COTS BOARDS

CURTISS-WRIGHT

CURTISSWRIGHTDS.COM

+ Products + Capabilities + Solutions

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CURTISS-WRIGHT
DEFENSE SOLUTIONS

In air, ground and naval defense, aerospace and border security applications, Curtiss-Wright Defense Solutions, a division of Curtiss-Wright, is an industry-leading supplier of sophisticated electronics products. We are recognized around the world as one of the most innovative designers and manufacturers of highly engineered solutions built rugged from the ground up to reliably perform in harsh conditions.

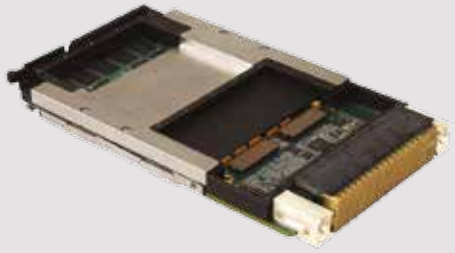
Curtiss-Wright's open architecture Commercial Off-The-Shelf (COTS) based rugged embedded computing solutions process data in real time to support mission-critical functions. We play a key industry role in the establishment of resources and services to ensure that our customers have access to the long lifecycle support required by aerospace and defense programs. We offer unmatched and comprehensive approaches for mitigating obsolescence, blocking the use of counterfeit parts, and developing product roadmaps to ease the integration of future generations of technologies.

The Defense Solution Advantage

A recent market study recognized Curtiss-Wright as the world's premiere supplier of rugged COTS VPX modules and subsystems. Not limited to VPX, Curtiss-Wright is a technological leader in providing COTS products and open architecture solutions for mission computing, signal processing, graphics, communication fabrics, system and sensing I/O and data storage.

The "building block" approach to providing solutions gives our customers great benefits with respect to cost, lead time and supportability. While providing these non-developmental items, the technology developed and the intellectual property also becomes a benefit for our customers in the ability to provide custom or point-design products when necessary.

Curtiss-Wright has products deployed in hundreds of defense programs and continues to provide support throughout their life cycle. Product families continue in volume production for a period of five to seven plus years; during this period, products undergo continuous improvement through software revisions, reliability enhancements and component upgrades. We realize our defense customers require knowledge, and often control, of these improvements. Application stability and predictability is essential for deployed mission-critical systems, which have an in-service life long past the volume production period. To meet these marketplace demands, Curtiss-Wright provides a suite of Total Life Cycle Management Services that safeguard your programs and mitigate the challenges associated with leveraging COTS technology for long-term mission-critical systems.



3U OpenVPX

6U VME

PROCESSOR BOARDS

Curtiss-Wright offers processing boards to fit any application, supporting Intel® and Power Architecture® and processor families, in 6U VME and 3U and 6U OpenVPX™ form factors. In addition to 3U, we offer small form factor embedded computing solutions in the and XMC form factors. These products support the long life-cycle of military programs with backwards pin-compatibility to enable easy system upgrades from older products.

Intel-based

3U Intel Single Board Computers

These small form factor products enable systems developers to deploy COTS solutions for size, weight and power (SWaP)-constrained applications that cannot accommodate the larger 6U standard. 3U SBCs based on the latest multi-core Intel processors deliver the highest levels of processing performance, with a broad base of software support.

Benefits

- High performance
- Widely installed base
- Easy development from desktop
- Large complement of I/O interfaces
- Pin-compatibility with previous generations of VPX Intel-based SBCs

Product	Form Factor	Processor(s)	SDRAM/ DDR	Flash	X/PMC Sites	Serial I/O	USB	Ethernet	Ruggedization	Operating Systems	Other
VPX3-1259	3U OpenVPX	Intel 5th Gen "Broadwell" Core i7 Quad-core @ 2.7 GHz	4, 8, 16 GB DDR3 @ 1,600 MT/s	8 to 32 GB SATA NAND SSD	1x XMC	2x EIA-232 2x EIA-422	3x USB 2.0 USB 3.0 optional	2x GbE 1000BASE-T or 1000BASE-X	AC 0, 100 CC 200, 300	Linux, VxWorks, Windows	8x GPIO, 2x SATA, 1x VGA, 2x DVI 8 lanes PCIe Gen3
VPX3-1258	3U OpenVPX	Intel 4th Gen "Haswell" Core i7-4701EQ Quad-core @ 2.4 GHz									
VPX3-1257	3U OpenVPX	Intel 3rd Gen Ivy Bridge" Core i7-3612QE Quad-core @ 2.1 GHz	8, 16 GB DDR3 @ 1,333 MT/s	8 or 16 GB NAND	1x XMC	2x EIA-232 2x EIA-422	3x USB 2.0	2x GbE 1000BASE-T or 1000BASE-X	AC 0, 100 CC 200, 300	Linux, VxWorks, Windows	8x GPIO, 3x SATA, 1x VGA, 2x DVI 8 lanes PCIe Gen2

PMC/XMC Intel Single Board Computers

This mezzanine SBC offers quad-core processing performance with ultra low power and a small sized footprint.

Product	Form Factor	Processor	SDRAM/ DDR	Flash	Serial I/O	USB	Ethernet	Ruggedization	Operating Systems	Other
XMC-120	XMC	Quad-core Atom "Bay Trail' E3845 @ 1.91 GHz	2, 4, 8 GB DDR3	4 to 32 GB SATA NAND SSD	1x RS-232 1x RS-232/422	2x USB	4x GbE BT/BX	AC 0, 100 CC 200	Linux, Windows	1x SATA, 1x VGA, 2x DVI or DisplayPort, 4x DIO, up to 4x PCIe
XMC-121	XMC	7th Gen Intel Kaby Lake Mobile Xeon E3-1505L v6 Quad-Core	sUp to 32 GB DDR4	8 to 32 GB SSD	1x RS-232, 1x RS-422/485	2x USB	2x BT or BX GbE ports	CC	Linux, Windows	4x Discrete GPIO 1x DVI/DP with audio 2x SPI and 1x I2C for basecard expansion

6U Intel Single Board Computers

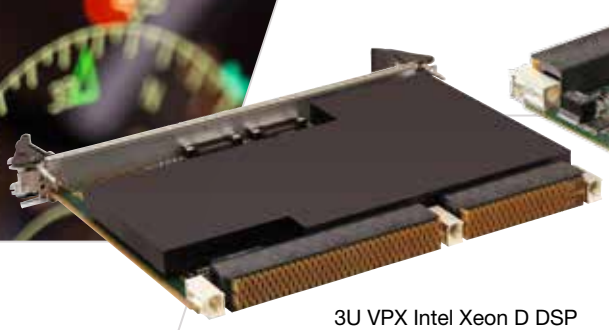
This set of COTS modules delivers high performance, I/O flexibility and large amounts of on-board memory to support data-intensive embedded applications.

Product	Form Factor	Processor(s)	SDRAM/ DDR	Flash	X/PMC Sites	Serial I/O	USB	Ethernet	Ruggedization	Operating Systems	Other
VPX6-1959	6U OpenVPX	Intel 5th Gen "Broadwell" Core i7 Quad-core @ 2.7 GHz	8, 16, 32 GB DDR3 @ 1,600 MT/s	8 to 128 GB SATA NAND SSD	2x XMC 1x PMC	4x EIA-232 2x EIA-422	3x USB	2x GbE BT + 2x GbE BX	AC 0, 100 CC 200, 300	Linux VxWorks Windows LynxOS	8x GPIO, 4x SATA, 1x VGA, 2x DVI/DP+ 16 lanes PCIe Gen3 on Expansion Plane 2x 10/40 G Ethernet/ InfiniBand on Data Plane
VPX6-1958	6U OpenVPX	Intel 4th Gen "Haswell" Core i7-4700EQ Quad-core @ 2.4 GHz									
VPX6-1957	6U OpenVPX	Intel 3rd Gen "Ivy Bridge" Core i7-3612QE Quad-core @ 2.1 GHz	8, 16 GB DDR3 @ 1,333 MT/s	8 or 16 GB NAND	2x XMC 1x PMC	2x EIA-232 3x EIA-422	5x USB	2x GbE BT or 4x GbE BX + 2x 10 GbE XAUI	AC 0, 100 CC 200, 300	Linux VxWorks Windows Red Hawk	8x GPIO, 4x SATA, 1x VGA, 2x DVI 16 lanes PCIe Gen2 on Expansion Plane 4x x4 SRIO on Data Plane
VME-1909	6U VME	Intel 5th Gen "Broadwell" Core i7 Quad-core @ 2.7 GHz	8, 16, 32 GB DDR3 @ 1,600 MT/s	8 to 128 GB SATA NAND SSD	2x XMC 2x PMC	2x EIA-232 3x EIA-422	5x USB	2x GbE BT	AC 0, 100 CC 200	Linux VxWorks Windows LynxOS	8x GPIO, 2x SATA, 1x VGA, 2x DVI
VME-1908	6U VME	Intel 4th Gen "Haswell" Core i7-4700EQ Quad-core @ 2.4 GHz									

3U and 6U Intel Digital Signal Processors

Curtiss-Wright builds high-performance digital signal processing (DSP) computing solutions tailored to the needs of the most demanding defense applications such as radar, sonar, signal intelligence and image processing. These 3U and 6U Intel DSP modules combine the ultimate in floating point performance with expansive bandwidth; the latest modules increase performance even further by exploiting GPUs integrated within multi-core processors. All of our DSP products are founded on the principle of focusing on high-integrity design aimed at harsh environment applications, backed by customer support and lifecycle management to support the programmatic needs of defense customers.

Product	Form Factor	Processor(s)	Memory	Flash (Max)	Mezzanine Sites	Ethernet	Ruggedization	Operating Systems	EIA-232/ 422/485 Ports	Other Features
CHAMP-XD1	3U OpenVPX	1x Xeon D D-1539 8-core @ 1.6 GHz or D-1559 12-core @ 1.5 GHz	16/32 GB DDR4 @ 2,133 MT/s	16 GB/32 GB NAND SSD	1x XMC (PCIe Gen 2/3, 25W)	1x BASE-T GbE 2x BASE-KR 10 GbE or 2x BASE-KX 1 GbE	AC 0 CC 200	CentOS, Linux Red Hat, Linux VxWorks	2x 232, 1x 422	IPMI, 1x USB 3.0, 1x SATA 3.0
CHAMP-XD2	6U OpenVPX	2x Xeon D D-1539 8-core @ 1.6 GHz or D-1559 12-core @ 1.5 GHz	32 GB per Xeon D (64 GB total) DDR4 @ 2,133 MT/s	32 GB NAND SSD per Xeon D (64 GB total)	1x XMC (PCIe Gen 2/3, 25W)	2x BASE-T GbE 2x BASE-KR 10 GbE or 2x BASE-KX 1 GbE 4x 40 GbE or InfiniBand	AC 0, 100 CC 200	CentOS, Linux Red Hat, Linux VxWorks	4x 232, 2x 422	IPMI, 1x USB 2.0, 1x USB 3.0, 2x SATA 3.0
CHAMP-XD2M	6U OpenVPX	1 x Xeon D 16-core @ 1.7 GHz	128 GB DDR4 @ 2133 MT/s	32 GB NAND SSD	1 x XMC (PCIe Gen 2/3, 25W)	4x 40G/10G or Infiniband	CC 100	Linux Red Hat, Linux VxWorks	2x 232, 2x 422	IPMI, 2x USB 2.0, 2x USB 3.0, 4x SATA 3.0
CHAMP-AV9	6U OpenVPX	2x Core i7-4700QE quad-core @ 2.4 GHz	16/32 GB DDR3 (ECC)	32 GB (NAND) flash	None	4x GbE, 4x 40 GbE/IB	AC 0, 100 CC 200	VxWorks, Linux, Gedae	6x 232, 2x 422/485	Dual 16x PCIe, 4x USB, 4x SATA, 6x DisplayPort
CHAMP-AV8	6U OpenVPX	2x Core i7-2715QE quad-core @ 2.1 GHz	8/16 GB DDR3 (ECC)	16 GB	1x XMC	4x GbE	AC 0, 100 CC 100, 200	VxWorks, Linux, Gedae	4x 232, 2x 422/485	4x sRIO, 2x PCIe, 2x USB, 2x SATA



3U VPX Intel Xeon D DSP Processor Card

6U VPX Intel Xeon D DSP Processor Card

Power Architecture-based

3U Power Architecture Single Board Computers

Optimized for SWaP-constrained applications, these 3U solutions offer different levels of performance, power and cost, all within a compact package. SBCs based on the latest QorIQ™ NXP processors offer deterministic, non-throttling performance.

