COTS DAL Certifiable BuiltSAFE Building Blocks
COTS DAL Certifiable BuiltSAFE™ Building Blocks

Mercury Mission Systems’ expertise and experience in Design Assurance Level (DAL) safety-certifiable solutions has been built on successful execution on dozens of programs over three decades. This domain knowledge is the foundation of our safety-certifiable BuiltSAFE modules, systems and software for avionics, communications, video servers and mission computing. Our latest rugged, safety certifiable building blocks have backwards compatibility and are designed with a top-down approach for interoperability and ease of pre-integration.

**Subsystem**

<table>
<thead>
<tr>
<th>SBC (Single Board Computers)</th>
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<tr>
<td><strong>CIO5-2040</strong> (OpenVPX)</td>
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<td><strong>CIOV-2231</strong> (OpenVPX)</td>
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<td><strong>MFCC-8570</strong> (XMC Mezzanine)</td>
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<td><strong>MFCC-8556</strong> (PMC/XMC Mezzanine)</td>
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<td><strong>RIO6-8092</strong> (VME 64x)</td>
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<td><strong>RIOV-2473</strong> (OpenVPX)</td>
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<td><strong>RIO6-8093</strong> (VME 64x)</td>
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<td><strong>MFCC-8557</strong> (XMC Mezzanine)</td>
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<td><strong>MFCC-8558</strong> (XMC Mezzanine)</td>
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Mercury’s BuiltSAFE™ products deliver 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.
Differentiated Software

Mercury provides the most comprehensive suite of software on all our boards. Our BSPs, include certifiable boot and data loaders, certifiable and continuous BIT and board level health-monitoring to reduce system integration development time and risk.

Our safety certifiable graphics libraries are available for CPUs and GPUs. Mercury BuiltSAFE Multi-Core Renderer runs on one or more CPU cores and is certifiable to the highest DAL levels. BuiltSAFE OpenGL Libraries run on GPUs for the highest graphics performance in a certifiable system.

**Video and Graphics**

- **VCP-2864** *(OpenVPX)*
  - **Video Frame Grabber**, Xilinx Kintex-7, 256MB DDR3, 1x XMC Site

- **VCP-8166** *(PMC/XMC Mezzanine)*
  - **H264/AVC Video Encoder**

- **VGP-2870** *(OpenVPX)*
  - **Video Processing Module**, AMD Radeon E8860, 2GB GDDR5, 256MB DDR3; Safety Certifiable up to DAL-C (DO-178C/254)

- **VCP-8162** *(XMC Mezzanine)*
  - **Video Frame Grabber**, Xilinx Virtex-5, 512MB DDR2, 1x XMC Site

- **VPP-8112** *(XMC Mezzanine)*
  - **Video I/O and Processor**, TI DaVinci, ARM Cortex-A8 (1.0GHz), 512MB DDR3, 1GB NAND

**I/O (Input/Output)**

- **ARINC-8429** *(PMC Mezzanine)*
  - **ARINC429** 32x Channel PMC Module, Safety-Certifiable driver (DO-178B) DAL-A

- **AVIO-2353** *(OpenVPX)*
  - **Multi I/O Avionics Interface Module**, 2x MIL Std 1553, 16x ARINC429, 10x Serial IO Designed for DAL-C (DO-178C/DO-254) certification

**Carriers**

- **CB3P-6231** *(OpenVPX)*
  - PMC/XMC Carrier Board, with 32 lane PCIe Gen 3 Switch

- **ISC-8422** *(VME 64x)*
  - Dual PMC/XMC Carrier Board, with PCIe to PCI/PCI-X bridge/switch

- **PEB-6426** *(6U VME 64x)*
  - User-Programmable Carrier with 32x - 48x user-specific I/O lines, 2x PMC/PrPMC sites

- **PEB-6416** *(VME 64x)*
  - Dual PMC Carrier Board, with User Programmable I/O interfaces

**Storage**

- **FDISK-8432** *(XMC Mezzanine)*
  - Flash Disk Storage Module, with ECC Protection, 256GB High Throughput

**Services**

Our in-house flight safety certification experts are available to provide certification services for hardware, software, and systems. We have extensive European Aviation Safety Agency (EASA), Federal Aviation Agency (FAA), Joint Aviation Authorities (JAA) and Transport Canada experience and a wide portfolio of building blocks, interfaces, software and safety certifiable fabrics/buses, making Mercury solutions the lowest risk.
Mercury Mission Systems

Mercury Mission Systems (MMS) has one of the industry’s largest safety-critical aerospace and defense processing design and manufacturing teams with extensive line replacement unit (LRU) integration capabilities. We add high levels of subsystem integration capabilities that leverage our pre-engineered, COTS flight-safety certifiable processing, networking and software building blocks.

Mission-critical, flight-safety certifiable integrated systems

We have a long program history of supplying advanced “first-quality”, on-time LRUs to US Army and Air Force rotor and fixed-wing platforms. Our embedded software and hardware processing solutions for manned/unmanned aircraft and aerospace applications are found on a variety of platforms such as the AH-64 Apache attack helicopter, KC-47 next generation airborne refueler and small handheld UAVs.

Proven software and interfaces

We incorporate custom and off-the-shelf solutions to meet our customers’ requirements. Our embedded software solutions span RTOS integration, partitioning application interfaces, drivers and Board and Platform Support Packages. Our robust test simulation software supports system integration and test for situations when custom hardware is unavailable.

Flight-safety services for low-risk and program velocity

Our safety-critical engineering services help our customers achieve their engineering, development, and certification goals. Our highly qualified and dynamic consultants deliver unwavering attention to detail, apply a unique hands-on approach, and bring extensive experience working in the avionics, industrial, and automotive industries.