

OVERVIEW

The **Genie-AHB Verification IP** is a comprehensive verification solution for pre-silicon functional verification of AMBA AHB based designs. It provides a fast and easy solution to verify the AMBA AHB functionality in any FPGA, SoC or ASIC design.

The **Genie-AHB VIP** supports Bus Functional Models (BFM) for **AHB Master**, **AHB Slave** and **Arbiter**. It includes an AHB Monitor and Checker to observe and verify all transactions across the bus. The compliance suite consists of BASIC TEST and RANDOM TEST to provide complete design coverage to the specification and allows designers to focus their efforts on the unique aspects of their design.

The **Genie-AHB VIP** is fully compliant with the AMBA3 AHB V1.0 specification. It includes verification techniques such as Callbacks, Monitors and Checkers to quickly and extensively test all features of the AHB.

Each Genie-AHB VIP provides:

- AHB Master Active/Passive Agents
- AHB Slave Agents
- AHB Sequencer and sequence library
- AHB Configuration block
- AHB Error Injector
- AHB Interface Inspector
 - AHB Monitor
 - AHB Scoreboard
 - AHB Coverage Collector
 - Performance analyzer
 - AHB Callbacks
 - AHB Protocol Checker
 - SystemVerilog Assertions
 - Report Generator

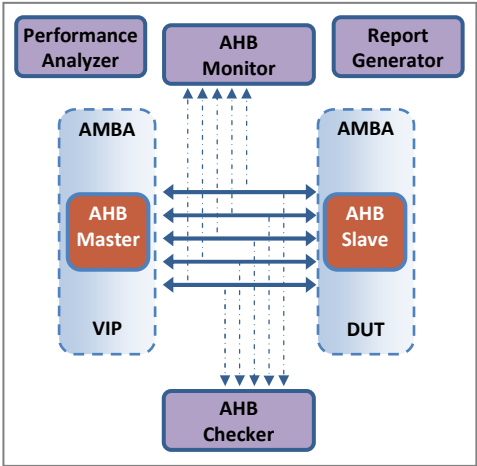


Fig. 1: AMBA AHB System Block Diagram

FEATURES

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| ❖ Compliant with the AMBA 3 AHB Protocol | ❖ Supports master and slave topologies |
| ❖ Supports all AMBA 3 AHB protocol transfer types, and response types | ❖ Configurable slave responses (OK, ERROR, WAIT, RETRY, and SPLIT) |
| ❖ Supports all AHB data and address widths | ❖ Supports address wrapping on slave Model |
| ❖ Supports Locked transfers | ❖ Supports early Burst termination by Slave |
| ❖ Supports burst transfers | ❖ Supports Idle and Busy Commands |
| ❖ Master model configurable for inserting busy cycles in burst transfers | ❖ Monitors and checks all protocol violations |
| ❖ Rich set of configuration parameters to control AHB Commands and Responses | ❖ For RETRY and SPLIT, Master reissues the transaction till complete data is transferred. |
| ❖ Support for all the transfer sizes | ❖ Support multiple masters & slaves |
| ❖ Ability to inject errors | ❖ Logs and report for bus traffic |
| ❖ Retry or cancel of a transfer on error. | ❖ Call backs for various events to provide control over test case execution |
| ❖ Complete UVM UVC is available for Master, slave and arbiter | ❖ Each VIP instance contains an agent containing monitor, sequencer and driver |

PRODUCT DETAILS

AHB Master

AHB master initiates transfers on the bus. User controllable knobs provide the ability to configure key features within the master model.

AHB Slave

AHB slave responds to the transaction initiated by the master. The AHB slave includes fully configurable wait states and slave error responses.

AHB Arbiter

AHB arbiter can take requests from multiple masters at a time and arbitrates for the bus using configurable priority scheme.

AHB Monitor

AHB monitor tracks and observes all traffic on the bus. It generates LOG files that are user configurable to customize information reported. It has the capability to program file names for logging information. It also supports Performance Analysis and Functional Coverage.

AHB Checker

AHB checker provides bus-level protocol checking capability. It performs real-time reporting of errors on the clock in which the End symbol of a packet is received.

BENEFITS

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|---|---|
| ❖ Faster Test bench development by using these configurable models | ❖ Corner case test scenario generation due to programmable BFM commands and Knobs |
| ❖ Reduce verification cycle by using readily available comprehensive directed and random test suite | ❖ Easily integrates with Verilog, SystemVerilog, OVM and UVM test environments |
| ❖ Faster debug due to customized reports and log files | ❖ Executable in every major simulation environment |
| | ❖ Supports back to back environment |

SUPPORTED SIMULATORS

ALDEC CADENCE MENTOR SYNOPSYS

AHB COMPLIANCE TEST SUITE	AHB SOLUTIONS
<p>Developed by PerfectVIPs to thoroughly verify AMBA AHB designs, the test suite is a comprehensive verification test suite.</p> <ul style="list-style-type: none"> Verifies all AMBA AHB functionalities Includes Basic, Advanced and Random Test suite Comes with regression scripts 	<p>Developed by PerfectVIPs to address all AMBA AHB based architectures, the following AMBA AHB solutions are available.</p> <p>Verification IP:</p> <ul style="list-style-type: none"> AMBA AHB Master VIP AMBA AHB Slave VIP AHB Checkers/Monitors <p>Compliance Suites:</p> <ul style="list-style-type: none"> Master Compliance Test Suite Slave Compliance Test Suite