VPX3-1259

3U VPX™ 5th Gen Intel® Core™ i7 Single Board Computer

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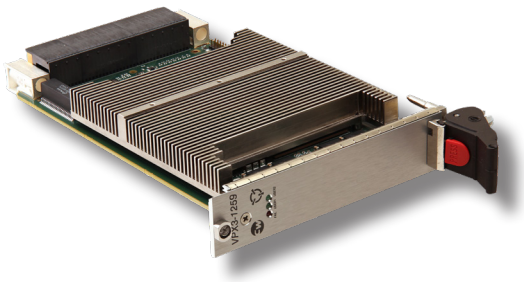

Key Features

- Intel Core i7 “Broadwell” 5th Gen processor
- Quad-Core (8-thread) i7-5850EQ at 2.7 GHz with Turbo up to 3.2 GHz
- Up to 16 GB DDR3L at 1600 MT/s supporting 25.6 GB/s
- Up to 32 GB SATA NAND flash
- Supports XMC expansion mezzanine
- Available in air-cooled and conduction-cooled versions
- Supports Linux (Fedora and RHEL), VxWorks, Microsoft Windows Embedded

Applications

- General computing and mission processing
- HPEC systems
- Multi-SBC systems for advanced processing and ISR applications

Overview

The VPX3-1259 from Curtiss-Wright Defense Solutions is a high performance single board computer (SBC) featuring the latest 5th Gen Intel Core i7 (Broadwell) processor. Pin-compatible with our previous generations of Intel SBCs, the VPX3-1259 offers the highest performance Intel processing in the smallest 3U form factor.

The Intel Core i7 processor offers Quad-Core (8-thread) performance at 2.7 GHz. With up to 16 GB of dual-channel high speed ECC-protected DDR3 memory, the VPX3-1259 provides up to 25.6 GB/s memory throughput, maximizing the capabilities of the processor. The processor also features AVX and AVX2 SIMD extensions, accelerating math-intensive algorithms. The Intel Core i7 processor includes an enhanced Intel Iris Pro Graphics GPU, offering discrete GPU performance with OpenGL® for graphics-intensive applications, and also serving as a 40-core GPGPU with performance up to 640 GFLOPS with OpenCL™ support for data processing-intensive applications.

With up to 32 GB of high speed SATA flash memory, the VPX3-1259 is ideal for handling complex applications with demanding sensor processing requirements, or high speed data processing, logging and storage needs.

The VPX3-1259 also features high speed PCI Express® (PCIe) Gen3 connectivity. The VPX backplane supports eight lanes of configurable PCIe fabric, offering NTB ports and supporting 8-lane, 4-lane, and 2-lane port widths. A local XMC mezzanine site supports an independent 8-lane PCIe Gen3 bus directly to the processor. These features make the VPX3-1259 an ideal building block when architecting systems requiring processor expansion or when connecting multiple processor boards together to create a high performance embedded system for ISR processing.

The VPX3-1259 is supported with an extensive suite of industry-standard operating systems such as Linux® (Fedora™ and Red Hat® Enterprise Linux [RHEL]), VxWorks®, and Microsoft® Windows® Embedded.

Features and Specifications

Form factor

- 3U OpenVPX, supporting module format MOD3-PAY-2F2T and MOD-PAY-2F2U
- VITA 46-, VITA 48-, and VITA 65-compliant

Processor

- Intel's 5th Gen Core i7 'Broadwell' processor
  - + Quad-Core (8 thread) i7-5850EQ @ 2.7 GHz with Turbo up to 3.2 GHz
  - + 256 KB L2 cache per core, 6 MB Intel Smart Cache
  - + Intel Streaming SIMD Extensions (SSE 4.1/4.2)
  - + Intel Advanced Vector Extensions (AVX and AVX2) floating-point
  - + Intel Virtualization Technology (VT-x)
  - + Intel Iris Pro Graphics 6200 (GT3e)

