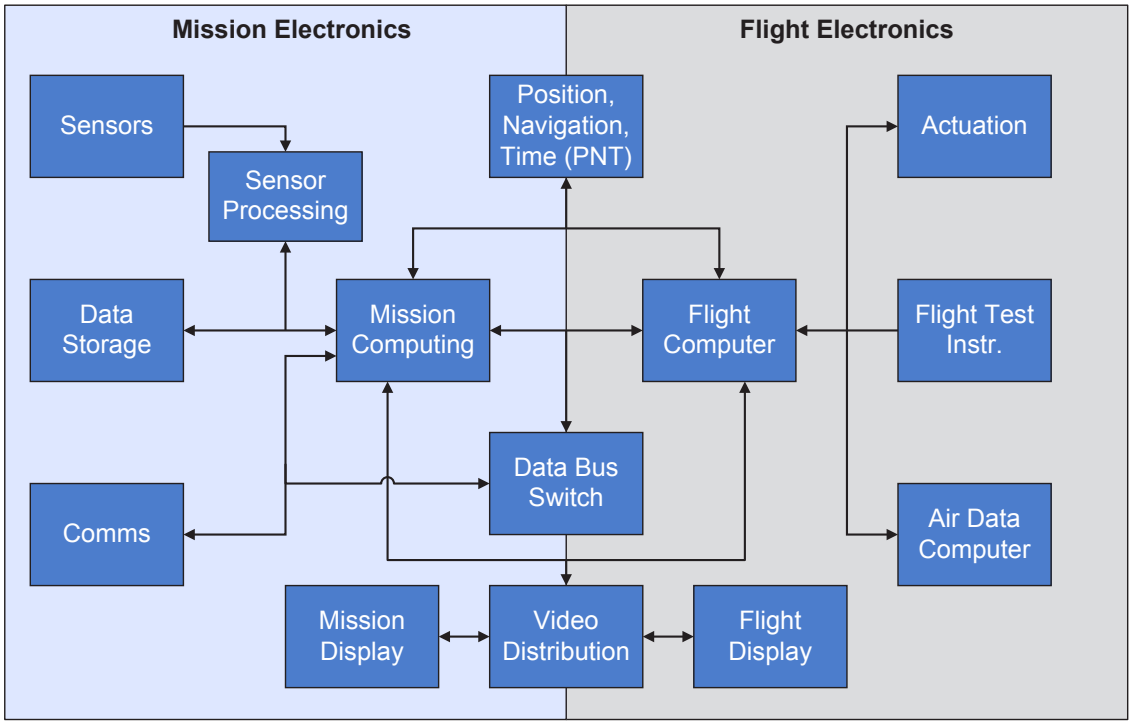
Small Form Factor Solutions

Products Developed for SWaP-C Constrained Platforms

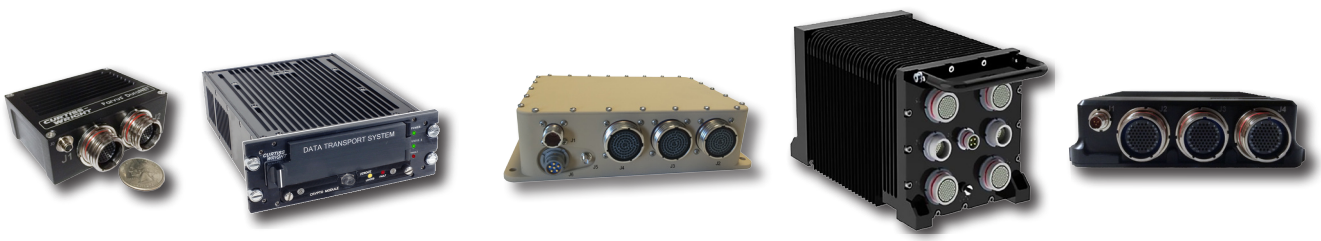
With the continued proliferation of small Unmanned Airborne Systems and the ever increasing pressure to find ways to be more and more competitive in the deployed military market, the number of platforms that require low size, weight, power and cost (SWaP-C) solutions are exploding. In response to this growing need, Curtiss-Wright has developed a series of products that either miniaturize classic airborne platform components, or allow the ability to consolidate these components into a single miniaturized solution.