Benefits

- AltiVec-enhanced
- High performance in a low power footprint
- Deterministic
- Pin-compatibility between select boards
- High-integrity computing
- SecureBOOT-enabled

Product	Form Factor	Processor(s)	SDRAM/ DDR	Flash	X/PMC Sites	Serial I/O	USB	Ethernet	Ruggedization	Operating Systems	Other
VPX3-133	3U VPX/ VPX REDI/ OpenVPX	T2080 @ 1.5 GHz	Up to 8 GB DDR3	256 MB NOR 8 GB NAND	1x XMC x4 PCIe Gen2	2x EIA-232 2x EIA-422	2x USB 2.0	2x GbE BT or 2x GbE BX	AC 0, 100 CC 200 CC 300 (VITA 48.2 Type I)	VxWorks, Linux	Pinout as per VITA 46.9, DIO, DIFFIO, USB, SATA Fabric PCIe Gen2 2x 4 lane ports, or 1x 8 lane port, or 4x 2 lane ports, or 8x 1 lane ports IPMI TCOTS ready
VPX3-131	3U VPX/ VPX REDI/ OpenVPX	P4080 @ 1.2 GHz (MP5020 @ 1.5 GHz – contact factory)	Up to 8 GB DDR3	256 MB NOR 8 GB NAND	1x XMC x4 PCIe Gen2	2x EIA-232 2x EIA-422 (SDLC capable)	2x USB 2.0 (with P5020)	2x GbE BT or 2x GbE BX	AC 0, 100 CC 200 CC 300 (VITA 48.2 Type I)	VxWorks, Linux, INTEGRITY, LynxOS	Pinout as per VITA 46.9, DIO, DIFFIO, USB, SATA Fabric PCIe Gen2 2x 4 lane ports, or 1x 8 lane port, or 8x 1 lane ports TCOTS Ready

6U Power Architecture Digital Signal Processors

Both of these boards support four efficient, flexible Power Architecture processors.

Product	Form Factor	Processor(s)	Memory	Flash (Max)	NVRAM	Mezzanine Sites	Ethernet	Ruggedization	Operating Systems	EIA-232/ 422/485 Ports	Discrete I/O	Other Features
CHAMP-AV6	6U VPX/ VPX REDI/ OpenVPX	Quad MPC8640/D @ 1 GHz	4 GB DDR2 (ECC)	256 MB	128 KB	1x XMC	4x GbE via switch	AC 0, 100 CC 100, 200	VxWorks, Gedae	4x 232, 2x 422/485	16-bits	16-bits
CHAMP-AV4	6U VME	Quad MPC7447/ MPC7448 @ 1 / 1.25 GHz	2 GB DDR (ECC)	256 MB	128 KB	2x 64-bit/ 100 MHz	4x GbE via switch	AC 0, 100 CC 100, 200	VxWorks	4x 232	8-bits	Onboard GbE Switch

PMC/XMC Power Architecture Single Board Computers

This small form factor mezzanine is card designed for applications where low power with dual-core performance is a requirement.

Product	Form Factor	Processor(s)	SDRAM/ DDR	Flash	Serial I/O	USB	Ethernet	Ruggedization	Operating Systems	Other
XMC-109	XMC	Dual-core P2020 @ 1.2 GHz	Up to 8 GB DDR3	256 MB 8 GB NAND	2x EIA-232/ 422	1x USB 2.0	2x GbE BT (2x GbE BX capable)	AC 0, 100 CC 200	VxWorks, Linux	Up to 4x PCIe Gen1 interface, SATA optional

6U Power Architecture Single Board Computers

For applications with complex requirements and restrictive SWaP constraints, these 6U SBCs exploit the performance, low-power characteristics and flexible I/O capabilities of Power Architecture processors. SBCs based on the latest QorIQ NXP processors offer deterministic, non-throttling performance.

Product	Form Factor	Processor(s)	SDRAM/ DDR	Flash	X/PMC Sites	Serial I/O	USB	Ethernet	Ruggedization	Operating Systems	Other
VPX6-195	6U VPX REDI/ OpenVPX	Dual node, T2080 @ 1.5 GHz	Up to 16 GB DDR per node	per node 512 MB NOR, Up to 32 GB NAND, 512 KB NVRAM	1 XMC per node 4-lane Gen 2/3	2x EIA-232 per node 2x EAI-422 per node	2x USB 2.0 per node	2x GbE BT Or 2x GbE BX per node	AC 0, 100 CC 200 CC 300 (VITA 48.2 Type I)	VxWorks, Linux, LynxOS	Nodes independently powered Pinout as per VITA 46.9, DIO, DIFFIO, Expansion plane Fabric is PCIe Gen2 TCOTS FPGA (2 sizes) TCOTS Ready
VME-186	6U VME	P4080 @ 1.2 GHz	Up to 8 GB DDR3	512 MB, 8 GB NAND, 512 KB NVRAM	2x 64-bit/ 133 MHz PMC or 8-lane PCIe XMC	2x EIA-232 4x EIA-232/ 422/485 Sync capable	2x USB 2.0	Up to 3x GbE BT	AC 0, 100 CC 200	VxWorks, VxWorks 653, Linux, INTEGRITY 11, INTEGRITY-178	Dual MIL-STD-1553B option, dual SATA option, DIO & DIFFIO TCOTS support
VPX6-187	6U VPX/ VPX REDI/ OpenVPX	P4080 @ 1.2 GHz	Up to 8 GB DDR3	512 MB, 8 GB NAND, 512 KB NVRAM	1x 64-bit/ 133 MHz PMC or 8-lane PCIe XMC, 1x 8-lane PCIe XMC	4x EIA-232 4x EIA-232/ 422/485 Sync capable	2x USB 2.0	Up to 4x GbE BT or 2x GbE BT 2x GbE BX	AC 0, 100 CC 200 CC 300 (VITA 48.2 Type I)	VxWorks, WR MILS, Linux, INTEGRITY 11, INTEGRITY-178, LynxOS 7, LynxOS-178, DEOS	SRIO and PCIe backplane fabric, Dual MIL-STD-1553B, dual SATA option, DIO & DIFFIO, IPMI TCOTS support
VPX6-185	6U VPX/ VPX REDI/ OpenVPX	Single/dual-core MPC8640/ MPC8641 @ 1.0 / 1.2 / 1.33 GHz	2 GB DDR2	512 MB, 128 KB NVRAM	1x 64-bit/ 100 MHz or 8-lane PCIe, 1x 64-bit/ 66 MHz or 4-lane PCIe	4x EIA-232 4x EIA-232/ 422/485 Sync capable	2x USB 2.0	Up to 4x GbE BT	AC 0, 100 CC 200 CC 300 (VITA 48.2 Type I)	VxWorks, WR MILS, Linux, INTEGRITY, LynxOS	SRIO and PCIe backplane fabric, Dual MIL-STD-1553B, dual SATA option, DIO & DIFFIO
VME-184	6U VME	Single/ dual-core MPC8640/ MPC8641 @ 1.0 / 1.25 GHz	2 GB DDR2	512 MB, 128 KB NVRAM	1x 64-bit/ 100 MHz or 8-lane PCIe, 1x 64-bit/ 66 MHz	2x EIA-232 4x EIA-232 422/485 Sync capable	2x USB 2.0	Up to 3x GbE BT	AC 0, 100 CC 200	VxWorks, Linux, INTEGRITY, LynxOS	Dual MIL-STD-1553B option, dual SATA option, SCSI option, DIO & DIFFIO
VME-183	6U VME	Single/dual MPC7447A/ MPC7448 @ 1.0 / 1.2 GHz	1 GB DDR	512 MB, 128 KB NVRAM	1x 64-bit/ 100 MHz, 1x 64-bit/ 66 MHz	2x EIA-232 4x EIA-422/485 Sync capable	2x USB 2.0	Up to 3x GbE BT	AC 0, 100 CC 200	VxWorks, Linux, INTEGRITY, LynxOS	Dual MIL-STD-1553B option, dual SATA option, SCSI option, DIO & DIFFIO
VME-194/B	6U VME	Dual-core P2020 up to 1.2 GHz	Up to 8 GB DDR3	512 MB, 512 KB NVRAM, 8 GB NAND	1x 64-bit/ 100 MHz, 1x 64-bit/ 133 MHz 2 x4 PCIe XMC	2x EIA-232 4x EIA-422/485 Sync capable	2x USB 2.0	Up to 3x GbE BT	AC 0, 100 CC 200	VxWorks, Linux, INTEGRITY	Dual MIL-STD-1553B option, dual SATA option, DIO & DIFFIO
VME-196	6U VME	NXP QorIQ T2080 Quad-core E6500 up to 1.8 GHz	4-16 GB DRAM	32 GB NAND Flash	Dual PMC/ XMC sites	2x EIA-232 4x EIA-232/422	2x USB	3x 1 GbE interfaces	AC 0, 100 CC 200	VxWorks 6.9, 7.0 LynxOS CW Linux INTEGRITY 11	2x SATA, DIO, DIFFO, Dual MIL-STD 1553
VPX6-197	6U OpenVPX	T2080 @1.8 GHz	2-16 GB DDR3	512 MB Flash	1 x PMC/XMC with 133 MHz PCI-X or 4-lane PCIe Gen2 1 x XMC with 4-lane PCIe Gen2	4x EIA-232 up to 4x EAI-422	2 x USB 2.0	4 x GbE interfaces	AC 0, 100 CC 200	Green Hills, INTEGRITY 11, Yocto Linux, LynxOS, VxWorks 6.9, VxWorks 7.0	2 x SATA 2.0, 2-channel MIL-STD-1553B option

DO-254 Safety Certifiable

DO-254 Safety Certifiable Single Board Computer

These boards are targeted at avionics applications where a cost effective COTS alternative to custom developed DO-254/DO-178 safety certifiable solutions can offer a competitive advantage for integrators.