Platform Controller Hub (PCH)

- 8 Series QM87 Chipset PCH

SDRAM memory

- 8 or 16 GB DDR3L at 1600 MT/s supporting 25.6 GB/s
- Dual channel memory configuration with ECC

Non-volatile memory

- 8, 16, or 32 GB SATA NAND (SLC) flash
- 512 KB NVRAM
- 16 MB SPI flash for BIOS functions

Backplane fabrics

- High speed PCIe Gen3 connectivity
  - + 8-lane PCIe fabric supporting 1 x 8-lane, 2 x 4-lane or 4 x 2-lane configurations with support for NTB ports
  - + Support for PCIe Gen1 (2.5 GT/s), Gen2 (5.0 GT/s) and Gen3 (8.0 GT/s)

One XMC mezzanine site

- 8-lane PCIe Gen2 to XMC direct from the CPU
- Optional Gen3 with VITA 61 connectors
- Backplane Pn6 I/O mapping of X24s+X8d+X12d per VITA 46.9
- Maximum power for mezzanine site = 15 watts

Dual Gigabit Ethernet (GbE) ports

- Dual independent GbE controllers supporting BASE-T or BASE-X (SerDes) interfaces

Flexible I/O supporting combinations of

- 2 x RS-232 serial channels
- 2 x RS-422 serial channels with support for multi-drop RS-485
- 8 x Discrete I/O
- 3 x USB 2.0 ports, 1 x USB 3.0 port
- 2 x SATA 2.0 ports
- 2 x DVI or DisplayPort™ graphics ports
- 1 x RGB/ VGA graphics port
- Intel HD audio input and stereo output

Health management

- IPMI support

Security features

- Trusted Platform Module (TPM)

Software support

- Linux (Fedora, RHEL)
- Wind River® VxWorks
- Microsoft Windows Embedded Standard

Built-in Test

- Power-up BIT (PBIT)
- User Initiated BIT (IBIT)
- Continuous BIT (CBIT)

Power

Power consumption will vary based on operational loading. Values below are guidelines for operation with four cores @ 2.7 GHz at room temperature (25°C) – contact Curtiss-Wright for more details on power consumption.

- Idle power consumption = 18W
- Typical power consumption = 49W
- Maximum power consumption = 57W

Note: power consumption is exclusive of optional mezzanine power

Environmental

- Air-cooled: available in Level 0 and Level 100
- Conduction-cooled: available in Level 200 and Level 300 VPX REDI™ LRM)

Weight

- Air-cooled Level 0 and Level 100: 386 g
- Conduction-cooled
  - + Level 200: 380 g
  - + Level 300: 480 g
  - + Level 200 all-copper frame: 723 g