To help describe the fit of these products, a high level view of a classic, generic airborne electronics architecture is shown below. Typically there are two major groupings of electronics on any platform: the flight electronics and the mission electronics. Flight electronics cover major functions that have to do with the movement and management of the aircraft such as flight computer, flight surface actuation, health management, air data computers, air data logging, flight display, etc. Mission electronics encompass functions such as sensors (EO/IR, radar, lidar, EW, etc.), sensor processing, mission data recording, communication, mission display, and the mission processor. These two categories, while very different in function, do share some capabilities such as PNT (position, navigation and time) and in some cases a common data bus.



Generic airborne platform architecture

This guide summarizes the products developed by Curtiss-Wright which provide the functions shown above in a miniaturized form or, for greater savings, provide multiple functions in a miniaturized form.



Miniaturized Solutions

Mission Computer

The DuraCOR 310 and DuraCOR 311 provides quad-core processing in either ARM® or Intel® architectures with a host of standard interfaces and customizable expansion to accommodate variation in interfaces for each program's need.

FEATURE	TYPICAL MISSION COMPUTER	DuraCOR 310/311
Weight	15-50 lb	1.5 lb
Power	100-300W	15W
Size	800 in^3	39 in^3
Interfaces	Ethernet, Serial, DIO, USB, Video/Audio, 1553, A429, custom	

Sensor Processing

The MPMC-9321 provides all of the key features required for sensor processing including high performance processing, flexible data ingest options, removable storage options and expansion sites to accommodate I/O needs. Processing is achieved using our 3U VPX™ Intel® Xeon® D card at the heart of the system.

FEATURE	TYPICAL SENSOR PROCESSOR	MPMC-9321
Weight	50-100 lb	15 lb
Power	500-2000W	150W
Size	900-3000 in^3	300 in^3
Processing performance	0.5-5 TFLOPS	1.2 TFLOPS
Interfaces	10 GbE, sFPDP, Fiber Ch., HD-SDI, Ethernet, Serial, DIO, custom	

Data Storage

The DTS1 provides a Network Attached Storage (NAS) using standard protocols for all clients on the network. In its compact size, the DTS1 provides a FIPS 140-2 encryptor and a removable drive with 100,000 exertion/extraction cycles.

FEATURE	TYPICAL MISSION COMPUTER	DTS1
Weight	10-20 lb	3.5 lb
Power	40-100W	18W
Size	400 in^3	50 in^3
Storage capacity	0.5-2 TB	1 TB
Interfaces	2 x Ethernet, 180 MB/s bandwidth	

Video Recording

The VRDV7000 provides HD video and audio recording complete with H.264 compression, simultaneous playback, metadata recording, and GbE to send compressed video to the platform downlink. Video is recorded to high capacity SD cards.

FEATURE	TYPICAL VIDEO RECORDER	VRDV7000
Weight	10-20 lb	1.7 lb
Power	50-120W	20W
Size	400 in^3	60 in^3

Data Bus Switch (Ethernet)

The DuraNET 20-11 is an ultra small form factor, 8-port, Layer 2+ managed Ethernet switch supporting IEEE-1588 PTP.

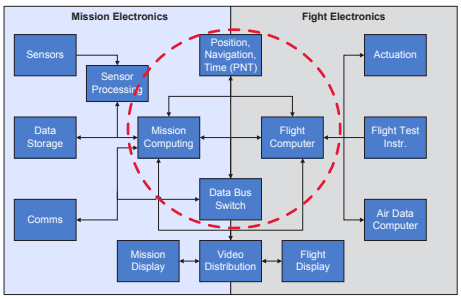
FEATURE	TYPICAL SWITCH	DuraNET 20-11
Weight	6-12 lb	0.5 lb
Power	10-20W	5W
Size	180 in^3	10 in^3

Consolidated and Miniaturized Solutions

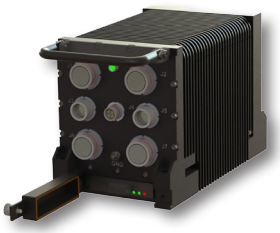
Data Bus Switch and Processor

The DuraDBH 672 combines the capability of four different functions in a typical architecture: the mission computer, the flight computer, the Positioning, Navigation and Timing (PNT) solution and the data bus switch. The DuraDBH-672 provides a powerful quad-core ARM processor that is powerful enough to host mission and flight control software. The system also can host an M-CODE/SAASM GPS receiver for PNT. Add to this a fully managed 16-port Ethernet switch and this single box can provide the core capability required for a small platform creating incredible SWaP-C savings.

