

# 1394b OHCI Link Layer Core

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

### Applications

Avionics vehicle and mission systems  
 Industrial/Machine vision systems

### Benefits

Increase interface port density while reducing interface size and power  
 Increased performance with hardware-based AS5643 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/S800/S1600/S3200 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

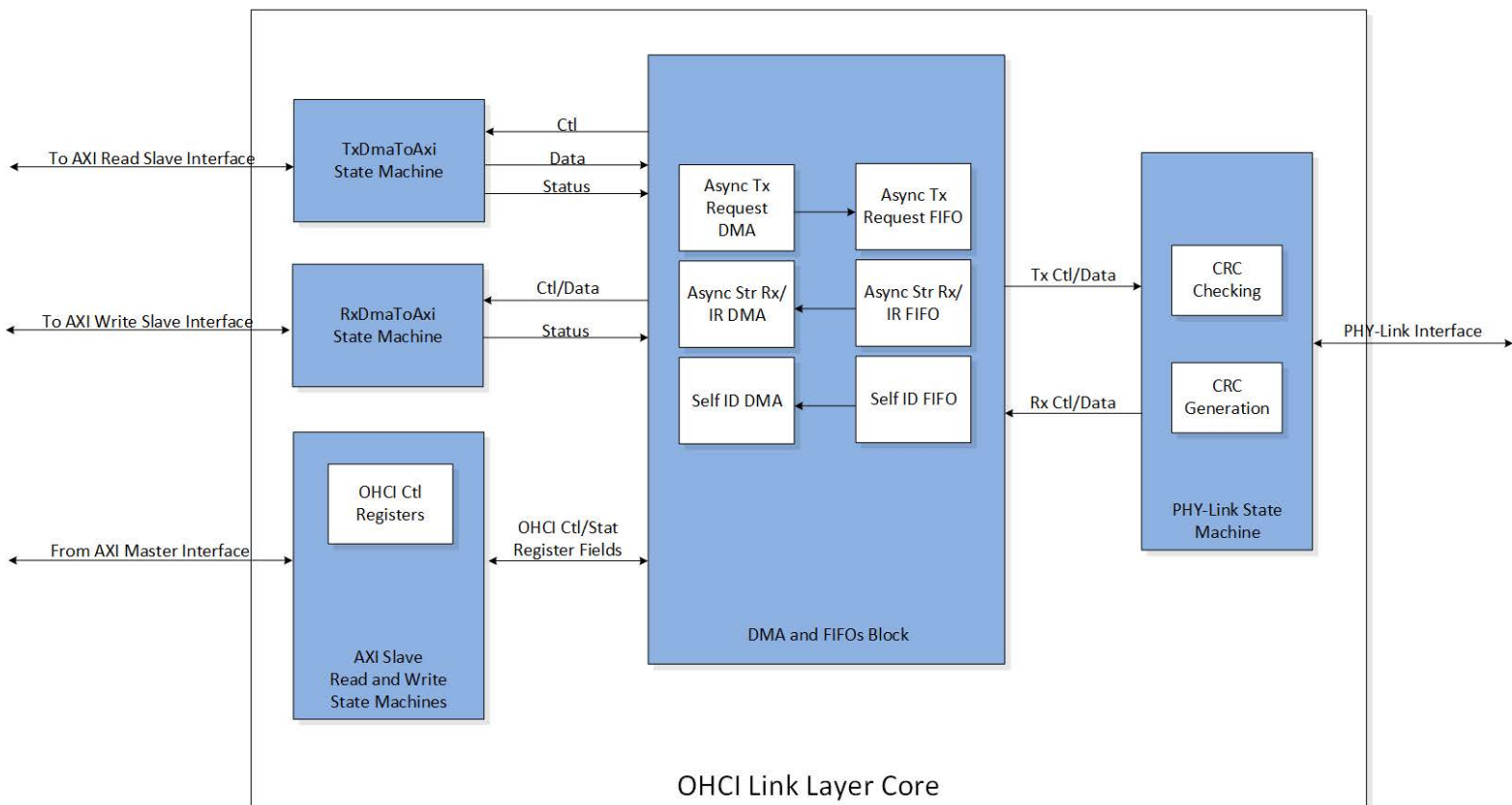
The New Wave Design and Verification (New Wave DV) 1394b OHCI core provides a complete IP solution for the OHCI layer of the 1394b AS5643 protocol.

The core includes all functionality needed to meet the AS5643 specification including: Asynchronous Transmit, Isochronous Receive, 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 PHY Layer integrated circuits.

This core is targeted towards applications in aerospace and industrial vision, 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 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 IP core.



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### Functional Description

The 1394b AS5643 OHCI IP core was developed as a 1394b-AS5643 compliant IP-based replacement to existing discrete 1394b 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 Xilinx, Intel (Altera), and Microsemi; future implementation options are assured.

In the OHCI core, New Wave DV provides capabilities that are not available in the 1394b 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 ports per instantiation. Customers have taken advantage of this capability to build devices with OHCI node counts of 1, 2, 3, 4, or higher. 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.

### Technical Specifications

**Core is delivered in netlist format including constraint files.**

#### SUPPORTED DEVICES

Xilinx: Virtex, Kintex, Artix FPGAs  
Intel (Altera): Stratix, Arria, Cyclone FPGAs  
Microsemi: SmartFusion2, Igloo2 FPGAs

#### SUPPORTED RATES

S100/S200/S400/S800/S1600/S3200

#### OPERATING FREQUENCIES

S100: 12.288Mhz  
S200: 24.576MHz  
S400: 49.152MHz  
S800: 98.304Mhz  
S1600: 196.608Mhz  
S3200: 196.608Mhz (double data width)

### Ordering Information

700-FW300-00-00: 1394b AS5643 OHCI Link Layer core, S100/S200/S400 rate support

700-FW300-01-00: 1394b AS5643 OHCI Link Layer core, S800/S1600/S3200 rate support

Other product configurations are available. Please contact us.

#### FOR MORE INFORMATION:

www.newwavedv.com  
info@newwavedv.com  
Phone +1 952-224-9201

New Wave DV  
4031 Highway 7  
Suite 190  
St. Louis Park, MN 55416 USA