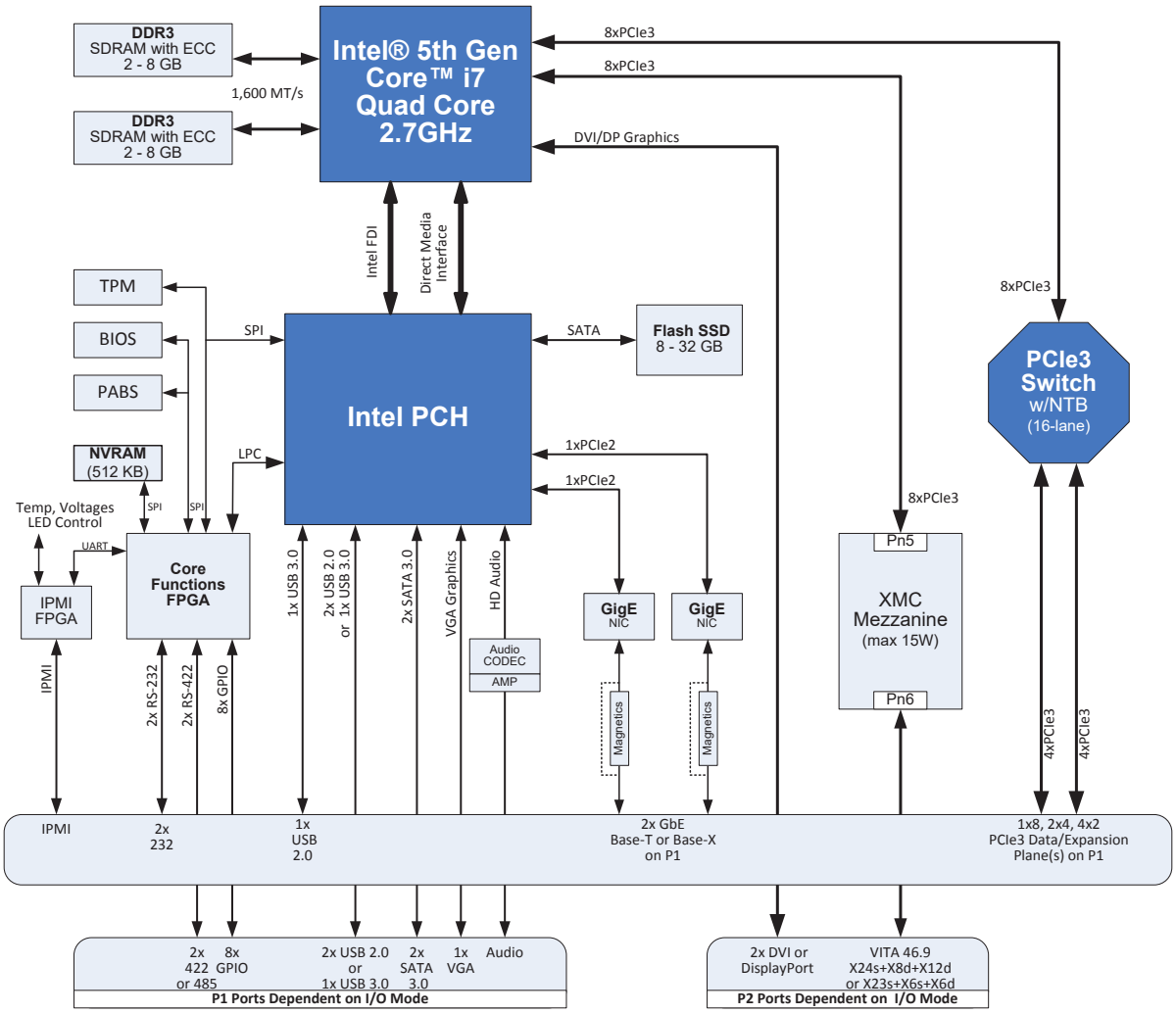

Figure 1: VPX3-1259 block diagram

VPX Module Format

The Versatile Performance Switching (VPX) module format, governed by the VITA 46 specification and the associated VITA 48 Ruggedized Enhanced Design Implementation (REDI), was established to address the fundamental requirement to provide open architecture modules that incorporate the high speed serial interconnect technology required for high performance computing. The VPX standard was developed by the leading providers of rugged embedded commercial-off-the-shelf (COTS) modules to incorporate high speed serial interconnects, as well as incorporate numerous improvements learned after years of integrating VME and CompactPCI® (cPCI) modules.

- 3U and 6U Eurocard form factors, preserving legacy VME chassis mechanical designs
- Support for high speed serial interfaces, with separate fabrics for control, data and expansion planes
- Support of higher power modules and improved cooling
- Improved logistics with two-level maintenance and module keying

The VPX module format provides many benefits to integrators of high performance multi-processor systems for general purpose computing, ISR and radar processing, and signal intelligence applications. In particular, 40 Gbps fabrics and PCIe Gen3 interconnects offer fast connections between processing modules, supporting both parallel processing and sequential (pipelined) processing architectures.

