

MPMC-965x

Multi-Platform Modular Computer 5-slot 6U VPX™, VME or VXS System



Key Features

- Processing: Intel or NXP Power Architecture
- 6U backplane: VPX, VME or VXS
- Weight fully populated: 40 lb (18.14 kg)
- Dimensions (L x W x H):
 - + 12.5 x 7.5 x 8.3”
(317.5 x 190.5 x 210.82 mm)
- Power supply: 28 VDC input per MIL-STD-704E, DO-160E
- Optional interfaces
 - + MIL-STD-1553 – up to two dual redundant channels
 - + ARINC 429 – up to 32 channels
 - + Video up to 4 outputs: DVI, LVDS or VGA
 - + Optional PowerPC™ video processor
 - + Video input, up to 6 channels, NTSC, PAL, RS-170

Applications

- Mission computing
- Video and image processing
- General processing

Overview

The Curtiss-Wright Defense Solutions MPMC-965x family of 6U 5-slot systems are leading edge, flexible and rugged processing systems that can be readily configured to meet the needs of any military or aerospace requirements, from benign laboratory to harsh avionics environments. The MPMC-965x is an integrated information processing system, providing complete hardware and software solutions.

The MPMC-965x leverages Commercial Off the Shelf (COTS) technology in application-specific requirements to provide a high-performance, state-of-the-art computing solution. By utilizing tried and tested Curtiss-Wright COTS products, the MPMC-965x is an affordable low-risk computing system.

System Overview

The MPMC-965x is a rugged computer designed to fill multiple roles in air and land vehicles. It is a packaged COTS solution that can greatly reduce up front development costs and through achieving economies of scale in production, reduces recurring costs while meeting the I/O, performance and environmental requirements of the system.

The MPMC-965x achieves these challenging goals through high-quality engineering and designing for the future. The MPMC-965x is a modular system consisting of multiple VPX, VME or VXS backplanes, front connector interfaces, front panels, sidewalls, single board computers (SBCs) and X/PMCs (depending on selected SBC). Besides these components that already have multiple implementations, the power supply is modular and may have multiple implementations in the future.

The MPMC-965x is a 5-slot 6U system that supports VPX, VME or VXS form factors. It allows up to five SBCs (or PMC carrier cards), 12 X/PMC modules (depending on chosen SBC) and one integrated fiber switch be housed in liquid-flow-through cooled chassis. The MPMC-965x can be configured to support both Power Architecture and Intel-based SBCs.

Figure 1 below illustrates a functional block diagram of the MPMC-965x system.

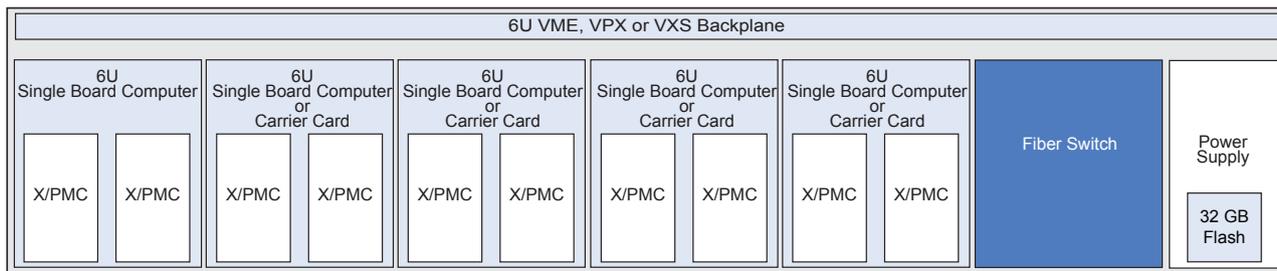


Figure 1: MPMC-965x system architecture

Standard System COTS Components

Curtiss-Wright has fully developed and tested several MPMC-965x system configurations with board level components that offer industry standard I/O to meet typical requirements of modern military mission control and flight computing systems. Further, these pre-developed system configurations have already passed rigorous environmental qualification testing, therefore reducing the risk and delivery time for customers (see the qualification section for more information).

