

# Fibre Channel Link Layer Core

## Layer-1 & Layer-2 IP Core for Fibre Channel

### Applications

Avionics and defense networks  
Enterprise networking/storage

### Benefits

Accelerates FPGA application development time-to-market  
Leverage proven technology for standard interface implementation  
Lower development costs

### Features

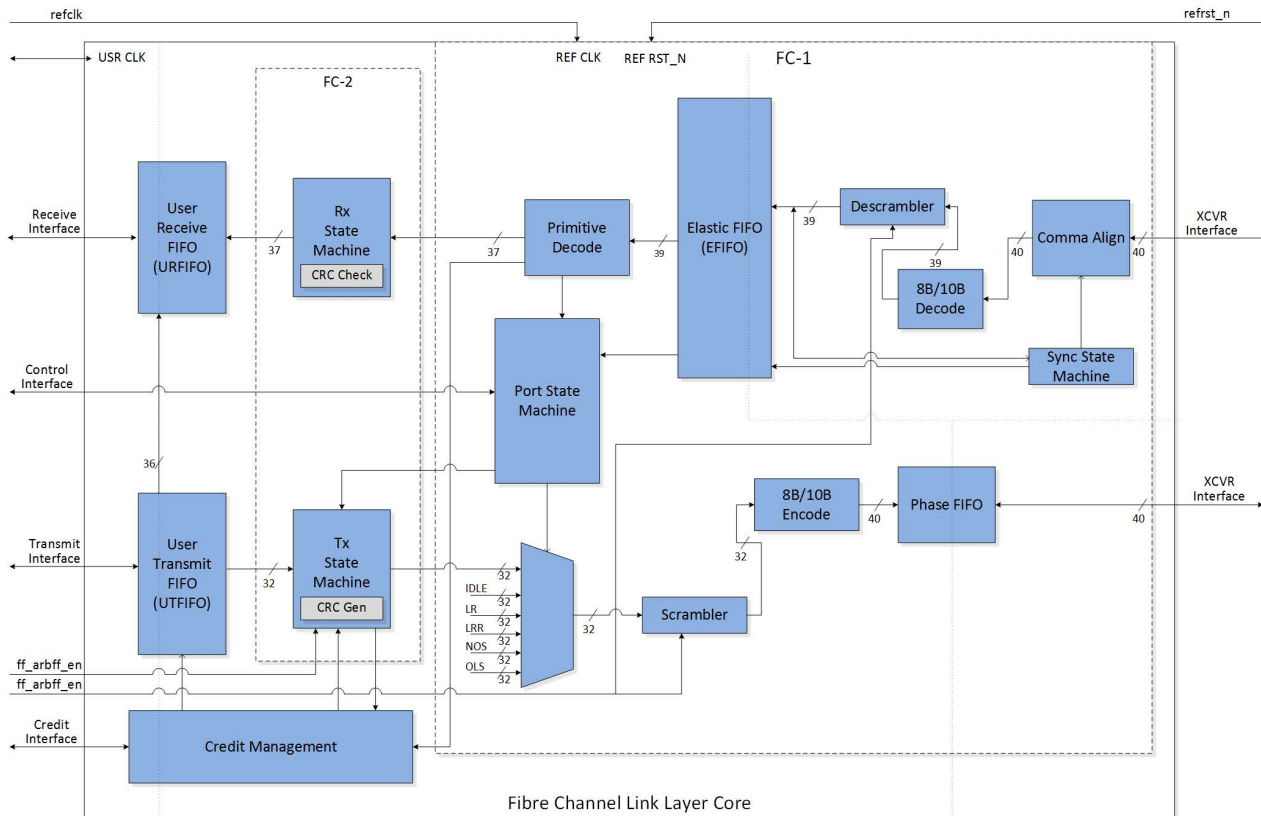
Supports 1/2/4/8/16 Gigabit Fibre Channel  
N Port and F Port Types  
Class 2 and Class 3 Fibre Channel Support  
Switched Fabric or Point-to-Point  
Complete FC1-FC2 functionality  
Intuitive streaming user interface  
Scales for multiple port designs

### Overview

The New Wave Design and Verification Fibre Channel (FC) Link Layer core provides a complete IP solution for FC Layer 1 and Layer 2. The core includes all functionality needed to meet the framing and signaling specification of Fibre Channel including: comma alignment, 8b/10b encode/decode, primitive decode, scrambling, port state machine, credit manager, CRC generation/checking, elastic FIFO, and phase FIFO.

At the physical layer, the core is built for connecting to ASIC/FPGA embedded SERDES or discrete SERDES parts. The user interface of the core provides an intuitive streaming interface for application designers. The user interface within the core also includes cross clocking logic making integration into the larger design extremely simple.

This core has been used on a diverse set of applications, from enterprise storage to aerospace electronics, and 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.



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### 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.

### 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 expressXG Development Framework, are designed to offer our customers an entirely unique out-of-the-box experience.

### New Wave DV FC Link Layer Cards

In addition to the FC-LL core, New Wave DV provides standard form-factor FC-LL interface cards that incorporate the FC-LL interface core along with high performance DMA engines and software drivers. Available in PMC/XMC form-factors, New Wave DV FC-LL cards provide up to 4 ports in a single card. Reach us at [info@newwavedv.com](mailto:info@newwavedv.com) to ask about our FC-LL solutions.

### Technical Specifications

Core is delivered in netlist format including constraint files

#### SUPPORTED DEVICES

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

#### SUPPORTED RATES

1/2/4/8/16G

#### OPERATING FREQUENCIES

1G: 26Mhz  
2G: 53Mhz  
4G: 106Mhz  
8G: 212Mhz  
16G: 212Mhz

### Ordering Information

- 700-FC100-00-00: Fibre Channel Layer 1 and 2 core, full duplex, 1/2/4G support
- 700-FC100-01-00: Fibre Channel Layer 1 and 2 core, receive only, 1/2/4G support
- 700-FC100-02-00: Fibre Channel Layer 1 and 2 core, transmit only, 1/2/4G support
- 700-FC100-03-00: Fibre Channel Layer 1 and 2 core, full duplex, 1/2/4/8G support
- 700-FC100-04-00: Fibre Channel Layer 1 and 2 core, receive only, 1/2/4/8G support
- 700-FC100-05-00: Fibre Channel Layer 1 and 2 core, transmit only, 1/2/4/8G support
- 700-FC100-06-00: Fibre Channel Layer 1 and 2 core, full duplex, 1/2/4/8/16G support
- 700-FC100-07-00: Fibre Channel Layer 1 and 2 core, receive only, 1/2/4/8/16G support
- 700-FC100-08-00: Fibre Channel Layer 1 and 2 core, transmit only, 1/2/4/8/16G support

**Other product configurations are available. Please contact us.**

#### FOR MORE INFORMATION:

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