VPX3-1259 Features

Powerful 5th Gen Intel Core i7 CPU

The Intel Core i7 processor is based on Intel's industry-leading silicon technology and the latest micro-architecture enhancements. This 5th Generation Core i7 processor builds on the tremendous success of the revolutionary micro-architecture and marks the next step in Intel's continual cadence for delivering contemporary technology to the aerospace and defense industry. Intel's 5th Generation Core i7 delivers unmatched performance at the manageable power levels required to support today's Size, Weight and Power (SWaP) sensitive designs.

The VPX3-1259 processor includes the following features:

- Quad-Core (8 thread) i7-5850EQ @ 2.7 GHz with Turbo up to 3.2 GHz
- Integrated two-channel memory controller with ECC
- 256 KB L2 cache per core, 6 MB Intel Smart Cache
- Intel Streaming SIMD Extensions (SSE 4.1/4.2)
- Intel Advanced Vector Extensions (AVX and AVX2) floating-point
- Intel Virtualization Technology (VT-x)
- Intel Iris Pro Graphics 6200 (GT3e)

Power consumption and CPU tuning

The VPX3-1259 provides extremely flexible and dynamic methods of controlling power consumption. From statically parking cores in the BIOS to dynamically adjusting CPU clocks at run time, the VPX3-1259 performance can be tailored to meet a wide range of processing and power requirements.

Intel 4th Generation Platform Controller Hub (PCH)

The VPX3-1259 employs the Intel 8 Series QM87 PCH Chipset. This highly integrated PCH handles much of the flow of information between the board's I/O interfaces and the Intel Core i7 Processor.

Dual Data Rate (DDR3) SDRAM

The VPX3-1259 has two independent DDR3 memory controllers supporting independent banks of 72-bit DDR3 SDRAM (64-bit plus ECC). The VPX3-1259 may be fitted with 8 or 16 GB of DDR3 SDRAM. The DDR3 interface operates at 1600 MT/s, yielding a memory throughput performance of 25.6 GB/s.

To preserve data integrity, the SDRAM is provided with ECC circuitry that detects and corrects all single-bit data errors, detects all double-bit errors, and detects all 3-bit and 4-bit errors within the same nibble. The SDRAM is accessible from the processor as well as from the XMC mezzanine, the Ethernet and PCIe interfaces.

Flash memory

The VPX3-1259 is configured with 8, 16, or 32 GB of SATA NAND flash memory, as well as 16 MB SPI flash for BIOS functions. Using SLC technology to enhance reliability, the flash will retain data for a minimum of 20 years at +85°C. Read performance of the flash array is optimized in order to minimize system boot up time for applications such as avionics mission computers where fast restarts after power interruptions are critical.

For absolute security against inadvertent flash programming or corruption, a hardware jumper is provided to disable writing to flash. The firmware provides flash programming functions with support for downloading flash images over Ethernet.

Non-volatile RAM

A 512 KB MRAM device is included to provide fast, non-volatile storage of data that must not be lost when power is removed. Data access is fast, with unlimited write endurance and automatic data protection on power loss. Data retention is greater than 20 years.

Fabric ports

The VPX3-1259 provides 8 lanes of PCIe to the VPX Expansion and Data Planes, used primarily to connect at the highest possible speeds to adjacent VPX modules. Supporting a flexible configuration of 1x 8-lane, 2x 4-lane, or 4x 2-lane ports, the PCIe ports operate at Gen1 (2.5 GT/s), Gen2 (5.0 GT/s) or Gen3 (8.0 GT/s) speeds, for a throughput of up to 7.9 GB/s for extremely fast data transfers. When connecting multiple SBCs together, a Non-Transparent Bridge (NTB) can be configured on any port. Common uses of the PCIe fabric ports are to connect the SBC to sensor or signal acquisition modules, or to augment the SBC processor with a powerful graphics module or dedicated GPGPU or FPGA offering additional computational power.

