etc) or user-defined functions are some of the rich features provided by the high-capacity EzWave tool.

### Comprehensive Libraries and Modeling Capabilities

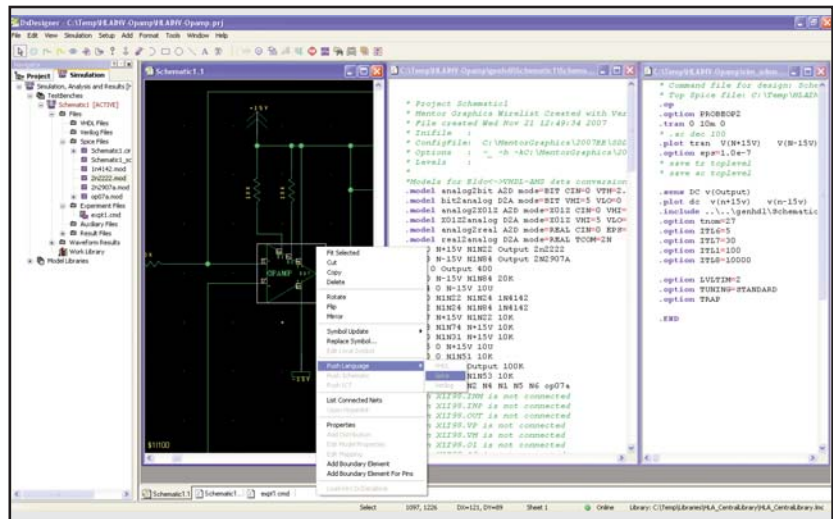
Quality models provided in multiple libraries unleash the power of the sophisticated simulation engines and other analysis tools available in HyperLynx Analog. In line with the multi-level simulation capability, libraries of Spice primitives, semiconductor models, sources but also system modeling blocks are provided.

External Spice libraries can be imported and Pspice libraries converted, raising the number of available models above 30,000.

The library of VHDL-AMS and Verilog-AMS behavioral models and supporting packages offer functions ranging from digital blocks to complex telecommunication functions among which are A/D, D/A, Amplifiers/Comparators, PLL, Delta-Sigma, Filters, Control and Modulators/Demodulators.

### Improving Design Quality and Manufacturability

With greater emphasis on reducing scrap and manufacturing costs, designs need to have the proper tolerances. Adequate range components are selected so that designs will function properly across several manufacturing runs. Analysis such as statistical Monte Carlo enable you to identify components that most affect circuit performance and predict likely design yields by considering tolerance variations across components. You'll also balance costs of components that have tight tolerances against the impact on circuit and manufacturing performance. Reports can be exported to an ASCII file using CSV format.



*A single environment that allows the user to easily view and edit models as well as the Spice circuits.*

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