Benefits of DO-254 certifiable COTS modules

- Lowers your risk
- Lowers your cost
- Speeds time to market
- Board level development available to DO-254 DAL C through DAL A
- We provide you with a full set of certification artifacts
- We offer a DER-approved process with SOI audits

Product	Form Factor	Processor(s)	SDRAM/ DDR	Flash	X/PMC Sites	Serial I/O	USB	Ethernet	Ruggedization	Operating Systems	Other
VPX3-150	3U OpenVPX	Dual-core P5020 up to 1.2 GHz	2 GB DDR3	256 MB	None	1x EIA-232 1x EIA 422	None	2x GbE	CC 100	VxWorks 653 VxWorks 6.9	CANbus, Elapsed Time Counter, DIO
VPX3-151	3U OpenVPX	QorIQ P3041 @ 1.2 GHz	4 GB DDR3	256 MB	None	1x EIA-232 1x EIA 422	None	2x GbE	CC 100	Green Hills INTEGRITY-178 tuMP VxWorks 6.9 SMP	Time Counter, 2 x SATA 2.0
VPX3-152	3U OpenVPX	Quad-core Altivec-enabled T2080 up to 1.8 GHz	Up to 8 GB DDR3	256 MB	1x XMC	2x EIA-232 2x EIA-422	2x USB 2.0	2x BASE-T, 2x BASE-KR or 10GbE-KR	AC 0, 100 CC 200, 300	VxWorks 6.9.4, 7, VxWorks 653, Linux, INTEGRITY-178 tuMP	2x SATA 2.0, DIO, timers
VPX3-1220	3U OpenVPX	7th Gen Kaby Lake Xeon Quad-Core @ up to 2.2 GHz	Up to 32 GB DDR4	8-32 GB SATA NAND Flash	1x XMC	2x RS-232 2x RS-422/485	3x USB 2.0 or 1x USB 3.0	2x BASE-T or 4x BASE-X	AC 0, 100	Linux (Fedora and Red Hat Enterprise Linux (RHEL)), VxWorks, Windows Embedded, and VMware	2x SATA 3.0 8x Discrete GPIO 3x DVI/DP with audio

GPGPU (General Purpose Graphics Processing Units)

GPGPU Digital Signal Processors

These boards harness the enormous floating point processing power of GPGPUs for compute intensive applications, configured in rugged form factors.

Product	Form Factor	Processor(s)	Memory	Ruggedization	Supported Hosts	Other Features
VPX3-491	3U OpenVPX	240-core NVIDIA Fermi	2 GB GDR5	AC 0 CC 200	VPX3-1256, VPX3-1257, VPX3-1258	PCIe x16
VPX6-490	6U OpenVPX	Dual 240-core NVIDIA Fermi	4 GB GDR5	AC 0 CC 200, AFT	VPX6-1956, VPX6-1957, VPX6-1958, CHAMP-AV8, CHAMP-AV9	Dual PCIe x16
VPX3-716	3U OpenVPX	640-core AMD E8860	2 GB GDDR5	AC 0 CC 200	VPX3-1256	PCIe x8
VPX3-4921	3U VPX	NVIDIA Quadro M5000SE	8 GB GDDR5	AC L100 CC L100	CHAMP-XD1 (VPX3-482)	PCIe x8 4 video outputs
VPX3-4922	3U VPX	NVIDIA TESLA M6	8 GB GDDR5	AC L100 CC L100	CHAMP-XD1 (VPX3-482)	PCIe x8 HPC mode
VPX6-4941	6U VPX	Single or Dual NVIDIA Quadro Maxwell-2	8 or 16 GB GDDR5	AC L100 CC L100	CHAMP-XD2 (VPX6-483)	PCIe 2x16 Up to 8 video outputs
VPX6-4942	6U VPX	Single or Dual NVIDIA TESLA M6	8 or 16 GB GDDR5	AC L100 CC L100	CHAMP-XD2 (VPX6-483)	PCIe 2x16 HPC mode

FPGA (Field Programmable Gate Arrays)

The use of FPGAs has revolutionized the way DSP subsystems are configured. With a large number of gates, hardware multipliers and high-speed serial interfaces, FPGAs are applicable to a variety of applications including RADAR, signal intelligence and image processing that have elements of computing characterized by repetitive fixed-point processing, expressed in highly parallel form. FFTs, pulse compression, filters, and digital down converters are examples of functions that FPGAs perform well. In deployed systems, this technical advantage translates to smaller, lower-power and lower-cost systems.

3U OpenVPX FPGA DSP

3U FPGA Digital Signal Processors

This is a set of boards offering high bandwidth datastream processing in a rugged, small form factor.

Product	Form Factor	Processor(s)	Memory	Flash (Max)	Mezzanine Sites	Ethernet	Ruggedization	Operating Systems	EIA-232/ 422/485 Ports	Discrete I/O	Other Features
VPX3-453	3U VPX/ VPX REDI/ OpenVPX	1x MPC8640D @ 1 GHz, 1x Xilinx Virtex-6 FPGA LX240T	2 banks of DDR2 SDRAM for the MPC8640D, 1 GB total. 2 banks of QDR2+ SRAM (36 MB total) and 1 bank of DDR2 SDRAM (256 MB total) for the FPGA.	256 MB	1x XMC x4 PCIe	2x GbE	CC 100, 200	VxWorks, Linux	2	7 LVTTL IO (processor); 18 LVDS pairs (FPGA)	2x x4 PCIe fabric ports, 2x x4 RocketIO ports to backplane, FXTools FPGA Development Kit
VPX3-450	3U VPX/ VPX REDI/ OpenVPX	1x MPC8640D @ 1 GHz, 1x Xilinx Virtex-5 FPGA LX155T/ SX95T	2 banks of DDR2 SDRAM for the MPC8640D, 1 GB total. 2 banks of QDR2+ SRAM (18 MB total) and 1 bank of DDR2 SDRAM (256 MB total) for the FPGA.	256 MB	1x XMC x4 PCIe	2x GbE	AC 0 CC 100, 200	VxWorks, Linux	2	7 LVTTL IO (processor); 18 LVDS pairs (FPGA)	2x x4 PCIe fabric ports, 2x x4 RocketIO ports to backplane, FXTools FPGA Development Kit
FPE320	3U VPX/ VPX REDI	1x Xilinx Virtex-5 FPGA SX240T/330T	2x 9 MB QDR2, 2x 256 MB DDR2	128 MB	1x FMC/ VITA 57	–	AC 0 CC 100, 200	VxWorks, Linux	–	8 single-ended I/O, 32 LVDS Pairs	PCIe x4 and 2x x4 RocketIO ports to backplane, FusionXF FPGA Development Kit
VPX3-530	3U VPX/ OpenVPX	1x Xilinx Virtex-7 XC7V690T	2x 4 GB DDR3	128 MB	–	–	AC 0 CC 200 (AC 100, contact factory)	VxWorks, Linux (Windows: contact factory)	–	x28 LVDS IO, 2x RS-485 input, 2x RS-485 output	2x 2/4 GSPS 12-bit ADC, 2x 5.6 GSPS 14-bit DAC PCIe x8 x8 RocketIO ports to backplane, FusionXF FPGA Development Kit

6U FPGA Digital Signal Processors

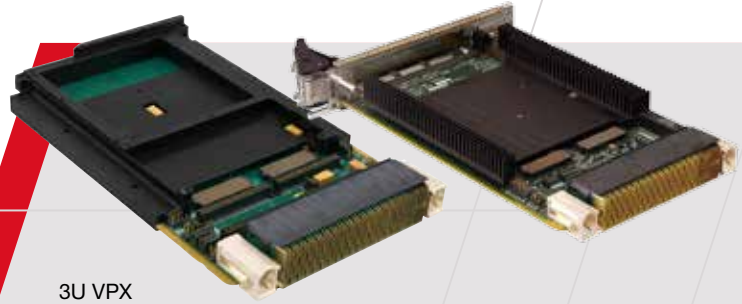
These boards offer power FPGA-based processing combined with flexible I/O across a range of 6U standards, including OpenVPX, VPX REDI, VXS and VME.

Product	Form Factor	Processors	Memory	Flash (Max)	Mezzanine Sites	Ethernet	Ruggedization	Operating Systems	EIA-232/ 422/485 Ports	Discrete I/O	Other Features
CHAMP-FX4	6U VPX/ VPX REDI/ OpenVPX	Dual ARM CortexA9 (in ZYNQ-7030), 2x or 3x Xilinx Virtex-7 FPGA	1 GB (Processor), 4 GB DDR3 SDRAM/FPGA, 36/72 MB QDRII+ SRAM/ FPGA	256 MB (processor), 32 MB (FPGA)	2x FMC	1x GbE-T 1x GbE-X	AC 0, 100 CC 100	VxWorks, Linux	RS-232	36 backplane LVDS (FPGA), 4 backplane LVDS (processor), 8 SE BP DIO (processor)	x40 high speed SerDes to backplane, Gen2 SRIO switch 4x4 to BP, Gen3 PCIe x8 to BP, FPGA Development Kit
CHAMP-WB	6U VPX/ VPX REDI/ OpenVPX	1x Xilinx Virtex-7 FPGA X690T/X980T	8 GB DDR3 SDRAM (FPGA)	32 MB (FPGA)	2x Enhanced FMC	-	AC 0 CC 100	VxWorks, Linux	-	16 LVDS from FPGA	x20 SerDes ports connected to FPGA for SRIO, Aurora, etc. FPGA Development Kit
CHAMP-FX2	6U VPX/ VPX REDI/ OpenVPX	Dual Xilinx Virtex-5 FPGAs LX110T/ LX220T, 1x MPC8640D	512 MB DDR2 SDRAM, 36 MB QDR2 SRAM per FPGA, 1 GB DDR2 SDRAM for MPC8640	512 MB	1x XMC x8 PCIe	2x GbE	AC 0, 100 CC 100, 200	VxWorks	2x EIA-232 2x EIA-422/485	16-bits LVTTL, 18 pairs LVDS from each FPGA	sRIO fabric (4x x4 ports off-board), dual x4 RocketIO ports to backplane, FXTools FPGA Development Kit
HPE720	6U VPX REDI	1x MPC8640/D @ 1 GHz Dual Xilinx Virtex-5 FPGAs LX330T/ SX240T	512 MB DDR2 SDRAM, 36 MB QDR2 SRAM per FPGA, 1 GB DDR2 SDRAM for MPC8640	128 MB	2x FMC or 1x FMC and 1x X/PMC	2x GbE	AC 0	VxWorks, Linux	2x EIA-232 2x EIA-422/485	19 differential pairs or 38 single-ended I/O from SCN FPGA	sRIO fabric, dual x8 RocketIO to backplane, PCIe x8 to backplane, FusionXF FPGA Development Kit

Note 1: Contact factory for rugged and conduction-cooled options

Curtiss-Wright is the world's premier supplier of rugged COTS VPX modules and subsystems.

6U VPX



3U VPX

PMC/XMC FPGA Digital Signal Processors

Flexible mezzanine card FPGA-based processing is supplied by this list.