XMC site

The VPX3-1259 is equipped with one mezzanine site capable of supporting a VITA 42 XMC module. The XMC site supports x8 lanes of PCIe Gen1, Gen2 or Gen3 rates directly from the CPU. Gen1 and Gen2 rates are supported with the standard VITA 42 connectors, and support for Gen3 is with optional VITA 61 connectors. Contact Curtiss-Wright for VITA 61 ordering options.

Full Pn6 I/O mapping is provided per VITA 46.9 as X24s+X8d+X12d, providing 24 single-ended and 20 pairs of high speed differential I/O from the mezzanine site to the VPX backplane connector.

On air-cooled cards, mezzanine installation requires a mounting kit (see ordering information) and extends the card width from 1" to 2". This provides optimal cooling for the Core i7 processor for better thermal performance. On the conduction-cooled card configuration, the XMC site maintains a 0.85" card pitch, and adheres to the VITA 20-2001 (R2005) conduction-cooled PCI Mezzanine Card standard specifications. To optimize the thermal transfer from XMC modules to the base card, the standard VPX3-1259 thermal frame incorporates both the primary and secondary thermal interfaces as defined by VITA 20-2001.

Dual Gigabit Ethernet interfaces

The VPX3-1259 provides two independent Ethernet controllers using Intel i210 devices which can be factory configured as either BASE-T or BASE-X (SerDes) ports. When configured as BASE-T, the Ethernet ports support tri-speed 10/100/1000BASE-T operation, enabling full gigabit performance as well as legacy 10/100 compatibility, and supporting auto-negotiation and auto-MDI/MDIX.

Each Ethernet port occupies a separate PCIe domain for multi-enclave systems.

The Ethernet controllers integrate a number of features designed to minimize processor loading due to Ethernet traffic. These include dedicated DMA engines, support for jumbo packets up to 9KB, efficient buffer management schemes, checksum calculation for IP, TCP, and UDP, and interrupt coalescence.

Serial ports

The VPX3-1259 provides two RS-232 and up to two RS-422 serial channels to the VPX backplane. The ports can also operate in multi-drop RS-485 mode. The serial ports support asynchronous communications with baud rates independently configurable from 300 to 115200 KBaud.

Discrete Digital I/O (DIO)

The VPX3-1259 provides up to 8 independent discrete digital I/O signals supported from the core functions FPGA. All DIOs are individually programmable as inputs or outputs. Each DIO is capable of triggering an interrupt upon a change of state, programmable to detect either rising or falling edge. All DIOs are 5V-tolerant.

USB ports

The VPX3-1259 provides up to three USB 2.0 ports from the PCH. Alternatively, one USB 2.0 and one USB 3.0 port can be factory configured. VBUS power (+5V) is provided for all USB ports.

Two SATA ports

The VPX3-1259 provides up to two SATA 3.0 interfaces on the rear VPX backplane. Each interface incorporates several performance-enhancing features such as:

- Independent DMA channel with 2K FIFO
- Independent command fetch, scatter/gather, and command executions

An additional SATA port is used internally for SATA NAND flash.

Display interfaces

The VPX3-1259's CPU supports Intel Iris Pro Graphics 6200 (GT3e), which includes a 300 MHz base clock with up to 1 GHz performance, and 40 graphics execution units with up to 640 GFLOPS performance. The VPX3-1259 provides up to two dual-mode DVI or DisplayPort ports, and up to one VGA port to the backplane. The CPU has an additional 64 MB of on-chip high speed eDRAM acting as a last level cache (LLC). This LLC results in a significant performance boost, especially for graphics and GPU operations.

Depending on the operating system, up to three independent display ports can operate simultaneously.

Audio and stereo interfaces

The VPX3-1259 provides one analog stereo audio port, offering 24-bit input and stereo output with a built-in headphone amplifier. One microphone input supporting up to 30 dB pre-amp boost is also provided.

Temperature sensors

The VPX3-1259 provides temperature sensors to measure board and processor temperatures. There is a sensor at each edge of the card and sensors built into the CPU. The card edge sensors can be read by software and they can be configured to generate an interrupt in case of an over temperature condition.

