µTCA.4 Kintex-7 Data Processing AMC (TCK7) – CM045

Key Features

- Data Processing AMC in double module, mid-size (full-size optional)
- Compliant to MicroTCA.4
- Class D1.2 compatible
- High-speed Kintex-7 FPGA
- 16 GB DDR3 SDRAM
- Octal SFP+ via the front panel
- PCIe x4 Gen 3
- Two channels of GbE
- Ten direct low latency connections to backplane
- Four low latency connections to RTM
- LVDS parallel bus to RTM
- Partial reconfiguration and firmware upgrade support
- Advanced diagnostic, monitoring and debugging

Benefits of Choosing VadaTech

- High performance Kintex-7 FPGA
- High end stabilizing control with powerful digital signal processing capability
- Compatible with application-specific Class D1.2 RTMs
- Low latency, with multiple front and RTM connections
- Electrical, mechanical, software, and system-level expertise in house
- Full ecosystem of front and rear boards, enclosures, specialty modules, and test/dev products from one source
- AS9100 and ISO9001 certified company

The CM045 (TCK7) AMC-based Controller board is a general purpose high-performance low-latency data processing unit designed according to the PICMG MTCA.4 specifications. The module provides processing power, data memory, communication links and reference clock signals. The CM045 is ideal for LLRF (Low Level Radio Frequency) cavity field stabilizing control for standing-wave linear accelerators, as well as other applications requiring low latency and high speed digital signal processing.

The FPGA on the CM045 supports eight SFP+ ports (up to 10 GbE) on the front panel. It also routes 4 low latency MGT Links and 38 LVDS I/O signals to the Rear Transition Module (RTM) Zone 3 connector. Since the control algorithms could be improved with time, the device supports in-system firmware upgrade, using IPMI and a fast serial link.
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**SPECIFICATIONS**

<table>
<thead>
<tr>
<th><strong>Architecture</strong></th>
<th><strong>Dimensions</strong></th>
<th><strong>Double module, mid-size (full-size optional)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical</strong></td>
<td><strong>Width:</strong> 5.486” (148.5 mm)</td>
<td></td>
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<tr>
<td></td>
<td><strong>Depth:</strong> 7.11” (180.6 mm)</td>
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<tr>
<td><strong>Type</strong></td>
<td>AMC Data Processing Module</td>
<td>Xilinx Kintex-7 Device</td>
</tr>
<tr>
<td></td>
<td>DDR3 memory</td>
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<table>
<thead>
<tr>
<th><strong>Standards</strong></th>
<th><strong>AMC Type</strong></th>
<th>AMC.1, AMC.2, and AMC.4 (FPGA programmable)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Module Management</strong></td>
<td>IPMI</td>
<td>IPMI version 2.0</td>
</tr>
<tr>
<td><strong>PCle</strong></td>
<td>Lanes</td>
<td>4x Gen3</td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>GbE</td>
<td>1000-BaseT</td>
</tr>
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<thead>
<tr>
<th><strong>Configuration</strong></th>
<th><strong>CM045</strong></th>
<th>&lt;50 W</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental</strong></td>
<td><strong>Operating Temperature:</strong> -5° to 50°C (55°C for limited time, performance restrictions may apply), industrial and military versions also available. <strong>(See environmental spec sheet)</strong></td>
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<tr>
<td></td>
<td><strong>Storage Temperature:</strong> -40° to +85°C</td>
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<tr>
<td><strong>Vibration</strong></td>
<td>Operating 9.8 m/s² (1.0 G), 5 to 500Hz</td>
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<tr>
<td><strong>Shock</strong></td>
<td>30Gs on each axis</td>
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<tr>
<td><strong>Relative Humidity</strong></td>
<td>5 to 90 per cent, non-condensing</td>
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<tr>
<td><strong>Front Panel</strong></td>
<td>Interface Connectors</td>
<td>Front panel 8 channel SFP+</td>
</tr>
<tr>
<td></td>
<td><strong>Clock Input</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>IPMI management control</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Status/Activity</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>Hot swap ejector handle</td>
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</tbody>
</table>

| **Conformal Coating**   | Humiseal 1A33 Polyurethane (Optional) |
|                         | Humiseal 1B31 Acrylic (Optional) |

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<thead>
<tr>
<th><strong>Other</strong></th>
<th><strong>MTBF</strong></th>
<th>MIL Hand book 217-F @ TBD Hrs</th>
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<tbody>
<tr>
<td><strong>Certifications</strong></td>
<td>Designed to meet FCC, CE and UL certifications where applicable</td>
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<tr>
<td><strong>Standards</strong></td>
<td>VadaTech is certified to both the ISO9001:2000 and AS9100B:2004 standards</td>
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<tr>
<td><strong>Warranty</strong></td>
<td>Two (2) years</td>
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**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.

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ORDERING OPTIONS

CM045 – 00C – DE0 – 00J

D = FPGA Type
0 = Reserved
1 = XC7K355T
2 = XC7K420T

E = FPGA Speed
0 = Reserved
1 = Low
2 = High

C = Front Panel
0 = Mid-size, MTCA.4
1 = Full-size, MTCA.4

J = Temperature Range and Coating
0 = Commercial (−5° to +55° C), No coating
1 = Reserved
2 = Reserved
3 = Industrial (−20° to +70° C), No coating
4 = Reserved
5 = Reserved
6 = Reserved
7 = Reserved

RELATED PRODUCTS

VT813 4400W
MTCA.4 Chassis

AMC520 ADC
MTCA.4 Module

VT812 2U
MTCA.4 Chassis

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