Product	Form Factor	Processor(s)	Memory	Ruggedization	Operating Systems	Discrete I/O	Other Features
XF07-523	XMC	Xilinx Kintex-7 XC7K325T	2x 128M x 16-bit	AC 0, 100 CC 200	VxWorks, Linux, (Contact factory for Windows)	Front Panel: 32x LVDS pairs (AC only), XMC P16: 20x LVDS pairs plus 32x single-ended (Note 2), PMC P14: 32x LVDS pairs (Note 2)	FusionXF FPGA Development Kit
ADX000	X/PMC	Xilinx Virtex-5 SX95T	2x 9M x 36-bit, 2x 128M x 16-bit	CC 200	VxWorks, Linux, Windows, ElinOS	PCI-X, PCIe, RocketIO, 10 LVDS (P4)	FusionXF FPGA Development Kit
XMC-442	XMC	Xilinx Virtex-5 SX50T/SX95T	256 MB DDR2 SDRAM, 18 MB QDR2 SRAM	AC 0, 100 CC 100, 200	VxWorks, Linux	Personality module, PCIe, RocketIO	FPGA Design Kit, FXTools FPGA Development Kit
XMC-FPGA05D	X/PMC	Xilinx Virtex-5 SX95T	18 MB QDR2 SDRAM (2 banks of 9 M x 18-bit), 256 MB DDR2 SDRAM (2 banks of 128 M x 16-bit)	AC 0, 100 CC 200	VxWorks, Linux, Windows	I/O personality module, PCIe, 64-bit 133 MHz PCI-X, RocketIO, 64-bit user I/O (P4)	FusionXF FPGA Development Kit, see I/O Personality Module Table
XMC-FPGA05F	X/PMC	Xilinx Virtex-5 SX95T	512 MB DDR2 SDRAM (4 banks of 64 M x 16-bit)	AC 0, 100 CC 200	VxWorks, Linux, Windows	4x Fiber-optic, PCIe, RocketIO, 64-bit user I/O (P4 or P6)	FusionXF FPGA Development Kit, sFPDP option
PMC-FPGA05	PMC	Xilinx Virtex-5 LX110/155	256 MB DDR2 SDRAM (2 banks of 64 M x 16-bit), 18 MB QDR2 SRAM (3 banks of 4 M x 18-bit)	AC 0	VxWorks, Linux, Windows	I/O personality module, 64-bit 133 MHz PCI-X, 64-bit rear user I/O (P4)	FPGA Development Kit, see I/O Personality Module Table (Note 1)
PMC-440	PMC	Xilinx Virtex-II Pro VP20/VP40	256 MB SDRAM	AC 0, 100 CC 100, 200	VxWorks	64-bit 66 MHz PCI	FPGA Design Kit

Notes:
1. Custom I/O personality modules can be easily developed or Curtiss-Wright offers a variety of modules including analog input, analog output, LVDS, EIA-485/422 and Camera Link.
2. PMC P14 and XMC P16 I/O mutually exclusive

DRFM (Digital RF Memory)

Wide-band, low latency applications that require large FPGA processing will find an optimized match in this 6U board. It offers wide input/output requirements with minimal latency.

Product	Form Factor	Processor(s)	Memory	Flash (Max)	ADC & DAC	Ruggedization	Operating Systems	EIA-232/ 422/485 Ports	Discrete I/O	Other Features
CHAMP-WB-DRFM	6U VPX/ VPX REDI/ OpenVPX	1x Xilinx Virtex-7 FPGA X690T/ X980T	8 GB DDR3 SDRAM (FPGA)	32 MB (FPGA)	12 GS/s 8-bit ADC & 12 GS/s 10-bit DAC	AC 0 CC 100	VxWorks, Linux	-	16 LVDS from FPGA	x20 SerDes ports connected to FPGA for SRIO, Aurora, etc. FPGA Development Kit

6U Wide-band ADC/DAC FPGA Modules

Product	Form Factor	Processor(s)	Memory	Flash (Max)	ADC & DAC	Ruggedization	Operating Systems	EIA-232/ 422/485 Ports	Discrete I/O	Other Features
CHAMP-WB-A25G	6U VPX/ VPX REDI/ OpenVPX	1x Xilinx Virtex-7 FPGA X690T/ X980T	8 GB DDR3 SDRAM (FPGA)	32 MB (FPGA)	25 GS/s 8-bit ADC	AC 0 CC 100	VxWorks, Linux	-	16 LVDS from FPGA	x20 SerDes ports connected to FPGA for SRIO, Aurora, etc. FPGA Development Kit
CHAMP-WB-D25G	6U VPX/ VPX REDI/ OpenVPX	1x Xilinx Virtex-7 FPGA X690T	8 GB DDR3 SDRAM (FPGA)	32 MB (FPGA)	25 GS/s 10-bit DAC	AC 0 CC 100	VxWorks, Linux	-	16 LVDS from FPGA	x20 SerDes ports connected to FPGA for SRIO, Aurora, etc. FPGA Development Kit

6U OpenVPX Wideband Receiver

6U OpenVPX Wideband Transmitter

OPEN-STANDARDS SOFTWARE

While other companies rely on board-specific software, Curtiss-Wright takes a system-level approach to build, manage and support your entire development project. While a single tool may not have the power to solve it all, creating an ecosystem of proven, dependable tools helps you accelerate your development cycle. These software tools are based on open standards that help deliver portability across platforms and programs, yielding greater-code reuse. This also translates to significant time savings by not having to repeatedly learn new tools and library calls on every program.

Hardware supported:

3U

- VPX3-131
- VPX3-133
- VPX3-1220
- VPX3-1258
- VPX3-1259
- VPX3-482 (CHAMP-XD1)

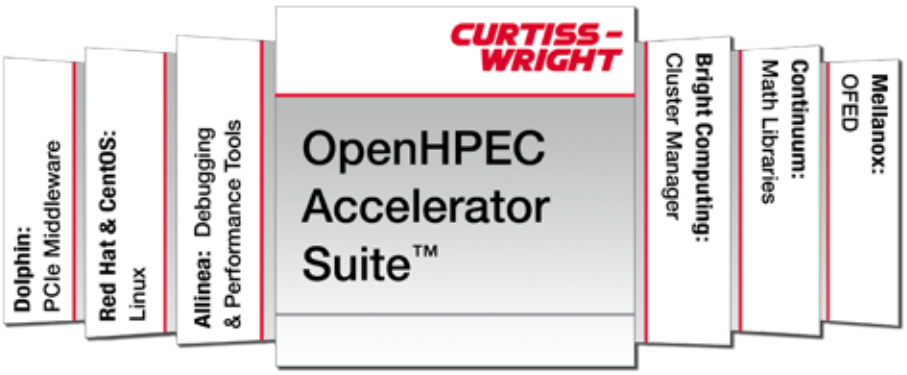
6U

- VPX6-463 (CHAMP-AV9)
- VPX6-1958
- VPX6-6802
- VPX6-490
- VPX6-483 (CHAMP-XD2)
- VPX6-1959
- XMC-554

OpenHPEC Accelerator Suite

The tool suite starts with the best-in-class cluster manager, debugger, and profiler from the High Performance Computer (HPC) domain. It also supports 40 GbE Ethernet, InfiniBand®, and PCI Express® (PCIe) fabrics, as well as multiple versions of MPI for communications.

- **Bright Cluster Manager** – System management (network, boards, and code) plus built-in/customizable health and status monitoring.
- **Allinea Debugger** – A true parallel system debugger. Steps, plays or breaks processes & threads, individual or in groups, while viewing stacks and memory across the boards.
- **Allinea Profiler** – Finds memory bottlenecks, time hogs, communication imbalances, sync issues, cache misses and more in threaded and parallel code.
- **Systems Bit Framework** – Create custom tests from APIs or a command line from the board-level BIT results.
- **Data Flow** – Records and graphs both latency & throughput of fabric transfers for benchmarking and verification.
- **Math Libraries** - Single and multi-thread functions, for both single and double precision, for VSIPL, FFTW and legacy Continuum API
- **Dolphin Interconnect Solutions™ PCIe Communications**
- **NVIDIA® GPU Support**
- **Centos and Red Hat® 7.1 Linux**
- **Mellanox OFED™**



Math Libraries

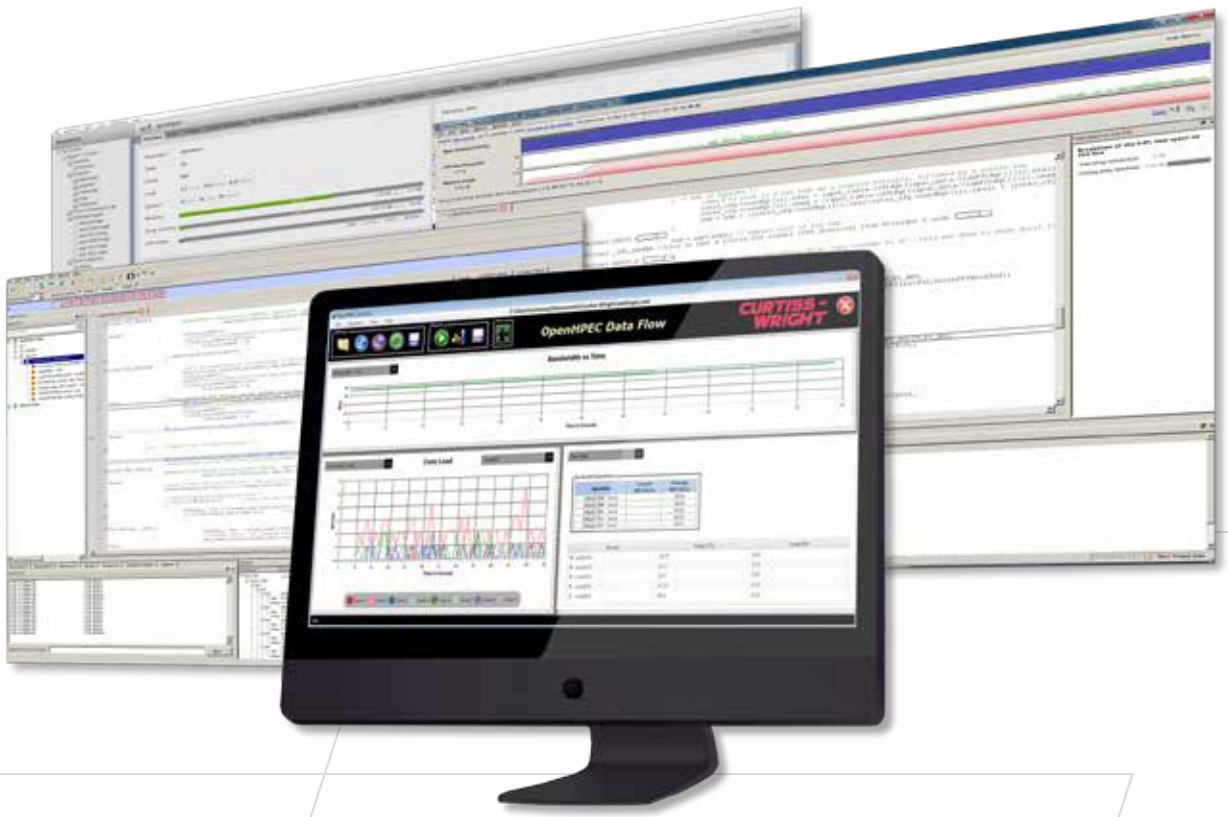
The Math Libraries provide a comprehensive set of C-callable functions which have been optimized to exploit the performance of the SIMD instruction sets of Intel AVX and SSE processors. By using the Continuum Math Libraries, a programmer can ignore the complexities of the SIMD instruction set and focus on the application problem. The Continuum math libraries also provide optimized performance using standard APIs for Power Architecture processors.