Security Features

Trusted Platform Module (TPM) support

The VPX3-1259 includes a Trusted Platform Module (TPM) device. The TPM can be used to create a secure computing environment, ensuring only trusted and signed BIOS and software can execute on the board.

Software Support

The VPX3-1259 is supported by a suite of firmware, Operating Systems (OS), RTOS board support packages (BSP), communication libraries and signal processing libraries. Many of these software elements are common across a wide range of Curtiss-Wright products, maximizing re-use of your software investment across multiple projects and over many generations of technology.

Built-in Test (BIT)

Built-in Test (BIT) is a library of diagnostic routines to support Power-up BIT (PBIT), Initiated BIT (IBIT), and Continuous BIT (CBIT) for health management of the module. BIT operations are supported through BIOS and software APIs, and can be accessed in customer developed applications.

- Built-in Test PBIT for power-up self-test
- IBIT for user-initiated self-test
- CBIT for continuous self-test

Operating system software

The VPX3-1259 is supported by a number of popular operating systems, each tailored to excel in specific application areas. Operating system support covers all facets of developing and running application code for the board. The following 64-bit operating systems are currently supported for the VPX3-1259:

- Linux Fedora Core 21 (pre-installed from the factory)
- Wind River VxWorks 7
- Microsoft Windows Embedded 7 Standard
- Red Hat Enterprise Linux (RHEL) 7.5

For information regarding additional operating systems support, please contact Curtiss-Wright.

Software drivers supporting on-board hardware accelerators are also available for most popular operating systems:

- OpenGL for graphics performance available for Linux and VxWorks
- OpenCL for computational GPGPU performance available for Linux
- Built-in graphics acceleration for Microsoft Windows

Effective Utilization of Multicore Resources

The VPX3-1259's quad-core 5th Gen Intel processor offers an ideal architecture to support multicore software, such as the field-proven operating systems from Green Hills Software, including its DO-178 safety-certifiable INTEGRITY-178 tuMP real-time operating system (RTOS). Supporting a variety of multi-processing architectures is crucial to enabling system integrators and designers to fully utilize all available computing power from the processor's cores. The INTEGRITY-178 tuMP RTOS permits any mix of Asymmetric Multi-Processing (AMP), Bound Multi-Processing (BMP), and Symmetric Multi-Processing (SMP) running on the VPX3-1259 to provide deterministic, user-defined core and scheduling assignments that can ensure the performance potential of the multicore hardware is fully achieved. As well, Green Hills Software operating systems support guest OS virtualization, enabling software applications requiring legacy or non-critical OSs to run on same processor. This brings the SWaP benefit of eliminating the need for a separate processor to support a guest OS. Together, the flexible options for software multi-processing architectures and hosting guest OS applications are critical components to achieve optimal multicore processing for safety-critical and non-critical applications.

Rear Transition Module

For building systems in the lab environment, Curtiss-Wright provides a Rear Transition Module (RTM) that plugs into the back side of the VPX3-1259's backplane and provides access to most of the board connections on industry standard connectors. For available RTM models, please refer to the ordering information.

Ruggedization Levels

To cost-effectively address a diverse range of applications, the VPX3-1259 is available in a range of ruggedization levels and mechanical formats. Air-cooled cards are available at Level 0 (0 to 50°C) and Level 100 (-40 to +71°C) and conduction-cooled cards are available at Level 200 (-40 to +85°C). Full details of Curtiss-Wright's standard Ruggedization Guidelines can be found on the Curtiss-Wright website.

Conduction-cooled modules are also offered with VITA 48 2-level maintenance covers to create a truly field-serviceable LRM.

Power Consumption

Power consumption of an Intel Core i7 SBC can vary greatly, depending on the processor configuration and loading characteristics. Curtiss-Wright has extensive background in characterizing Intel SBCs and can provide a detailed power calculator to better understand the power vs. performance tradeoffs when designing systems around the VPX3-1259 module.

