Mil1394 OHCI Link Layer Controller IP Core

Open Host Controller Interface (OHCI) Link Layer IP Core for 1394b AS5643

Applications

Vehicle System - Remote Node

Vehicle System - Vehicle Management Computer

Avionic Mission Systems

Benefits

Increase interface node density while reducing interface size & power

Increased performance with hardware-based STOF offload

Additional diagnostics and programmable operation features

Leverage proven technology for standard interface implementation

Features

AS5643 compliant interface with hardware-based STOF offload

Supports S100/S200/S400 data rates

Configurable number of OHCI nodes in a single FPGA

AXI-based host interface for embedded or PCIe-based processors

Standard PHY-Link interface

Overview

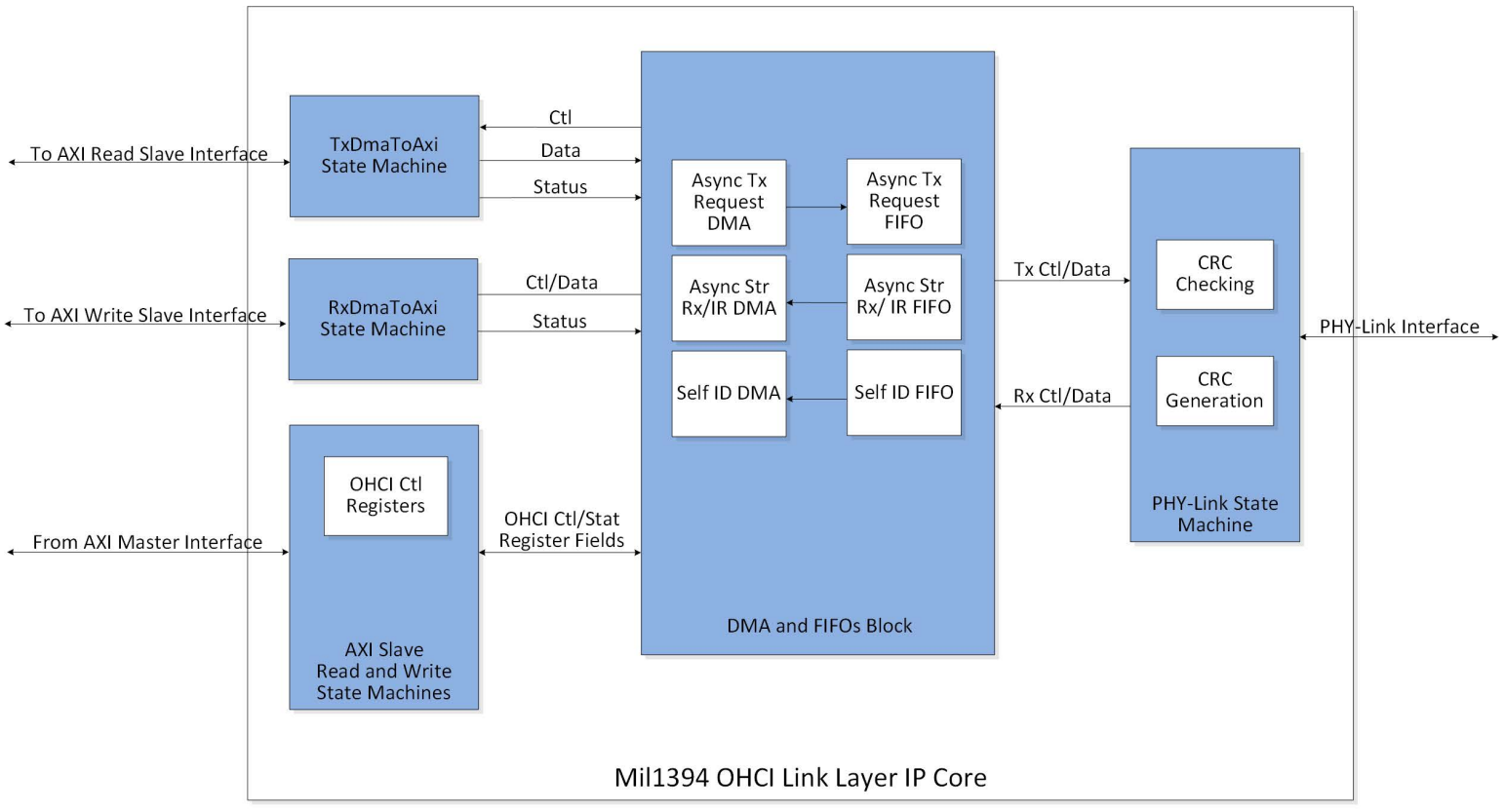
The New Wave Design and Verification (New Wave DV) Mil1394 OHCI Link Layer IP Core provides a complete IP solution for the OHCI layer of the Mil1394 protocol.