- Open and Industry-standard APIs
- VSIPL: Greatest number of supported API functions: Over 2600
- Only vendor with VSIPL support for double precision – required for positioning and geolocation
- Optimized FFTW with standard API
- Multi-threaded versions for shared memory systems
- VxWorks and Linux support

Dolphin PCIe Fabric Communications Library

Curtiss-Wright partnered with Dolphin to provide a PCI Express (PCIe) Fabric Communications Library supporting high-speed, low-latency, peer to peer communications using PCIe connections.

- SuperSockets® – Standard Berkley API with TCP and UPD multi-cast
- Support for message passing via MPI
- SISCI – optimized shared memory API providing fast low-latency data movement
- Common API, hiding the underlying PCIe complexities



3U VPX ADC/DAC

FMC ADC

FMC clock generator

I/O AND COMMUNICATIONS

Acquiring and moving data is key for all applications. Curtiss-Wright offers the industry's widest range of I/O and Communications solutions for Aerospace and Defense, supporting analog signalling, legacy standards and the latest high-bandwidth protocols.

Sensor I/O

Curtiss-Wright has over 20 years of experience in the design and production of best-of-breed COTS signal acquisition hardware. Our 3U, XMC, PMC and FMC module-based sensor I/O solutions are designed to handle the toughest operating environments. This continually expanding Sensor I/O product family includes rugged, high performance solutions to support intelligent analog I/O for frequency and time domain applications, and Digital I/O. These modules are designed to deliver optimal performance in the extremes of temperature and vibration conditions.

Analog I/O and Digital Receivers

Product	Function	Form Factor	Input Channels			Output Channels			Ruggedization	Operating Systems	Other
			Chans	Bit	MS/s	Chans	Bit	MS/s			
VPX3-530	ADC/DAC	3U VPX	2/4	12	4000/ 2000	2	14	5600	AC 0, 100 CC 200	VxWorks, Linux	User programmable Xilinx Virtex-7 FPGA
XF07-516	ADC	XMC	4	16	250	-	-	-	AC 0, 100 CC 200	VxWorks, Linux (contact factory for Windows)	User programmable Xilinx Kintex-7 FPGA. Embedded DDC option Multi-board sync
XF07-518	ADC	XMC	4	14	500	-	-	-	AC 0, 100 CC 200	VxWorks, Linux (contact factory for Windows)	User programmable Xilinx Kintex-7 FPGA. Embedded DDC option Multi-board sync
ADC-MOD2	ADC	X/PMC (Note 1)	2	14	125	-	-	-	AC 0	VxWorks, Linux, Windows hosts FusionXF	AC or DC coupled
DAC-MOD1	DAC	X/PMC (Note 1)	-	-	-	2	14	210	AC 0	VxWorks, Linux, Windows hosts FusionXF	AC or DC coupled
ADC510	ADC	FMC	2	12	550	-	-	-	AC 0, 100 CC contact factory	VxWorks, Linux hosts FusionXF	Onboard clock option
ADC511	ADC	FMC	2	14	400	-	-	-	AC 0, 100 CC contact factory	VxWorks, Linux hosts FusionXF	Onboard clock option
ADC512	ADC	FMC	2	8	3000	-	-	-	AC 0, 100 CC 200	VxWorks, Linux hosts FusionXF	
ADC513	ADC	FMC	4	8	1500	-	-	-	AC 0, 100 CC 200	VxWorks, Linux hosts FusionXF	
FMC-516	ADC	FMC	4	16	250	-	-	-	AC 0, 100 CC 200	VxWorks, Linux hosts FusionXF	Onboard clock option
FMC-518	ADC	FMC	4	14	500	-	-	-	AC 0, 100 CC 200	VxWorks, Linux hosts FusionXF	Onboard clock option
FMC-520	DAC	FMC	-	-	-	4	16	500/ 1000	AC 0, 100 CC 200	VxWorks, Linux hosts FusionXF	
FMC-XCLK2	Clock generator	X/PMC	-	-	-	4	N/A	up to 2000	AC 0, rugged CC 200	N/A	Internal or external 10 MHz reference, clock sources up to >2 GHz
XCLK1	Clock generator	X/PMC	-	-	-	6	N/A	up to 2000	AC 0, rugged CC contact factory	N/A	Internal or external 10 MHz reference, clock sources up to >2 GHz

Digital I/O

Product	Function	Form Factor	Ruggedization	Operating Systems	Other
CAML-MOD3	Camera Link	X/PMC (Note 1)	AC 0	VxWorks, Linux, Windows hosts FusionXF	Supports base, Medium and Full mode
LVDS-MOD3	32x LVDS pairs	X/PMC (Note 1)	AC 0	N/A	68-way SCSI-3 style front panel connector
LVDS-MOD4	64x LVDS pairs	X/PMC (Note 1)	AC 0	N/A	152-way high-density front panel connector
LVDS-MOD5	2x 26 LVDS pairs	X/PMC (Note 1)	AC 0	N/A	2x 80-way front panel connectors
PMC-FPGA05	Digital I/O	PMC	AC 0	VxWorks, Linux, Windows hosts XF (Note 2)	User programmable Xilinx Virtex-5 LX110/155 FPGA
RS485-MOD2	33x RS-485 pairs	X/PMC (Note 1)	AC 0	N/A	Supports base, Medium and Full mode

Notes:
1. Module is a daughter module for either PMC-FPGA05 or XMC-FPGA05D, so the combination will form either a PMC or XMC solution.
2. PMC-FPGA05 uses similar tools to FusionXF and supports a common SDK.

I/O Personality Modules for the XMC-FPGA05D and the PMC-FPGA05

Module	Function	Notes
LVDS-MOD3	32 LVDS pairs	68-way SCSI-3 style front panel connector
LVDS-MOD4	64 LVDS pairs	152-way high-density front panel connector
LVDS-MOD5	2x 26 LVDS pairs	2x 80-way front panel connectors
ADC-MOD2	Dual 125 MSPS 14-bit ADC	AC/DC coupled, front panel MMCX connector
DAC-MOD1	Dual 210 MSPS 14-bit DAC	AC coupled, front panel MMCX connector
RS485-MOD2	33x EIA-485/422/422B channels	VHDCI - SCSI-5 style front panel connector
CAML-MOD3	Camera Link	Supports base, Medium and Full mode

Fiber-Optic I/O

Product	Function	Form Factor	Ruggedization	Operating Systems	Other
XMC-FPGA05F	Fiber-optic I/O	X/PMC	AC 0, 100 CC 200	VxWorks, Linux, Windows hosts FusionXF	Four banks 128Mbytes 250 MHz DDR2 SDRAM memory. Serial FPDP option

Serial FPDP

Fabrics and Protocols

Curtiss-Wright offers a wide range of solutions for high-speed, low latency communications. These products are offered in a variety of form-factors including PMC, XMC, PCIe and PC/104 cards designed to support popular communications standards including 1553, StarFabric, ARINC 429, CANbus and Serial FPDP.

StarFabric

Product	Form Factor	Interface Type and Number	Speed	Operating System/ Protocol Support	Ruggedization	Other
StarLink II	PMC	4x StarFabric ports	440 MB/s total	VxWorks, Linux, INTEGRITY	AC 0, 100 CC 200	Includes integrated StarFabric switch

Avionics/Vehicle Bus and Serial I/O Communications Products

Product	Form Factor	Interface Type and Number	Speed	Operating System/ Protocol Support	Ruggedization	Other
PMC-601	PMC	up to 2x MIL-STD-1553	1 Mbps	VxWorks, Linux	AC 0, 100 CC 200	16-bit discrete I/O. Support for Direct and transformer coupled
PMC-1553	PMC	4x MIL-STD-1553	1 Mbps	VxWorks, Linux, Windows	AC 0, 100 CC 200	Product produced by AIT
PMC-429	PMC	ARINC 429 4, 8, 16 & 32 Serial Ports	12.5 & 100 Kbps	VxWorks, Linux, Windows	AC 0, 100 CC 200	Product produced by AIT
XMC-603	XMC	up to 4x MIL-STD-1553	1 Mbps	VxWorks, Linux	AC 0, 100 CC 200	IO available on either PN4 or PN6. Support for Direct and transformer coupled

DO-254 Safety Certifiable I/O modules

Product	Form Factor	Interface Type and Number	Operating System	Ruggedization	Other
VPX3-611	PMC	2x MIL-STD-1553, 10x ARINC 429 Tx, 18x ARINC 429 Rx, 8x UART, 16x discretes	VxWorks 6.9, VxWorks 653 v2.5 (DO-178C certifiable)	AC 0 CC 200	Flash-based FPGA hardware architecture, DO-254 Artifact Kit available to support DAL C, DO-178C Artifact Kit available to support DAL C

Safety Certifiable I/O Module

Serial FPDP

Protocol	Form Factor	Interface Type and Number	Speed	Operating System/ Protocol Support	Ruggedization	Other
FibreXtreme SL100 Single Channel	PMC, PCI, PCIe or CMC (Note 1)	sFPDP 850 nm	1.0625 Gbps, 105 MB/s throughput	VxWorks, Linux, Windows	AC 0 CC 200	Extends FPDP up to 50 km
FibreXtreme SL240 Single Channel	PMC, PCI, PCIe, or CMC (Note 1)	sFPDP 850 nm	2.5 Gbps, 247 MB/s throughput	VxWorks, Linux, Windows	AC 0 CC 200	Extends FPDP up to 50 km
FibreXtreme SL100DC Dual Channel	XMC or PCIe	sFPDP 850 nm	1.0625 Gbps, 105 MB/channel	VxWorks, Linux, Windows	AC 0 CC 200 (XMC)	
FibreXtreme SL240DC Dual Channel	XMC or PCIe	sFPDP 850 nm	2.5 Gbps, 247 MB/channel	VxWorks, Linux, Windows	AC 0 CC 200 (XMC)	
FibreXtreme SL100QC Quad Channel	XMC or PCIe	sFPDP 850 nm	1.0625 Gbps, 105 MB/channel	VxWorks, Linux, Windows	AC 0 CC 200 (XMC)	
FibreXtreme SL240QC Quad Channel	XMC or PCIe	sFPDP 850 nm	2.5 Gbps, 247 MB/channel	VxWorks, Linux, Windows	AC 0 CC 200 (XMC)	

Notes
1. The CMC format provides a 32-bit parallel interface for conversion to sFPDP. FibreXtreme CMC cards can be mounted on a custom carrier.