Power dissipation at varying operating temperatures

TABLE 1 Power dissipation	
OPERATING TEMPERATURE	POWER DISSIPATION
-40 to +55°C	600W
-40 to +60°C	575W
-40 to +71°C	530W

Cooling Technology

The MPMC-965x utilizes liquid-flow-through cooling technology. With this cooling method, heat from the card edge is conducted to the chassis side wall (or internal cold-plate) where liquid is pumped through. The heat is then absorbed by the liquid and pumped away to a heat transfer unit.

This approach has the greatest cooling capacity over all other cooling techniques, but does require the vehicle to provide power for the liquid pump (and requires greater space and weight).

To ensure the highest levels of performance, the MPMC-965x chassis has been designed to meet or surpass MIL-STD-810 Qualifications for Military Equipment and DO-160E Environmental Conditions for Airborne Equipment. The MPMC-965x has successfully passed numerous environmental tests including temperature, altitude, shock, vibration, fluid susceptibility, voltage spikes, electrostatic discharge and more (see the environmental qualifications section for more information). Circuit cards installed in the sealed compact chassis are completely isolated from external environmental conditions such as humidity, dust and sand.

Software Support

The MPMC-965x is currently available with different software support options depending on the system configurations.

Standard Configuration

MPMC-9650-001 variant

The MPMC-9650-0001 is equipped with an integrated 28 VDC power supply unit, five VPF1 FPGA cards, one FHAS Fibre Channel PMC, and one CSW1 Switch Card.

Power supply

- 28 VDC input
- MIL-STD-704 compliant

TABLE 2 Max power		POWER	QTY	TOTAL
SYSTEM COMPONENT				
VPF1	90W	5	450W	
FHAS	20W	1	20W	
CSW1	20W	5	20W	
Power supply	73W	1	73W	
Total power required				563W

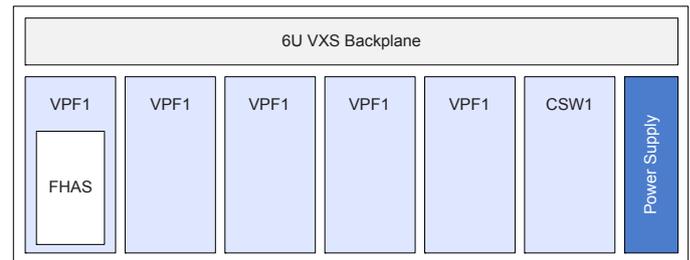


Figure 2: MPMC-9650-001 block diagram

Environmental Qualifications

The MPMC-965x is a highly ruggedized computing system that has been rigorously tested to ensure its operation in the harshest environments. The following charts illustrate the industry standards that Curtiss-Wright MPMC systems are qualified to:

DO-160 environmental conditions and test procedures for airborne equipment

- Temperature/altitude
- Temperature variation
- Humidity
- Operation shocks
- Crash safety
- Vibration
- Waterproofness
- Fluid susceptibility
- Fungus resistance
- Magnetic effect
- Power input
- Voltage spike
- Audio frequency conducted susceptibility
- RF susceptibility
- Emission of RF energy
- Lightening induced transient susceptibility
- Electrostatic discharge

MIL-STD-810 US Army standard testing

- Low pressure
- High temperature
- Low temperature
- Temperature shock
- Rain
- Humidity
- Fungus
- Salt fog
- Sand and dust
- Explosive atmosphere
- Leakage
- Acceleration
- Shock
- Gunfire vibration
- Temp, humidity, vibration
- Icing, freezing rain

MIL-STD-461 EMC testing of military equipment

- Electromagnetic Interference (EMI)

Ordering Information

Curtiss-Wright has a fully developed variant of the MPMC-965x system that is currently deployed and available for ordering. Customer configurations are available. Please contact your local sales representative for additional information.