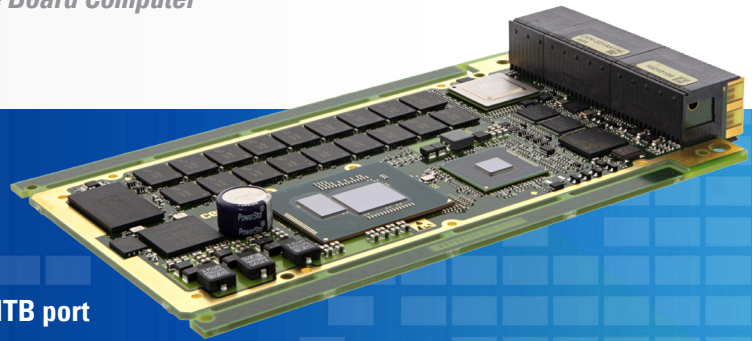


BuiltSAFE™ CIOV-2231

3U OpenVPX™ Intel® Core™ i7 Gen5 Conduction-cooled Single Board Computer

- Intel Core i7 Gen5 processor
- Intel Iris Pro Graphics 6200 GPU
- Digital video capture (HD/SD-SDI)
- PCIe Gen3 1x 8-lane, 2x 4-lane, 4x 2-lane with support for NTB port
- PCIe Gen2 full mesh network for near-deterministic communication
- Serial interfaces RS232/422/485

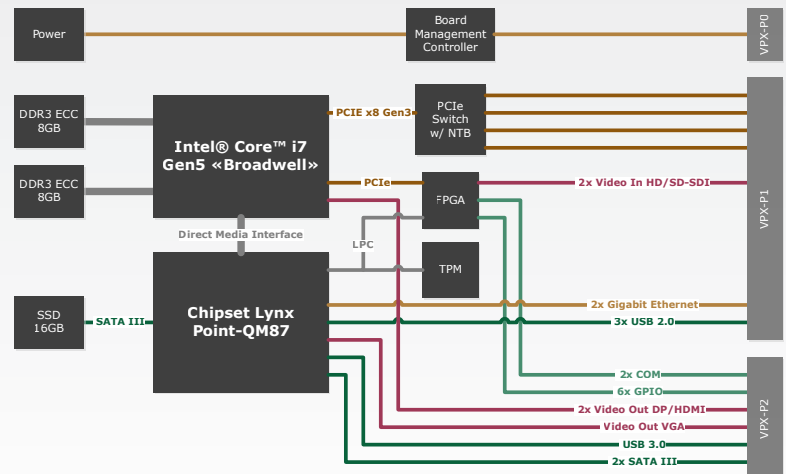


Mercury's BuiltSAFE™ products bring the highest level of flight safety assurance to aerospace and defense applications. Our proven, reusable Design Assurance Level (DAL) certified artifacts for mission computing, avionics, networking and datalink comms processing save time and cost while decreasing risk.

Mercury's BuiltSAFE CIOV-2231 is a 3U OpenVPX Single Board Computer featuring an Intel Core i7 Gen5 processor with Quad-Core, dual-threaded (8-threads) over the Broadwell microarchitecture. Designed for extreme temperature range, shock and vibration, the CIOV-2231 is made for data and graphic intensive processing applications within conduction-cooled systems.

Data and graphic processing power

The Intel Iris™ Pro Graphics 6200 GPU embedded in the Core i7 processor delivers high-performance GPU capabilities and GPGPU programming options using OpenCL™. The BuiltSAFE CIOV-2231 has 16GB of DDR3 ECC memory (25.6GB/s throughput) and up to 32 GB of on-board SATA flash memory for intense data processing. The BuiltSAFE CIOV-2231 has two SATA III interfaces and Intel Rapid Storage Technology with support for RAID 0 and RAID 1 enabling the CIOV-2231 to deliver enhanced storage speed and reliability.



Video capture and serial interfaces for ISR

The BuiltSAFE CIOV-2231's FPGA provides additional functionality including digital video capture, RS232/422/485 serial data links and GPIO for advanced ISR functionality.

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.

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.



