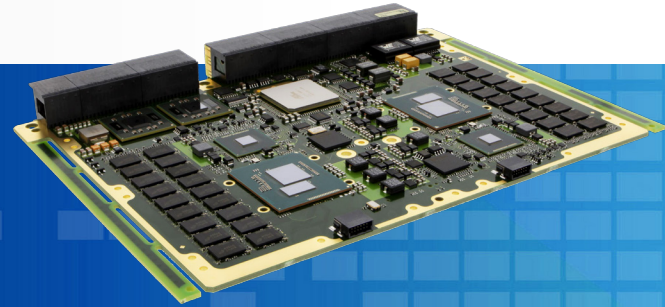# Avionics Series
CIO5-2040

Dual Intel® Core™ i7 Gen5, 6U OpenVPX™ Single Board Computer

- **Dual Intel® Core™ i7 Gen5**
- **Conduction-cooled ruggedization (-40°C to +85°C)**
- **PCIe Gen3 x8 with support for NTB port**
- **Gigabit Ethernet and 10 Gigabit Ethernet**
- **SATA III - USB 3.0**

Mercury is bringing 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, and reduce risk.

The CIO5-2040 is a 6U OpenVPX Single Board Computer (SBC) integrating two Intel Core i7 Gen5 processors. It is specifically designed for the most demanding networking and computing applications deployed in space-constrained environments requiring conduction-cooled equipment.

The CIO5-2040 is built to withstand extreme temperatures, shock and vibrations with an operating temperature range of -40°C to +85°C. With six SATA III, four GbE and four 10GbE it offers high data throughput to access storage and communicate over Ethernet.
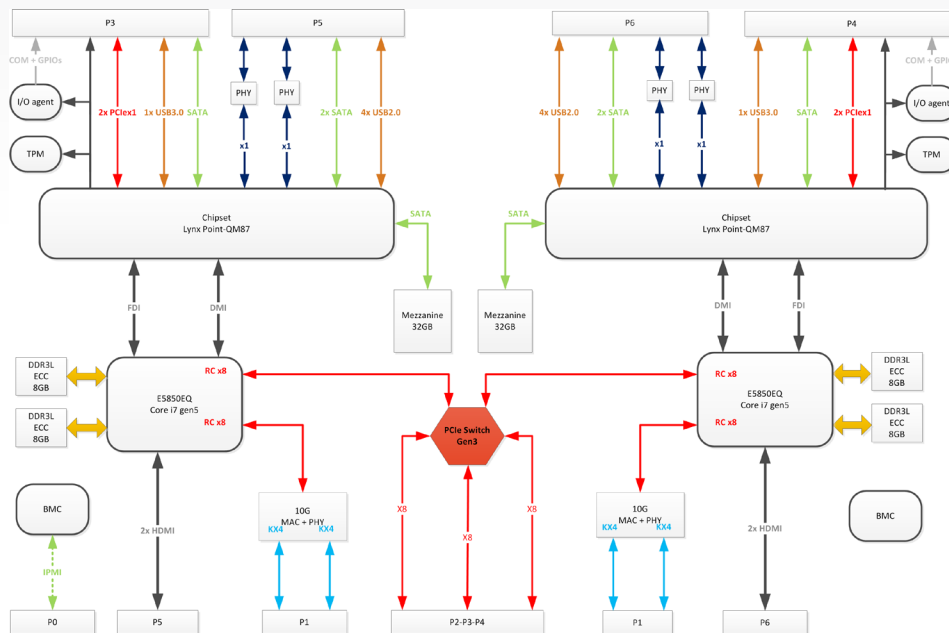
CIO5-2040 functional block diagram

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.

ACQUIRE   DIGITIZE   PROCESS   STORAGE   EXPLOIT   DISSEMINATE

Technical Specifications

Compliance

6U VPX (VITA 46)/OpenVPX (VITA 65)

Conduction-cooled (VITA 48.2)

Slot profile SLT6-PAY-4F1Q2U2T-10.2.1

Power Consumption

Typical 110W

Processor

2x Intel Core i7 Gen5 (E5860EQ) @ 2.7 GHz (4 cores)

    Intel QM87 Express chipset

Memory

2x 16GB DDR3L ECC (one per CPU node)

2x removable storage mezzanines with two independent 32GB flash

I/Os

High speed Links

    2x GbE 1000Base-T (one per CPU node)

    2x GbE 1000Base-X (one per CPU node)

    4x 10GbE 10GBase-KX4, Intel 82599 NIC (two per CPU node)

    3x PCIe x8 Gen3 links

Connections

    6x SATA @ 6Gbps (three per CPU node)

    2x USB 3.0 (one per CPU node)

    8x USB 2.0 (four per CPU node)

Video

    Four HDMI (two per CPU node)

Other

    GPIOs

    Serial port RS232 (one per CPU node)

Board Management

Reset

Sensors

IPMI

Software

Board support package

    Windows

    Linux

Built-in Tests (PBIT, CBIT and IBIT)

Product Ordering

CIO5-2040AA40LC   Dual Intel Core i7 Gen5 6U OpenVPX Single Board Computer with two 16GB of DDR3L ECC, 0.85"pitch

Ruggedization Levels

Level	Description	Cooling Type	Operating Temperature	Vibration (1 hour per axis)	Operating Shocks
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

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	