The core includes all functionality needed to meet the Mil1394 specification including: Asynchronous Transmit, Isochronous Receive, Start of Frame (STOF) handling, STOF regulated transmit functions, Self ID, and CRC generation/checking.

At the PHY-Link interface, the core is built for connecting to any PHY implementing the defined standard PHY-Link interface. This interface is compatible with the New Wave DV PHY IP core as well as discrete

This core is targeted towards Mil1394 aerospace applications and has been used on a wide range of parts at varying operating rates. The core comes with test-benches and example code, making design integration a straightforward task.

Evaluation versions of the OHCI Link Layer IP Core are available and New Wave DV has a set of standard form factor boards featuring FPGAs, 1394b connectors and transformers, and off-the-shelf reference designs for quick evaluation of the OHCI Link Layer IP Core.



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Functional Description

The Mil1394 OHCI Link Layer IP Core was developed as a AS5643-compliant, IP-based replacement to existing discrete 1394 OHCI integrated circuits without AS5643 support. The IP Core implementation provides significant operational benefits as well as size, weight, and power savings over legacy discrete component implementations.

Use of an IP Core-based implementation for 1394b also significantly mitigates future obsolescence issues. Discrete component 1394b options are now offered by only one vendor. Since the OHCI core from New Wave DV can operate in all FPGA technologies including but not limited to AMD (Xilinx), Intel (Altera), and Microchip (Microsemi); future implementation options are assured.

In the OHCI Core, New Wave DV provides enhancements that are not available in the 1394 discrete components. These additional capabilities include diagnostic information, hardware-based AS5643 STOF offload, AXI-based host interfaces, and custom configuration options.

The OHCI core can be instantiated multiple times in a single part. The OHCI core also supports a configurable number of nodes. Customers have taken advantage of this capability to build devices with OHCI node counts of of up 15 and port counts as high as 30. This customization allows for the most efficient use of FPGA/ASIC resources.

By taking advantage of modern FPGA technology, and using this IP core along with 1394b PHY core from New Wave DV, it is feasible to implement in one FPGA what used to be implemented in 8-10 discrete components. Each of those discrete integrated circuits being the size of the one FPGA/ASIC using the New Wave DV IP cores. This is a board-space savings for high-density 1394b applications of roughly 10:1.

Complete Product Support Program

Our customers can attest to our exceptional support. New Wave DV provides an industry-standard warranty on its products, but it is the human factor that makes our support so valuable to our customers. Our team takes the time and effort to ensure a positive customer experience.

Technical Specifications

Core is delivered in netlist format including constraint files.

SUPPORTED DEVICES
AMD (Xilinx): Virtex, Kintex, Artix, Zynq FPGAs
Intel (Altera): Stratix, Arria, Cyclone FPGAs
Microchip (Microsemi): SmartFusion2, Igloo2 FPGAs

SUPPORTED RATES
S100/S200/S400

OPERATING FREQUENCIES
S100: 12.288Mhz
S200: 24.576MHz
S400: 49.152MHz

Mil1394 OHCI Host Adapter Cards

In addition to the Mil1394 OHCI Link Layer Link layer Controller IP Core, New Wave DV provides standard form factor Mil1394 OHCI interface cards that incorporate the IP core along with high performance DMA engines and software drivers. Available in PMC/XMC/PCIe form factors, New Wave DV Mil1394 OHCI Link Layer cards provide up to 30 ports in a single card.

Our Commitment

New Wave DV is committed to providing the latest innovations in technology, architectures, and techniques to keep our customers one step ahead of the rest. Our products, complete with the Development Framework, are intended to offer our customers an entirely unique out-of-the-box experience.

Ordering Information

700-FW300-00-A0 (Altera), M0 (Microsemi), X0 (Xilinx):1394b OHCI Link Layer Core, S100/S200/S400 rate support

700-FW300-10-A0 (Altera), M0 (Microsemi), X0 (Xilinx): 1394b OHCI Link Layer IP Core, includes PHY Layer Core, S200/S400 rate support

Other product configurations are available. Please contact us.

FOR MORE INFORMATION

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