Flexible PCIe

With various PCIe Gen3 configurations (1x 8-lane, 2x 4-lane, 4x 2-lane) and support for Non-Transparent Bridge (NTB) port the CIOV-2231 supports multiple scenarios including communicating with similar HPEC SBCs, driving an BuiltSAFE VGP-2870 for additional GPGPU performance or interconnecting with an AVIO-2353 for avionics applications. The CIOV-2231 supports a 4x PCIe Gen2 configuration for full mesh PCIe network support, enabling near deterministic communication with up to three boards over the OpenVPX backplane.

Technical Specifications

Compliance

3U VPX (VITA 46)/OpenVPX (VITA 65 /VPX REDI (VITA 48)
OpenVPX (VITA 75): multiple peripheral slot profiles ⁽¹⁾

Power Consumption

minimum	typical	maximum	units
-	45	70	Watts

Processor

Intel Core i7 Gen5 (5850EQ) @ 2.7GHz (Turbo Boost to 3.4GHz)

Memory

16GB of DDR3 ECC
16GB of on-board SSD ⁽²⁾

I/O

Expansion links

PCIe Gen3 1x8, 2x4, 4x2 from PCIe switch (with NTB port support) to OpenVPX-P1 ^(AA)

4x PCIe Gen2 (full mesh PCIe network) to OpenVPX-P1 ^(BA)

High speed links

2x GbE 1000Base-KX/BX on VPX-P1

3x USB 2.0 on VPX-P1

1x USB 3.0 on VPX-P2

2x SATA III on VPX-P2

Video Out

2x DisplayPort/HDMI on VPX-P2

1x VGA on VPX-P2

Video In

2x HD/SD-SDI on VPX-P1

Others ⁽³⁾

2x COM ports

6x user GPIO

(1) Please contact factory for more information

(2) Other sizes available upon request

(3) Please contact factory for other configurations

(AA) Applies to "AA" configuration

(BA) Applies to "BA" configuration

Board Management

Built-In-Test (BIOS and software)

Temperature monitoring

Watchdog

Error reporting

Reset management

Debug and maintenance mode

Distributed clock for system integration (ROCK-2)

Trusted Platform Module

Software

Linux® BSP

Windows® Embedded BSP

Product Ordering and Options

CIOV-2231

3U OpenVPX Intel Core i7 Gen5 Single Board Computer

Memory

☐ 16GB SSD

☐ 32GB SSD

Environmental

☐ A1: 0°C to 55°C

☐ C4: -40°C to 85°C

Development

Rear Transition Module capability

Slot profile

☐ Standard

☐ ROCK-2 compatible

Software

☐ Linux BSP

☐ Windows BSP

Related Hardware Products

ACS-6076	Forced air-cooled, 4-slot payload, 3U OpenVPX sealed conduction-cooled subsystem (0.8", 0.85", 1" pitch, 250 Watts) with MIL connectors
AVIO-2353	3U OpenVPX avionics I/O board
VGP-2870	3U OpenVPX video I/O and graphic processor
ROCK-2	3U OpenVPX, low-SWaP, rugged, modular, pre-qualified subsystems

Ruggedization Levels

Level	Description	Cooling Type	Operating Temperature	Vibration (1 hour per axis)	Operating Shocks
A1	Commercial AC	Forced air*	0°C to 55°C [AC1]	5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.04 g ² /Hz, 1000-2000Hz: decrease at 6 dB/octave [V2]	20g, 11ms saw-tooth, three axes [OS1]
C4	Extended range CC	Conduction	-40°C to 85°C [CC4]	5-100 Hz: increase at 3 dB/octave, 100-1000 Hz: 0.1 g ² /Hz, 1000-2000Hz: decrease at 6 dB/octave	40g, 11ms saw-tooth, three axes

* The required air-flow is defined separately for each product

Environmental Specifications

Condition	Limits, standards	Comments
Non-operating temperature	-55°C to 105°C [C4]	
Humidity	95%	
Altitude	-1,500 to 60,000 feet	May require conformal coating
Fungus resistance	No nutrient materials	
Workmanship	IPC-A-160 class 3	
Soldering	IPC J-STD-001 class 3	
PCB Manufacturing	IPC-A-600 class 3	
Conformal coating	IPC-CC-830	Optional
Materials	REACH compliant	ROHS variants as an option
Flammability	UL 94 Class V-0	
Quality	EN 9100:2008	

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