- Weight: 4 lb
- Power: 20W
- Size: 140 in^3
- Interfaces: Ethernet, serial, discretes, USB, video, audio, 1553, A429, custom

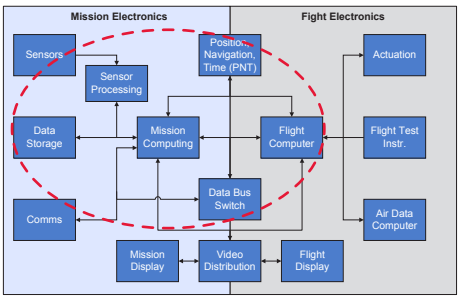


3U VPX MPMC-9321



The MPMC-9321 utilizes two 3U VPX modules and four industry standard XMC sites to provide all mission processing and flight computer in a single, compact LRU. The combination or our 12-core Intel Xeon D based processor card, the XD1, and our XF07, a Virtex-7 based XMC, provides a single-slot solution for data ingest, sensor processing and mission computing. To provide additional functionality, a second XMC site is used for 1553, ARINC 429, serial and discrete interfaces and a removable hard drive is available for data storage. Using the second slot for a safety certifiable processor and XMC I/O solution, the flight computer can be provided in a single slot. The final XMC in the system provides an Ethernet Switch for the data bus making this one box nearly all of the platform computing solution.

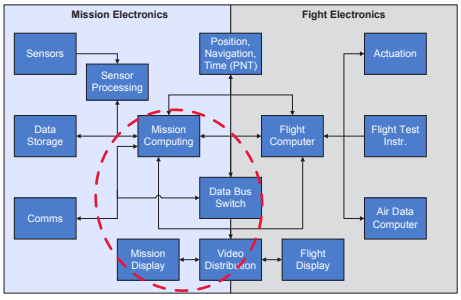
- Weight: 18 lb
- Power: 140W
- Size: 300 in^3
- Interfaces: 10 GbE, sFPDP, Fiber Channel, HD-SDI, Ethernet, serial, discretes, 1553, A429, custom



Smart Display and Processor

The PVDU is a 17.3” rugged high definition display with a built-in Intel processor to provide the combined functionality of a mission display and video distribution unit. This has proven to be extremely effective in smaller helicopter platforms to significantly reduce weight and volume. Other display sizes are also available from 10-21”.

- Weight: 20 lb
- Power: 150W
- Size: 640 in^3
- Interfaces: Ethernet, USB, serial, HD-SDI, custom



Other Considerations

Security

As reliance on digital information increases, so does the threat of that information falling into the wrong hands. Curtiss-Wright understands the importance of this issue and that it is constantly changing. To help you combat these threats, we have created solutions to help secure you systems with our TrustedCOTS™ programs. For more information, contact your local sales representative.

Safety

GUARDIAN SELECT
Embedded Program Partner

As either new platforms are created or as legacy platforms are refreshed, RTCA DO-254/DO-178B certification can be a costly and time consuming undertaking. Curtiss-Wright has extensive experience and decades of proven success in providing safety critical hardware and software to RTCA DO-254/178 levels A, B, C and D. Our range of solutions covers process-intensive civil and military embedded systems, highly configurable data acquisition systems, data concentrators and controllers, air data computers and crash protected recorders. We have the expertise to help you save time getting your systems certified.

Lifecycle Services

continuum

To meet the unique demands of our marketplace, Curtiss-Wright offers a comprehensive suite of Continuum Lifecycle Services designed to safeguard your programs and provide what you need for as long as you need. These services include:

- Visibility into or Control over product configuration changes and component obsolescence issues
- Longevity of Supply (LOS) extends the product build capability beyond the active production period
- Longevity of Repair (LOR) extends the product repair capability beyond the active repair period
- PLUS gives authorization over the use of materials sourced through independent distribution

Platform Integration

As new architectures are created with new components, the integration of these items can be risky and costly which might be a barrier to securing new business. Recognizing this challenge for our customers, Curtiss-Wright has taken industry standard components and software suites and integrated them to our products in advance to alleviate integration cost. These items include: moving maps, EO-IR sensors, tracking software, mission management and more.

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