Table 1 outlines common operating configurations and power measurements for the VPX3-1259. These power figures are actual measured values taken while executing a test application generating CPU processing loads and data traffic representative of a typical customer application.

Although power consumption increases as operating temperature rises, Intel processors may hit a thermal limit, after which they will throttle the processor performance to reduce operational power. The measurements below were determined at 23°C room temperature in an air-cooled environment.

The VPX3-1259 BIOS provides a rich set of controls to statically or dynamically control CPU core parking, CPU clock speed, and Turbo Mode operation.

As CPU clock speeds and board performance may vary depending on the thermal environment, please consult Curtiss-Wright for additional details.

TABLE 1 Power consumption under various loading conditions

PROCESSOR CONFIGURATION	TYPICAL POWER Note 1	HIGH CPU, NO GFX Note 2	MAX POWER Note 3
4 cores @ 2.7 GHz	49W	54W	57W
2 cores @ 2.7 GHz	37W	50W	57W
2 cores @ 800 MHz	18W	18W	40W

Notes:

1. CPU cores 50%, GFX cores 60%, memory r/w stress test
2. CPU cores 100%, GFX cores 0%, memory r/w stress test
3. CPU cores 100%, GFX cores 100%, memory r/w stress test

Ordering Information

The VPX3-1259 is ordered with the following part number convention. Not all possible configurations are offered – see Ordering Configurations below or contact Curtiss-Wright for additional configurations

TABLE 2 Ordering information

PART NUMBER	DESCRIPTION
VPX3-1259-A0vwxyz	Air-cooled Level 0, 0 to 50°C
VPX3-1259-A1vwxyz	Air-cooled Level 100, -40 to +71°C
VPX3-1259-C2vwxyz	Conduction-cooled Level 200, -40 to +85°C card edge
v	Mechanical format › 1: 0.8” pitch › 3: 0.85” pitch › 4: 1.0” pitch front panel and metalwork › 5: 1.0” pitch, 2LM covers › 6: 2.0” pitch › 7: 1.0” pitch, copper frame with front-panel cutout › 8: 1.0” pitch, copper frame with front-panel cutout, 2LM covers
w	Control Plane fabric and P2 mapping mode (see Table 3 below) › A: 2F2T = 2 x 1000BASE-T, full XMC mapping as X24s+X8d+X12d › B: 2F2U = 2 x 1000BASE-X, full XMC mapping as X24s+X8d+X12d › C: 2F2T = 2 x 1000BASE-T, partial XMC mapping as X23s+X6s+X6d with 2 x DVI › D: 2F2U = 2 x 1000BASE-X, partial XMC mapping as X23s+X6s+X6d with 2 x DVI
x	Memory configuration (DRAM / Flash) › 4: 4 GB SDRAM, 8 GB Flash › 8: 8 GB SDRAM, 8 GB Flash › C: 16 GB SDRAM,16 GB Flash › D: 16 GB SDRAM, 32 GB Flash › R: 8 GB SDRAM on rear only, 8 GB Flash
y	Processor and software configurations › 5: Quad-Core processor, Fedora Linux
z	P1 I/O Mode (see Table 4 below)

TABLE 4	P1 I/O mode						
I/O MODE	GPIO	RS-232	RS-422	USB 2.0	SATA 3.0	VGA	AUDIO
0	4	2	2	3*	1	-	-
1	4	2	1	1	1	1	-
8	4	2	1	3*	2	-	-
A	8	2	1	3*	1	-	-
D	4	2	1	3*	1	-	1
F	4	2	-	1	1	1	1

Note: Two USB 2.0 ports can be factory configured as one USB 3.0 port.

Ordering configurations

A summary of popular ordering configurations are shown below. Only I/O mode 0 is shown (final model number digit), as this is a popular I/O model. For other models or configurations, consult Curtiss-Wright for availability.

