The AMC534 is an FPGA with dual zQSFP+ connectors offering 100G performance (Port 0 at 100G, Port 1 up to 40G) via the front panel. The module is compliant to the AMC.1, AMC.2, and/or AMC.4 specification. It has an on-board, reconfigurable FPGA which interfaces directly to the AMC FCLKA and TCLK A-D. The FPGA has interfaces to four DDR3 memory channels (32-bit wide each) with 1 GBytes per channel and a 4 GBytes total size. This allows for large buffer sizes to be stored during processing as well as for queuing the data to the host.

The on-board quad-core P2040 can run at 1.2GHz with 2 GBytes of DDR3, 128 Mbytes of Boot Flash, and a 32 GByte SD Card. The PPC has an x4 PCIe interface to the FPGA in addition to its local bus. The PPC has its dual GbE routed to ports 0 and 1 of the AMC.

VadaTech can modify this product to meet special customer requirements. Contact us to discuss your application.
REFERENCE DESIGN

VadaTech provides a reference design implementation for our FPGAs complete with VHDL source code and configuration binaries. The reference design focuses on the I/O ring of the FPGA to demonstrate low-level operation of the interconnections between the FPGA and other circuits on the board and/or backplane. It is geared to prove out the hardware for engineering/factory diagnostics and customer acceptance of the hardware, but it does not strive to implement a particular end application.

FRONT PANEL zQSFP+ PORTS

The front panel zQSFP+ Ethernet ports provide support for 10GbE/40GbE/100GbE via removable QSFP+ or zQSFP+ modules. There are not any status LEDs directly associated with these ports. Port 0 routes to GTB transceiver ports on the FPGA and is limited to an operating range of 20 Gbps to 28.05 Gbps per lane (100GbE utilizing four lanes). Port 1 routes to GXB transceiver ports on the FPGA and is limited to an operating range of 600 Mbps to 12.5 Gbps per lane (10GbE/40GbE utilizing four lanes). The ports are protocol agnostic and can be used for any SERDES protocol that is compatible with both the zQSFP+ module and the FPGA’s transceivers.

INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of ATCA and μTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTM), Power Modules, and more. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

BLOCK DIAGRAM
# SPECIFICATIONS

## Architecture

<table>
<thead>
<tr>
<th>Physical</th>
<th>Dimensions</th>
<th>Width: 2.89&quot; (73.5 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Depth 7.11&quot; (180.6 mm)</td>
</tr>
<tr>
<td>Type</td>
<td>AMC FPGA Carrier</td>
<td>Altera FPGA Stratix-V GT Device</td>
</tr>
<tr>
<td></td>
<td>On-board CPU</td>
<td>Four banks of DDR3 (32 bits each)</td>
</tr>
</tbody>
</table>

## Standards

<table>
<thead>
<tr>
<th>AMC</th>
<th>Type</th>
<th>AMC.1, AMC.2, and AMC.4 (FPGA programmable) and AMC.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Management</td>
<td>IPMI</td>
<td>IPMI version 2.0</td>
</tr>
<tr>
<td>PCIe</td>
<td>Lanes</td>
<td>Dual x4 via FPGA to AMC</td>
</tr>
<tr>
<td>SRIO</td>
<td>Lanes</td>
<td>Dual x4 via FPGA to AMC</td>
</tr>
<tr>
<td>Ethernet</td>
<td>10GbE and GbE</td>
<td>Dual 10GbE via FPGA and dual 1000 BaseBX from PPC</td>
</tr>
</tbody>
</table>

## Configuration

<table>
<thead>
<tr>
<th>Power</th>
<th>AMC534</th>
<th>Carrier is ~40W (without mezzanine) application specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Operating Temperature: -5°C to 55°C (air flow &gt; 400 LFM) industrial and military versions also available (See environmental spec sheet)</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°C to +90°C</td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>Operating 9.8 m/s², 1G, 5 to 500Hz on each axis</td>
<td></td>
</tr>
<tr>
<td>Shock</td>
<td>Operating 30G on each axis</td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>5 to 95 per cent, non-condensing</td>
<td></td>
</tr>
<tr>
<td>Front Panel</td>
<td>Interface Connectors</td>
<td>Dual zQSFP+, CPU RS-232</td>
</tr>
<tr>
<td>LEDs</td>
<td>IPMI management control</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>Activity / Link user LEDs</td>
<td></td>
</tr>
<tr>
<td>Software Support</td>
<td>Operating System</td>
<td>Linux, VxWorks</td>
</tr>
</tbody>
</table>

## Other

<table>
<thead>
<tr>
<th>MTBF</th>
<th>MIL Handbook 217-F@TBD Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certifications</td>
<td>Designed to meet FCC, CE and UL certifications where applicable</td>
</tr>
<tr>
<td>Standards</td>
<td>VadaTech is certified to both the ISO9001:2000 and AS9100B:2004 standards</td>
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<tr>
<td>Warranty</td>
<td>Two (2) years</td>
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AMC Stratix V FPGA, 100G – AMC534

ORDERING OPTIONS
AMC534 – ABC – DEF – GHJ

A = FPGA DDR3 Memory
0 = None
1 = Reserved
2 = 4GB (total)

B = FPGA
0 = Reserved
1 = 5SGTC5
2 = 5SGTC7
3 = Reserved
4 = Reserved

C = Front Panel Size
1 = Reserved
2 = Mid-size
3 = Full-size

D = FPGA Transceiver PMA Speed Grade
1 = Highest
2 = Mid

E = FPGA Fabric Speed
1 = Highest
2 = Mid

F = FPGA PCIe Option
0 = No PCIe (ports 4-11)
1 = PCIe on ports 4-7
2 = PCIe on ports 8-11
3 = PCIe on ports 4-11

G = Clock Holdover Stability
0 = Standard (XO)
1 = Stratum-3 (TCXO)

H = Temperature Range
0 = Commercial (–5° to +55° C)
1 = Industrial (–20° to +70° C)
2 = Military (–40° to +85° C)*

J = Conformal Coating
0 = None
1 = Humiseal 1A33 Polyurethane
2 = Humiseal 1B31 Acrylic

*Edge of module for conduction-cooled boards

COMMON CONFIGURATIONS
AMC534-223-110-000

RELATED PRODUCTS

VT899 Cube Chassis  FMC223 High Speed FMC for DAC  UTC020 1000W Power Module

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