Shared Memory

Shared Memory enables multiple computing platforms to solve portions of the same computational problem in real-time. Curtiss-Wright's Shared Memory products are optimized for the high-speed, ultra-low latency transfer of data between multiple compute platforms. These products combine simplicity and high speed to support applications that require a high degree of synchronization and control.

Protocol	Form Factor	Interface Type and Number	Speed	Operating System/ Protocol Support	Ruggedization	Other
SCRAMNet+ SC150e	PCI or PMC	Shared Memory, Standard Fiber	150 Mbps, 16.7 MB/s throughput	VxWorks, Linux, Windows	AC 0	250 nsec latency
SCRAMNet+ SC150	VME	Shared Memory (Note 1)	150 Mbps, 16.7 MB/s throughput	VxWorks, Linux, Windows	AC 0	250 nsec latency
SCRAMNetGT GT200	PCI or PMC	Shared Memory (Note 2)	2.5 Gbps, 200 MB/s throughput	VxWorks, Linux, Windows	AC 0	

Notes
1. SCRAMNet+ is a ring topology shared memory network, available in standard fiber (300M) or extended fiber (3000M) media.
2. SCRAMNet GT is a ring topology shared memory net

Carrier Cards

Carrier cards allow a designer to expand system capabilities, especially I/O, by simply plugging in a card that 'carries' another module into the system.

Product	Form Factor	XMC/PMC Interface	Backplane Interface	Ruggedization	Other
ACR5325	6U OpenVPX	2x X/PMC sites	Expansion Plane PCIe Gen 2	AC 0 CC 200	
ACR5326	6U OpenVPX	2x X/PMC sites	Data Plane PCIe Gen 2	AC 0 CC 200	
VPX6-215	6U VPX	2x X/PMC sites + 1 IPM site	Data Plane PCIe Gen 1	AC 0,100 CC 200	With PCIe switch
VPX3-215	3U VPX	1x X/PMC site	Data Plane PCIe Gen 1	AC 0,100 CC 200	With PCIe switch
ACR5305	3U OpenVPX	1x X/PMC site	Data Plane PCIe Gen 2	AC 0 CC 200	With PCIe switch Pn4 I/O
ACR5330	3U OpenVPX	1x X/PMC site	Data Plane PCIe Gen 2	AC 0 CC 200	With PCIe switch Pn6 I/O
SCP/DCP-201	3U cPCI	1x PMC site	PCI - 32 bit 33/66 MHz	AC 0,100 CC 200	

XMC and IPM Carrier Card

3U VPX Ethernet switch

6U OpenVPX Ethernet switch & router

XMC switching mezzanine

SWITCHES AND ROUTERS

Switches and routers are essential in a connected environment, where operational success depends on efficient data communications between systems and within systems-of-systems. Curtiss-Wright offers the broadest selection of switching modules available on the market, so you can select the configuration – form factor, interfaces, protocols and features – that matches your requirements. These solutions come with the quality, reliability and ruggedness you expect from Curtiss-Wright, allowing you to configure your system with confidence.

Curtiss-Wright switches and routers help turn the promise of fully networked defense and aerospace systems into reality. They speed and simplify the integration of powerful network solutions that interconnect chassis, cards, and CPUs.

VPX Ethernet Switches and Routers

Designed for the current generation of VPX systems, and compliant with common OpenVPX profiles, our 3U and 6U OpenVPX modules offer wire-speed Gigabit Ethernet and 10G Ethernet connectivity for intra-platform switching and secure WAN routing.

Product	Form Factor	Description	Typical Interfaces	Key Features	Ruggedization
VPX3-621	3U VPX, OpenVPX	SBC with Cisco IOS Embedded Services Router	Intel Core i7 CPU with 2x 1000BASE-T or 4x 1000BASE-X Ethernet ports and IPSec VPN, IPS/IDS	Cisco IOS™ ESR-5921 with static and dynamic Routing, IPv6, address families, Multicast, MLD Proxy, MPLS, and more.	AC 0 CC 200
VPX3-652	3U VPX	Low power Layer-2 managed Gigabit Ethernet switch	20x Gigabit Ethernet (12x 1000BASE-T + 8x 1000BASE-X)	Low power: 11W (typ), Fast boot	AC 0, 100 CC 200, 300
VPX3-671	3U VPX	Managed VICTORY-compliant Ethernet switch	12x 10/100/1000BASE-T Gigabit ports	Layer 2 switching feature set with wire-speed non-blocking IPv4/v6 switch architecture. VLANs, QoS, IGMP multicast, link aggregation	CC 200, 300
VPX3-683	3U VPX	Managed Gigabit Ethernet switch and router with 10 GbE uplinks and multi-layer services	24x Gigabit Ethernet (1000BASE-X) 2x 10 G XAUI	IPv4/IPV6 dynamic routing, multicast.	AC 0, 100 CC 200, 300
VPX3-687	3U VPX	Versatile, high-performance, fully managed multi-layer Ethernet switch	32 SerDes interfaces to VPX backplane configurable for 1G, 10G, 40G modes	IPv4, IPv6 ACLs, Support for Gigabit, 10 Gbps and 40 Gbps backplane Ethernet standards	AC 0, 100 CC 200
VPX6-684	6U VPX	Managed Gigabit Ethernet switch and router with 10 GbE uplinks and multi-layer services. Optional security module for VPN and firewall services.	24x Gigabit Ethernet (1000BASE-T) 4x 10 G XAUI	IPv4/IPV6 dynamic routing, multicast. Optional security module for VPN, firewall.	AC 0, 100 CC 200
VPX3-685	3U VPX	Gigabit Ethernet secure WAN router with integrated firewall, VPN and IDS/IPS	20x Gigabit Ethernet (12x 1000BASE-T + 8x 1000BASE-X)	FIPS-140-2 and Common Criteria Certified	AC 0, 100 CC 200, 300

PMC/XMC Switches

Our PMC/XMC switches provide SWAP-optimized in-chassis networking with a Gigabit Ethernet mezzanine card.

Product	Form Factor	Description	Typical Interfaces	Key Features	Ruggedization
XMC-620	XMC	Small form factor mezzanine module optimized with Cisco IOS running as an Embedded Services Router	4x Gigabit Ethernet ports configurable as 1000BASE-T or 1000BASE-X (SerDes)	Low power, Cisco ESR 5921 Advanced Enterprise Services, Intel Atom quad-core processor	AC L0 CC L200
PMC-651	PMC	Managed Gigabit Ethernet switching mezzanine	8x Gigabit Ethernet (1000BASE-T)	Low SWaP – zero slot switch	AC 0, 100 CC 200
XMC-651	XMC	Managed Gigabit Ethernet switching mezzanine	8x Gigabit Ethernet (1000BASE-T) 4x Gigabit Ethernet (1000BASE-X)	Low SWaP – zero slot switch	AC 0, 100 CC 200

OpenVPX Fabric and Hybrid Switches

Our OpenVPX fabric and hybrid switches are designed to meet the needs of high performance processing systems with low-latency and low-overhead fabrics based on RapidIO®, Ethernet and InfiniBand.

Product	Form Factor	Description	Typical Interfaces	Key Features	Ruggedization
VPX6-6802	6U VPX	Hybrid switch combining 40 Gbps Ethernet/InfiniBand fabric and Gigabit Ethernet control plane switch	20x 40G Ethernet/InfiniBand 16x Gigabit Ethernet (1000BASE-X)	Fabric40™ data plane	AC 0, 100 CC 100, 200
VPX6-6902	6U VPX	Hybrid switch combining Serial RapidIO Gen2 fabric and Gigabit Ethernet control plane switch	20x sRIO 16x Gigabit Ethernet (1000BASE-X)	896 Gbps RapidIO fabric	AC 0, 100 CC 200, 300

VME Switches and Routers – Featured Products

Our VME switches are designed to provide fully featured Gigabit Ethernet networking for new VME systems, or to upgrade existing systems.

Product	Form Factor	Description	Typical Interfaces	Key Features	Ruggedization
VME-682	VME	Managed Gigabit Ethernet switch & router with multi-layer services.	20x Gigabit Ethernet (1000BASE-T) 2x 10 G XAUI	IPv4/IPV6 dynamic routing, multicast. Optional security module for VPN, firewall.	AC 0, 100 CC 100, 200
COM-8000	6U VME	Ultra-rugged conduction-cooled 6U single-slot VME Ethernet Switch card	16x 10/100 Fast Ethernet Optional 2x 10/100/1000 Gigabit Ethernet	Compliant with IPv6 traffic. Designed for continuous extended temperature operation over the range of -40 to +85°C and MIL-STD-810G shock and vibration.	-40 to +85°C Passive Cooling

PC/104 Switches

These rugged stackable Ethernet switch modules are designed for small form factor networking applications.

Product	Form Factor	Description	Typical Interfaces	Key Features	Ruggedization
SWI-22-10	PCI/104-Express	Managed Layer-2+ Gigabit Ethernet Switch	20x Gigabit Ethernet (1000BASE-T)	1588 PTP, SNMPv3, QoS, IPv4/IPv6 Multicast, Zeroize, BIT	-40 to +85°C Passive cooling
PRV-1059	PCI/104	Unmanaged Layer-2 10/100 Ethernet Switch	5x 10/100 Ethernet (100BASE-TX)	Plug-and-Play, No CPU Required, Port-based-VLAN	-40 to +85°C Passive cooling

Physical Layer Switches

Physical layer switches are scalable, versatile, multi-purpose devices that provide protocol-transparent switching for Fibre Channel (FC), Serial FPDP, shared-memory communications and other high-speed digital signals, up to 3.2 Gbps. Physical layer switch modules enable users to easily and quickly change network and system configurations with an easy-to-use interface, to significantly reduce time and costs. Curtiss-Wright offers a wide range of these devices in a variety of form factors, including boards and fully integrated subsystems.

