Space applications require more and more high speed serial links to sustain the ever increasing data-rate demands of satellites while keeping the harness routing complexity under control. The Gigabit Serial Link Controller (GSLC) IP implements the digital interface for both simple and complex communication protocols based on the most used Serializer/Deserializer (SERDES) available on the market.

The GSLC can be customised to be compatible with a very simple hand-shake/flow control protocol or with a more complex communication standard including FDIR and Quality-of-Service such as SpaceFibre. The GSLC IP is suitable both for FPGA and ASIC technology depending on the application demand.

**Key features**

- Customisable to fulfil user needs
- 6.6 Gbps link speed on the Xilinx Virtex-6 GTX transceiver
- Compatible with Microsemi RTAX2000 FPGA + Wizard Link TLK2711 configuration
- Compliant with the SpaceFibre standard
- Interoperable with commercial SpaceFibre products
- Simple FIFO-based host interface
- Compliant with the most common SERDES units (WizardLink, RocketIO, GTX)
- Compliance with other SERDES available on request
Typical scenarios

The Gigabit Serial Link Controller is a highly customizable block which can be used in different scenarios:

Interface for Texas Instruments TLK2711 (WizardLink)

Host Interface

GSLC WizardLink

TI TLK2711

Serial Link

Interface for Xilinx transceivers (RocketIO, GTX, ...)

Host Interface

GSLC GTX

GTX Transceiver

Serial Link

SpaceFibre interface

Management Interface

Virtual Channel/Broadcast Interface

MGMT layer

GSLC SpaceFibre

Network layer

Quality layer

Multilane layer

Lane layer

SERDES

SpaceFibre Link

Customizable on user request

Gigabit Serial Link Controller

IP Core

Syntesis results on Microsemi RTAX2000S

<table>
<thead>
<tr>
<th></th>
<th>Combinational</th>
<th>Registers</th>
<th>RAM blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSLC Wizardlink</td>
<td>3.3 % (713/21504)</td>
<td>3.1 % (335/10752)</td>
<td>6.3 % (4/64)</td>
</tr>
<tr>
<td>GSLC SpaceFibre (2 VCs)</td>
<td>22 % (4641/21504)</td>
<td>14 % (1471/10752)</td>
<td>19 % (12/64)</td>
</tr>
<tr>
<td>GSLC SpaceFibre (4 VCs)</td>
<td>29 % (6201/21504)</td>
<td>19 % (2091/10752)</td>
<td>25 % (16/64)</td>
</tr>
</tbody>
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