Mercury's BuiltSAFE™ products bring the highest level of flight safety assurance to aerospace and defense applications. Our proven, reusable Design Assurance Level (DAL) certified artifacts for mission computing, avionics, networking and datalink comms processing save time and cost while decreasing risk.

The VGP-8177 is a 6U OpenVPX high-performance embedded double GPU board offering up to 2.4 TeraFLOPS of processing, driven through a VPX PCIe Gen 3 bus.

The VGP-8177 offers high-speed fiber optics digital video inputs and outputs, supporting ARINC-818-2, DVI and SDI up to 1080p60, and legacy RGB and CVBS analog inputs and outputs.

With up to 10 inputs and 12 outputs overall, all multiplexable, the VGP-8177 covers all major cases of video processing scenario such as capture, encoding and decoding and switching.

VGP-8177 functional block diagram

Mercury Systems is a leading commercial provider of secure sensor and mission processing subsystems. Optimized for customer and mission success, Mercury’s solutions power a wide variety of critical defense and intelligence programs.
BuiltSAFE for Avionics

Mercury’s expertise and experience in safety certifiable solutions has been built on successful execution of dozens of programs over three decades. This domain knowledge is the foundation of our BuiltSAFE portfolio of open architecture modules, systems and software for avionics, communications, video servers, and mission computing.

Technical Specifications

Compliance
6U OpenVPX (VITA 65)
VPX REDI (VITA 48)
Cooling technology (VITA 48.7)
Optical interconnect (VITA 66.1)
SMPTE-424

Power Consumption

minimum typical maximum units
80-100 160-180 Watts

Graphics Processors

2x AMD Radeon™ E9171 MCM GPU
8x compute units (8x64 shaders) 1.2 TFLOPS
4GB GDDR5 memory 128-bit wide
Graphics clock 1124 MHz or 1219 MHz
Memory clock 1500 MHz

Memory
6x 1GB DDR3 dedicated video memory

FPGA

2x Xilinx Kintex® UltraScale™ XCKU060

PCIe

2x PCIe Gen3 x8 interfaces per FPGA to the switch

Video Inputs

2x DVI (XGA 60 Hz)
4x ARINC-818-2 (XGA 60 Hz, SXGA+ 60 Hz)
1x 3G SDI (1080p60)
4x analog video: RGB, CVBS

Video Outputs

5x DVI (XGA 60 Hz)
4x ARINC-818-2 (XGA 60 Hz, SXGA+ 60 Hz, HD 1080 60 Hz)
1x 3G SDI (1080p60)
2x analog video: RGB, CVBS

Software

TBD

Product Ordering

VGP-8177AA30LN 6U OpenVPX Dual Graphic Processor AMD E9171 and Video I/O, with ARINC-818, DVI and 3G SDI Video In/Out Interfaces, Conduction-Cooled 1” pitch, Aluminium Frame

VGP-8177AA40LC 6U OpenVPX Dual Graphic Processor AMD E9171 and Video I/O, with ARINC-818, DVI and 3G SDI Video In/Out Interfaces, Conduction-Cooled 1” pitch, Extended Temperature Range

Ruggedization Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Cooling Type</th>
<th>Operating Temperature</th>
<th>Vibration (1 hour per axis)</th>
<th>Operating Shocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>C4</td>
<td>Extended range CC</td>
<td>Conduction</td>
<td>-40°C to 85°C [CC4]</td>
<td>5-100 Hz; increase at 3 dB/octave, 100-1000 Hz: 0.1 g²/Hz, 1000-2000 Hz: decrease at 6 dB/octave</td>
<td>40g, 11ms saw-tooth, three axes</td>
</tr>
</tbody>
</table>

Environmental Specifications

<table>
<thead>
<tr>
<th>Condition</th>
<th>Limits, standards</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-operating temperature</td>
<td>-55°C to 105°C [C4]</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>95%</td>
<td></td>
</tr>
<tr>
<td>Altitude</td>
<td>-1,500 to 60,000 feet</td>
<td>May require conformal coating</td>
</tr>
<tr>
<td>Fungus resistance</td>
<td>No nutrient materials</td>
<td></td>
</tr>
<tr>
<td>Workmanship</td>
<td>IPC-A-610 class 3</td>
<td></td>
</tr>
<tr>
<td>Soldering</td>
<td>IPC-J-STD-001 class 3</td>
<td></td>
</tr>
<tr>
<td>PCB Manufacturing</td>
<td>IPC-A-600 class 3</td>
<td></td>
</tr>
<tr>
<td>Conformal coating</td>
<td>IPC-CC-830</td>
<td>Optional</td>
</tr>
<tr>
<td>Materials</td>
<td>REACH compliant</td>
<td>RoHS variants as an option</td>
</tr>
<tr>
<td>Flammability</td>
<td>UL 94 Class V-0</td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>EN 9100:2008</td>
<td></td>
</tr>
</tbody>
</table>

(1) Depends on configuration. Please consult factory.

BuiltSAFE, Innovation That Matters, and Mercury Systems are trademarks of Mercury Systems, Inc. Other product and company names mentioned may be trademarks and/or registered trademarks of their respective holders. Mercury Systems, Inc. believes this information is accurate as of its publication date and is not responsible for any inadvertent errors. The information contained herein is subject to change without notice.

Copyright © 2020 Mercury Systems, Inc.