Product	Form Factor	Interface Type	Number of Ports	Port Options (Note 1)	Ruggedization
CSW1	6U VXS	Any digital serial signal up to 3.2 Gbps	Up to 12 AC front panel Up to 10 CC front panel 56 backplane	850 multi-mode, 1310 nm single mode, Copper	AC 0, 100 CC 100
VLX2500	6U VME optional 19" 1U chassis	Any digital signal up to 2.5 Gbps	8 ports and 16 ports	SFP-type, FC, GbE and sFPDP	AC 0, 100 (Note 2)
VPX2500	VPX slot	Any digital signal up to 2.5 Gbps	18 ports on backplane	Rear I/O, FC and GbE	CC 200

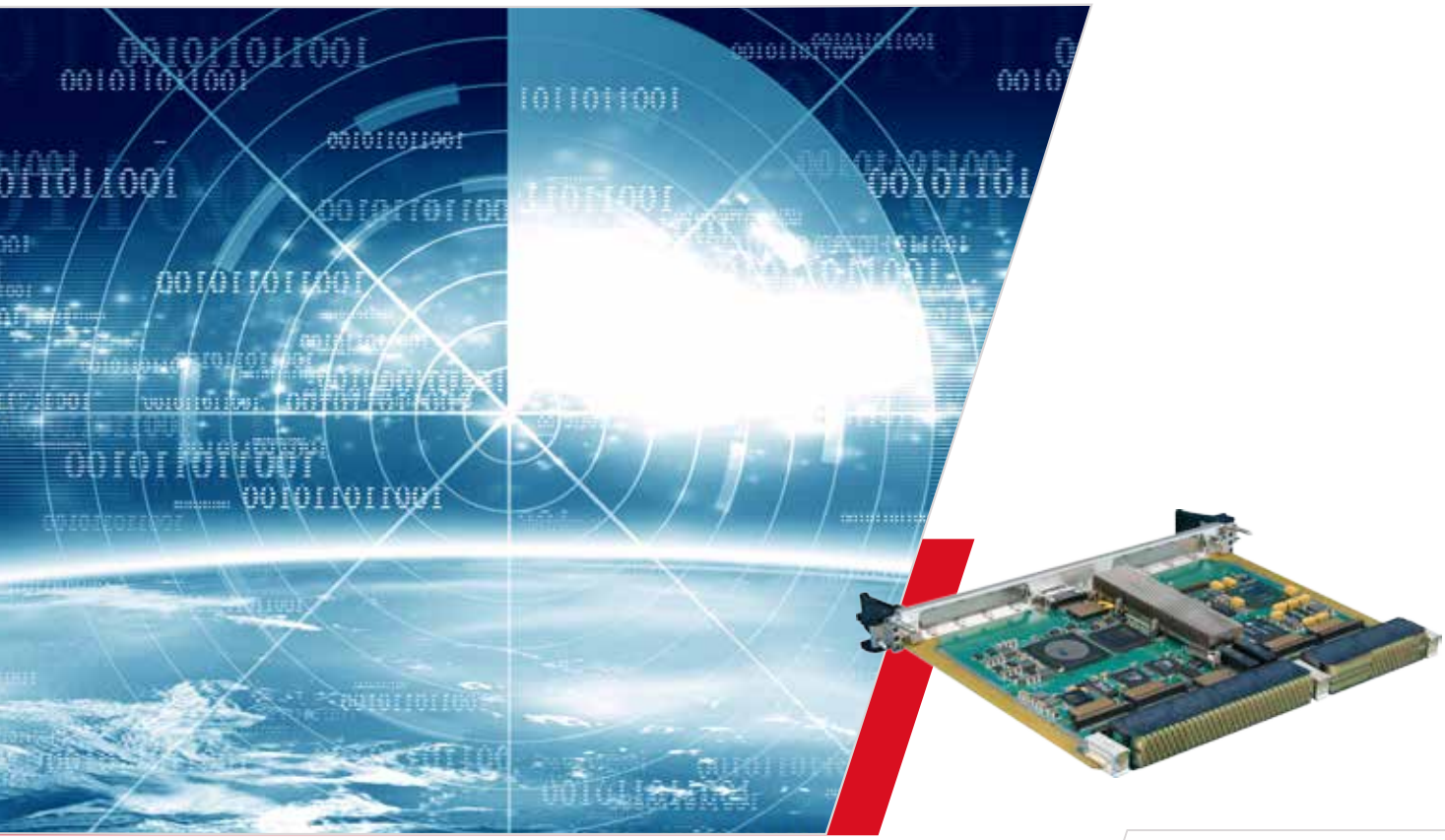
Notes:
1. FC = Fibre Channel, GbE = Gigabit Ethernet, sFPDP = Serial FPDP
2. Available in -10 to +70°C air-cooled configuration

6U VPX data recorder

DATA RECORDERS

Curtiss-Wright is an industry leading supplier of high-performance scalable data recording technology. To support signal processing applications with the ability to record, playback and analysis data in real-time, Curtiss-Wright offers a wide range of customer programmable, high-speed data recording products. These open standard-based COTS data recorders are available in a variety of form factors including VPX (VITA 46), VPX REDI (VITA 48), VXS (VITA 41) and VME. They are ideal for recording all of the most popular data protocols such as Fibre Channel, Serial FPDP (sFPDP), Ethernet, 10 GbE, and Serial RapidIO.

Product	Controller Form Factor	Storage Interface Type	Ruggedization	Other
VR-6511S8	6U VXS	SATA	AC 0, 50 CC 100	Multi-channel data recorder with solid state drives
VR-185	6U VPX	Fibre Channel	AC 0, 50 CC 100	6U VPX SRIO data recorder
VPX, VME, VXS (6511, 6211)	VPX , VME or VXS	Fibre Channel for SATA	AC 0, 50 CC 100	High speed data recording, playback and analysis
VR-1257	3U VPX	SATA	AC 0, 50 CC 100	3U VPX data recorder for capturing sFPDP, Gigabit Ethernet, 10 GbE and analog I/O interfaces



Flash Storage Module Carrier

NAND Sata Drive

DIRECT ATTACHED STORAGE

Curtiss-Wright Direct Attached Storage (DAS) products enable solid state and rotating media to be incorporated in embedded computing VPX and VXS system solutions for a wide range of applications. DAS enables data storage devices to attach directly to the host. These data solutions are scalable, enabling storage of your critical data from multiple Gigabytes to Terabytes. In addition, some products feature encryption and sanitization capabilities allowing you to keep your information secure.

Product	Form Factor	Function	Interface	Capacity	Encryption	Support	Ruggedization	Other
Quad SATA Carrier	6U VXS	SATA disk drive carrier for VXS	4x SATA on VXS	4x 256 Gb (additional capacities available)	Optional SSDs can provide AES encryption	No drivers required	-	Compliments VXS6511S8
Flash Storage Module Carrier (FSM-C)	3U VPX or 100K connector	Rugged, removable solid-state SATA module, 2.5" SSD With optional encryption	4x SATA on VPX (JBOD), 1x SATA on VPX (RAID), 1x RS-232 (control)	SLC: 256 GB, 128 GB eMLC: 1 TB, 512 GB MLC: 2 TB, 1 TB, 512 GB, 256 GB, 128 GB	AES-256-bit	No drivers required	40 to +85°C CC 100	Tool-Less Wedge locks, 100K insertion cycle connector
PRV-1220	Small Form Factor	CompactFlash IDE Carrier	40/44-Pin IDE	CF SSD Not included		No drivers required	-40 to +85°C Passive Cooling	–
XMC-554 Rugged SSD	XMC	mSATA SSD	2x PCIe Gen2	2 TB MLC	Optional AES-256	Linux, Windows, VxWorks	CC 200	

VIDEO AND GRAPHICS

Graphics and Frame Grabbers

Curtiss-Wright's family of graphics controllers and video frame grabbers are specifically designed to provide man-machine interfaces where graphics and sensor imagery must be combined. These modules are supported with standards-based X11 and OpenGL® software interfaces. They support a wide range of graphics and video functions, from simple graphics output, to multi-head, high-performance 3D rendering. These rugged graphics and video controllers are ideal for use in the most advanced deployed applications such as 3D terrain mapping, target acquisition/tracking and helmet mounted displays.

Benefits

- Low power
- Low cost
- Low latency
- High reliability
- No run time licenses
- No third party costs
- Curtiss-Wright is a one-stop shop for all your graphics needs

Product	Form Factor	Graphics Processor	Inputs				Outputs					Operating System	API	Ruggedization	Other
			RGB	NTSC/ PAL/ RS-170	LVDS	DVI	RGB	NTSC/ PAL/ RS-170	RS-170/ RS-343/ STANAG 3350	LVDS	DVI				
XMC-715	XMC	AMD E4690	-	-	-	-	2	1	-	-	2	VxWorks, VxWorks 653, INTEGRITY, PikeOS	OpenGL 1.3, OpenGL ES 1.x, OpenGL ES 2.0, OpenGL SC, H.264 video decoder	AC 0 CC 200	(Note 1,2)
VPX3-716	3U OpenVPX	AMD E8860	-	-	-	-	2	2	2	-	4	VxWorks, VxWorks 653, INTEGRITY, Linux (x86), Windows	OpenGL 1.3, OpenGL ES 1.x, OpenGL ES 2.0, OpenGL SC, H.264 video decoder	AC 0 CC 200	Two DisplayPort Outputs (Note 1,2)
XMC-280	XMC	None	2	2	-	2	-	-	-	-	2	Linux, Windows	Curtiss-Wright	AC 0	Capture and compress/ uncompress (JPEG2000) HD video, 4x audio I/O
PMC-704A	PMC	ATI M9	1	1 of 4	1	-	2	1	1	2	2	VxWorks, Linux, INTEGRITY	OpenGL 1.3, X11R6	AC 0, 100 CC 100, 200	External sync (Note 1)
PMC-706A	PMC	ATI M9	-	-	-	-	2	1	-	2	2	VxWorks, Linux, Windows XP, INTEGRITY	OpenGL 1.3, X11R6	AC 0, 100 CC 100, 200	(Note 1)

Notes:
1. Not all input/output combinations are available in all variants. Refer to the data sheet for greater detail or contact your sales representative.
2. A DO-178B driver can be made available for this item. Please contact your sales representative.

DO-254 Safety Certifiable Graphics

Product	Form Factor	Graphics Processor	Inputs						Outputs						Operating System	API	Ruggedization	Other
			HD-SDI	RGB	NTSC/PAL/RS-170	LVDS	DVI	SMPTE-292M	RGB	NTSC/PAL/RS-170	RS-170/RS-343/ STANAG 3350	LVDS	DVI	SMPTE-292M				
VPX3-717	3U OpenVPX	AMD E8860	-	-	-	-	-	-	1	-	-	-	6	-	Linux, VxWorks, Windows, VxWorks 653, INTEGRITY-178, LynxOS-178	OpenGL 1.3, OpenGL ES 2.0, OpenGL SC 1.0, OpenGL SC 2.0	CC 200	Other: DO-254/DO-178 Safety Certifiable
VPX3-718	3U OpenVPX	AMD E4690	-	-	2	-	-	2	2	1	1	-	2	2	VxWorks 653, VxWorks 6.9	OpenGL SC 1.0	CC 100	DO-254/DO-178 Safety Certifiable, supports up to two STANAG 3350 B/C inputs
VPX3-719	3U OpenVPX	AMD E8860	2	1	1	-	-	-	1	-	-	-	4	-	Linux, VxWorks, Windows, VxWorks 653, INTEGRITY-178, LynxOS-178	OpenGL 1.3, OpenGL ES 2.0, OpenGL SC 1.0, OpenGL SC 2.0	CC 200	Two independent video outputs selectable from: 2 x HD-SDI, 1 x analog PAL/NTSC, STANAG 3350 class B/C, RGBHV

Graphics and Video Software Support

Curtiss-Wright's graphics software products are based primarily on the X Window and OpenGL application programming interface. These industry standard APIs for 2D and 3D graphics maximize application compatibility across product lines and ease portability to next generation graphics products.

Curtiss-Wright works with leading RTOS and GUI tools vendors to continually improve the interoperability and support required for embedded graphics applications development. The following graphics and video products feature software support for Power Architecture and Intel host cards using a variety of real-time operating systems (RTOS):

- Curtiss-Wright Graphics Software Suite with X11 and OpenGL
- OpenGL drivers from CoreAVI®
- Curtiss-Wright Video Capture Library
- Curtiss-Wright VDS

- VxWorks®, Linux®, INTEGRITY®, Windows® XPe, Windows® 7
- SCADE® from ANSYS®
- VAPS from Presagis
- iData® Tool Suite from Ensco Avionics

Video Compression, Switching and Windowing

Curtiss-Wright's video compression, switching and windowing products address the increasing demand for HD video recording and network distribution.

