XPedite2402

Virtex-7 FPGA-Based Conduction- or Air-Cooled Fiber-Optic I/O XMC Module

- Xilinx Virtex-7 FPGA XC7VX690T
- Conduction- or air-cooled XMC module
- Twelve 10.3125 Gb/s optical transceiver links
- Up to 8 GB of DDR3-1333 SDRAM in two channels
- Front panel I/O using MTP/MPO
- Non-volatile FPGA SPI configuration flash
- Linux support

XPedite2402

The XPedite2402 is a high-performance, reconfigurable, conduction- or air-cooled XMC module based on the user-programmable Xilinx Virtex-7 family of FPGAs. With dual x8 PCI Express Gen3 interfaces, external memory, and twelve high-speed fiber-optic transceivers, the XPedite2402 is ideal for customizable, high-bandwidth, data-processing applications.

The XPedite2402 incorporates 12 fiber-optic transceivers. Each transceiver is driven directly by an FPGA high-speed serial (HSS) link and gives the developer full control over data protocols such as Aurora, Serial FPDP (sFPDP), Fibre Channel, Infiniband, and Gigabit Ethernet. The fiber-optic transceivers utilize multi-fiber MT connectors, which can easily be connected to the backplane (VITA 66).

The XPedite2402 is designed to be a user-programmable FPGA resource, using the powerful Virtex-7 690T FPGA to support high-performance signal processing, sensor I/O, data recording, and linking systems in a range of protocols.

X-ES’ Firmware Development Kit (FDK) includes IP blocks, HDL, Test Benches, Linux drivers, and complete example designs for the XPedite2402.

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FPGA
- Xilinx Virtex-7 690T for high-performance logic and DSP applications

Supported FPGAs
- Xilinx Virtex-7 XC7VX690T
- Support for commercial and industrial temperature as well as -2, -3 speed grades

Memory
- Up to 8 GB of DDR3-1333 SDRAM in two 64-bit channels

P16
- 18 differential LVDS user I/O
- Two single-ended user I/O
- x8 GTH transceivers
- Can be used as x8 PCI Express Gen3 port

Front Panel I/O
- Dual multi-fiber ribbons with MTP/MPO connectors

Software
- Linux support
- X-ES' Firmware Development Kit (FDK)

P15
- x8 PCI Express Gen3 port

Physical Characteristics
- XMC conduction- or air-cooled form factor
- Dimensions: 149 mm x 74 mm

Environmental Requirements
- Contact factory for appropriate board configuration based on environmental requirements.
- Supported ruggedization levels (see chart below): 1, 3, 5
- Conformal coating available as an ordering option

Power Requirements
- Power will vary based on configuration and usage. Please consult factory.

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### Ruggedization Level

<table>
<thead>
<tr>
<th>Ruggedization Level</th>
<th>Level 1</th>
<th>Level 3</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling Method</td>
<td>Standard Air-Cooled</td>
<td>Rugged Air-Cooled</td>
<td>Conduction-Cooled</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0 to +55°C ambient (300 LFM)</td>
<td>-40 to +70°C (600 LFM)</td>
<td>-40 to +85°C (board rail surface)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40 to +85°C ambient</td>
<td>-55 to +105°C ambient</td>
<td>-55 to +105°C (maximum)</td>
</tr>
<tr>
<td>Vibration</td>
<td>0.002 g²/Hz (maximum), 5 to 2000 Hz</td>
<td>0.04 g²/Hz (maximum), 5 to 2000 Hz</td>
<td>0.1 g²/Hz (maximum), 5 to 2000 Hz</td>
</tr>
<tr>
<td>Shock</td>
<td>20 g, 11 ms sawtooth</td>
<td>30 g, 11 ms sawtooth</td>
<td>40 g, 11 ms sawtooth</td>
</tr>
<tr>
<td>Humidity</td>
<td>0% to 95% non-condensing</td>
<td>0% to 95% non-condensing</td>
<td>0% to 95% non-condensing</td>
</tr>
</tbody>
</table>