TABLE 5	Ordering configuration with P2 = Full XMC I/O, no DVI			
MEMORY (GB)		ETHERNET PORTS	RUGGEDIZATION	
DRAM	FLASH		AIR-COOLED LEVEL 0	CONDUCTION-COOLED LEVEL 200
8	8	BASE-T	VPX3-1259-A04A850	VPX3-1259-C21A850
		BASE-X	VPX3-1259-A04B850	VPX3-1259-C21B850
16	16	BASE-T	VPX3-1259-A04AC50	VPX3-1259-C21AC50
		BASE-X	VPX3-1259-A04BC50	VPX3-1259-C21BC50
16	32	BASE-T	VPX3-1259-A04AD50	VPX3-1259-C21AD50
		BASE-X	VPX3-1259-A04BD50	VPX3-1259-C21BD50

TABLE 6	Ordering configurations with P2 = Partial XMC I/O, 2 x DVI			
MEMORY (GB)		ETHERNET PORTS	RUGGEDIZATION	
DRAM	FLASH		AIR-COOLED LEVEL 0	CONDUCTION-COOLED LEVEL 200
8	8	BASE-T	VPX3-1259-A04C850	VPX3-1259-C21C850
		BASE-X	VPX3-1259-A04D850	VPX3-1259-C21D850
16	16	BASE-T	VPX3-1259-A04CC50	VPX3-1259-C21CC50
		BASE-X	VPX3-1259-A04DC50	VPX3-1259-C21DC50
16	32	BASE-T	VPX3-1259-A04CD50	VPX3-1259-C21CD50
		BASE-X	VPX3-1259-A04DD50	VPX3-1259-C21DD50

TABLE 7	Accessories
PART NUMBER	DESCRIPTION
KIT-1258-XMC	› XMC Mounting Kit for air-cooled VPX3-1258 and VPX3-1259 modules › Includes 2” front panel and XMC interposer
RTM3-1258-100x	› Rear Transition Module for VPX3-1258 and VPX3-1259 with P2 mapping modes A and B › Provides breakout connectors and cables for most 125x board I/O › Select RTM product number ‘x’ based on 125x I/O mode (i.e. if 125x is I/O mode 1, select RTM3-1258-1001)
RTM3-1258-DVIx	› Rear Transition Module for VPX3-1258 and VPX3-1259 with P2 mapping modes C and D › Provides breakout connectors and cables for most 1258/1259 board I/O including dual DVI outputs › Select RTM product number ‘x’ based on 125x I/O mode (i.e. if 125x is I/O mode 1, select RTM3-1258-DVI1)
RIM-GEN-0001	Low speed RTM Interface Module: › Provides access to XMC Pn6 I/O on the RTM for low-speed signals › Extends the RTM width from 1” to 2”
RIM-GEN-0002	High speed RTM Interface Module: › Provides access to XMC Pn6 I/O on the RTM for high-speed and differential signals › Extends the RTM width from 1” to 2”

TABLE 8	Software
PART NUMBER	DESCRIPTION
DSW-1259-6220-FED6	Fedora 22 64-bit BSP for VPX3-1259. Includes driver source code.
DSW-1259-0700-VXW6	Wind River VxWorks 7 64-bit BSP for VPX3-1259
DSW-1259-6750-RHL6	Red Hat Enterprise Linux (RHEL) 7.5 64-bit BSP for VPX3-1259. Includes driver source code.
DSW-1259-7700-WES6	Microsoft Windows Embedded 7 Standard 64-bit (WES8)
MNT-1259-LNX	Annual maintenance and Software Upgrade Program (SUP) for VPX3-1259 Linux (Fedora and RHEL)
MNT-1259-VXW	Annual maintenance and Software Upgrade Program (SUP) for VPX3-1259 Wind River VxWorks
MNT-1259-WES	Annual maintenance and Software Upgrade Program (SUP) for VPX3-1259 Microsoft Windows Embedded