Product	Form Factor	Function	Inputs	Outputs	Ruggedization
VxPoint	6U VME	Video crosspoint switch	8x video input lines supporting RGB, NTSC/PAL	32 video output lines supporting RGB, NTSC/PAL	AC 0 CC 200
VDA	(Note 1)	Buffers and replicates a single analog RGB input to 2x RGB outputs	1x RGB sync-on-green (3 BNC)	2x RGB sync-on-green (6 BNC)	(Note 2)
Cobra 2	6U VME	4x video windows, scaled and positioned, video overlay, video cross-mixing, alpha-blending	12x video input lines supporting RGB, NTSC/ PAL, RS-170, RS-343, 1x DVI	DVI-I	AC 0

Notes:
1. Length: 6 inches/152 mm, Width: 4 inches/102 mm, Height: 2.5 inches/64 mm
2. -30 to +55°C Qualified LRU for airborne applications

RADAR ACQUISITION AND PROCESSING

PMC radar scan converter

Curtiss-Wright offers a wide variety of modular and flexible hardware and software solutions for radar acquisition, processing and conversion applications.

Product	Form Factor	Function	Inputs	Outputs	Software API/ Operating System (Note 1)	Ruggedization	Other
SoftScan	N/A	Software radar scan conversion	Captured radar inputs	Multi-layer display	Linux, Windows	N/A	Software API to create console applications that use the power of OpenGL2-capable GPUs to render digitized radar video inputs
Cougar 2	6U VME, 1-slot	Radar input and radar scan conversion	Radar inputs: 2x analog radar videos, 8x digital radars, 2x triggers, 2x sets of turning data	DVI-I	Linux, Windows	AC 0, 50	Integrated dual-channel radar interface, scan-conversion and display solution
Osiris	PMC, PCI	Radar input	Radar inputs: 2x analog radar videos, 8x digital radars, 2x triggers, 2x sets of turning data	PCI	Linux, Windows	AC 0, 50	High-performance dual-channel radar interface card
Advantage Xi	PCI	Radar scan converter	DVI from graphics card	DVI-I	Linux, Windows	AC 0	Radar scan conversion with underlay/ overlay via DVI-D input
Eagle-2	PMC	High-resolution radar scan converter	PCI, DVI from graphics card	DVI-I	Linux, Windows	AC 0, 100	High-resolution (2k x 2k) radar scan conversion with underlay/overlay via DVI-D input
RVP Radar Distribution	VME, PCI, cPCI or turnkey system	Radar distribution	Radar inputs	Radar video data on LAN	Linux, Windows	N/A	Radar video distribution on LAN
RVP Radar Tracker	VME, PCI, cPCI or turnkey system	Radar tracker	Radar inputs or external plot input	Radar plot or track data on LAN	Linux, Windows	N/A	Radar video plot extractor and tracker

Note: For exact OS support details please contact your sales representative.

BUS ANALYZERS

Curtiss-Wright's Vanguard Bus Analyzers, Exercisers, Protocol Checkers and Compliance Checkers are available in VMEbus, PCI, PCI-X, CompactPCI, and PMC form factors. The VME bus analyzer supports VME, VME320 and 2eSST protocols. The PCI, CompactPCI and PMC bus analyzers support up to 133 MHz PCI-X protocols. These indispensable, ready-to-use tools enable debugging hardware and software through the BusView, graphical user interface software or an optional API interface. With this, you can use the Ethernet interface to debug from your workstation and not the laboratory. An USB interface is also available.

Product Name	Form Factor	Qualification Certifies	I/O Interfaces
Vanguard VME	VME	VME, VME320 and 2eSST protocols	Ethernet and USB
Vanguard PMC	PMC	Up to 133 MHz PCI-X protocols	Ethernet and USB
Vanguard PCI	PCI	Up to 133 MHz PCI-X protocols	Ethernet and USB
Vanguard CPCI	CPCI	Up to 133 MHz PCI-X protocols	Ethernet and USB

Curtiss-Wright continues to make significant investments into research to ensure that all parts meet our exacting requirements.

Ruggedization

Curtiss-Wright specializes in products that are deployed in harsh environments typical of Defense and Aerospace applications. In this rugged domain, the depth and breadth of our experience and expertise are unmatched by any other COTS vendor.

Packaging for Performance

Deployment in harsh environments demands that our COTS products provide attributes far beyond high-performance, rich functionality and affordability. They must also provide the highest achievable levels of reliability while delivering optimal performance in adverse conditions. To ensure that our products perform as required in harsh environments, Curtiss-Wright continues to make significant investments into research that furthers advanced packaging techniques, including materials technology and advanced cooling methods such as heat pipes, evaporative, immersion, liquid and air flow-through technologies.

Rugged and Reliable

Our design philosophy is to use those commercially available components that are best suited to the design requirement to ensure that our products perform optimally in the presence of extreme temperatures, high levels of shock and vibration, and environmental hazards. Where possible, we use industrial temperature rated components for our Level 100 and 200 products. Military qualified components are often not available for many of the advanced, high-performance functions demanded by modern military systems. While commercial components are typically only characterized by manufacturers for their volume markets, many of these components have inherent design margins well-suited for use in harsher environments and these are selected for preference. Curtiss-Wright has developed rigorous procedures including construction analysis, temperature cycling and vibration testing to ensure that all parts meet our exacting requirements.

Newly manufactured products at our state-of-the-art facility undergo full functional testing. Our test regimen includes an Environmental Stress Screen (ESS) running functional test software. Hot and cold starts and variations of supply voltage are applied, in order to detect early component failures or manufacturing defects. The following ruggedization specifications express the minimum capability of our products. Curtiss-Wright follows a conservative practice of specifying for worst-case thermal scenarios. Refer to individual product specifications or contact a Curtiss-Wright representative for detailed information and expert guidance. These levels of ruggedization are provided as a guideline, and individual products may have a slight variation in each range. Not all products support all levels of ruggedization. Refer to individual product data sheets for availability.

Safety Certifiable

Certifying avionics subsystems to DO-254 / DO-178 standards can be a costly and time consuming process. This is especially true for developments where a customized product is required. Curtiss-Wright has developed safety certified, low risk certifiable products from DO-254/DO-178B Design Assurance Level (DAL) A to DAL E. We have accumulated processes, hardware design and software development techniques that allow us to reduce your certification risk, project costs and accelerate your time to market.

Ruggedization Table

Environmental Condition	Air-cooled			Conduction-cooled			Air Flow Through (Note 6)
	Level 0	Level 50	Level 100	Level 100	Level 200	Level 300 (Note 6)	
Operating Temperature	0 to +50°C (Note 4)	-20 to +65°C (Note 4)	-40 to +71°C (Note 4)	-40 to +71°C (Note 7)	-40 to +85°C (Note 7)	-40 to +85°C (Note 7)	-40 to +55°C (Notes 4,8)
Non-Operating Temperature (Storage)	-40 to +85°C	-40 to +85°C	-55 to +125°C	-55 to +125°C	-55 to +125°C	-55 to +125°C	-55 to +125°C
Non-Operating Humidity (Storage)	0-95% Non-condensing	0-100% Non-condensing	0-100% Non-condensing	0-100% Non-condensing	0-100% Non-condensing	0-100% Non-condensing	0-100% Non-condensing
Vibration Sine (Note 1)	2g Peak 5-2000 Hz	2g Peak 5-2000 Hz	10g Peak 5-2000 Hz	10g Peak 5-2000 Hz	10g Peak 5-2000 Hz	10g Peak 5-2000 Hz	10g Peak 5-2000 Hz
Vibration Random (Note 1)	0.04 @ 5 Hz 0.04 @ 100 Hz 0.01 @ 2000 Hz	0.04 @ 5 Hz 0.04 @ 100 Hz 0.01 @ 2000 Hz	0.002 @ 5 Hz 0.04 @ 15 Hz 0.04 @ 2000 Hz	0.005 @ 5 Hz 0.1 @ 15 Hz 0.1 @ 2000 Hz	0.005 @ 5 Hz 0.1 @ 15 Hz 0.1 @ 2000 Hz	0.005 @ 5 Hz 0.1 @ 15 Hz 0.1 @ 2000 Hz	0.005 @ 5 Hz 0.1 @ 15 Hz 0.1 @ 2000 Hz
Shock (Note 3)	20g Peak	20g Peak	30g Peak	40g Peak	40g Peak	40g Peak	40g Peak
Altitude (Note 9)	-1,500 to 60,000ft	-1,500 to 60,000ft	-1,500 to 60,000ft	-1,500 to 60,000ft	-1,500 to 60,000ft	-1,500 to 60,000ft	-1,500 to 60,000ft
Conformal Coat (Note 5)	No	Consult Factory	Yes	Yes	Yes	Yes	Yes
2 Level Maintenance Ready	–	–	–	No	No	Yes	Yes

Notes:
1. Sine vibration based on a sine sweep duration of 10 minutes per axis in each of three mutually perpendicular axes. May be displacement limited from 5 to 44 Hz, depending on specific test equipment.
2. Random vibration 60 minutes per axis, in each of three mutually perpendicular axes.
3. Three hits in each axis, both directions, 1/2 sine and terminal-peak saw tooth. Total 36 hits.
4. Consult the factory for air flow rate details.
5. Conformal coating type is manufacturing site-specific. Consult the factory for details.
6. This is a non-standard product. Consult factory for availability.
7. Temperature is measured at the card edge.
8. Assuming maximum pressure of 2.5" H2O.
9. Forced air cooled designs shall receive the same minimum mass airflow rate under these condition as required at sea level.

System Ready Applications

Curtiss-Wright works with select software solution partners to lower the cost and speed the integration of critical capabilities, such as Digital Mapping, Human Machine Interface (HMI) and Data Security solutions. The System Ready Applications initiative ensures that these software solutions have been developed, tested, and qualified in advance with Curtiss-Wright hardware modules. Without adding additional costs, pre-verified SRA solutions not only remove integration and interoperability design risk from the process of building new functionality into embedded systems, but also greatly speed application deployment.

Modified COTS

Modern embedded computing applications demand that the latest advanced and size, weight and power (SWaP)-optimized processor, networking and I/O technologies be delivered within ever shorter development schedules at minimal NRE cost. This creates challenges for system integrators who need to build a modern technical solution quickly, while staying on budget.

Building your solution with Commercial Off-The-Shelf (COTS) hardware saves you time, money, and reduces your risk - but if your program has unique requirements not built into the original COTS hardware, or needs a specifically tailored solution, how will that affect your bottom line? Developing your own solution is a hassle, and will cost integrators precious time they don't have. When you need to architect the perfect solution, Curtiss-Wright's Modified COTS (MCOTS) program will help address all your customer's development requirements – ranging from the design and manufacture of custom boards, board support software packages and drivers and providing rapid subsystem pre-integration capabilities - that will give you a competitive edge.

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