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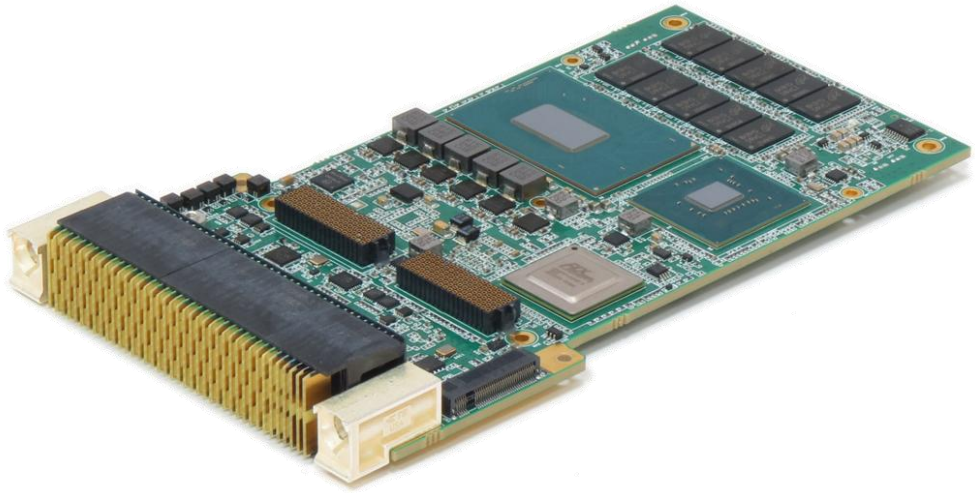
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Find the *Aitech Defense Systems C875* at our website: ***Click HERE***

C875 | 3U VPX SBC

8th Gen. Intel® Xeon® E-2176

Aitech
Embedded Computing *without* Compromise



- Rugged 3U VPX Single-Slot SBC
- 8th Gen E-2176M Intel® Xeon® CPU
  - 6 Cores/12Threads @ 2.7 GHz
  - Turbo Boost @ 4.4 GHz
  - Intel UHD Graphics 630
- Up to 32 GB DDR4 w/ECC @ 2133 MT/s
- Up to 1 TB On-Board SSD
- Versatile Board I/O
  - USB 3.0 & 2.0
  - SATA III
  - Audio In/Out
  - Serial
  - Discrete
  - GbE
  - HDMI
  - RGBHV
- XMC Slot w/PCIe x8 Gen3
- 8 Lane PCIe Gen3 VPX Data Plane
- Microsemi SmartFusion™ FPGA with ARM CPU
- Up to 3 Graphics Heads (2x HDMI, RGB)
- Auto System/Peripheral Configuration
- Cyber Security
- WWDT, ETR, RTC, Temp. Sensors
- IPMI, VITA 46.11 Tier 1 & Tier 2 Support
- Windows®, Linux®, VxWorks® Support
- Open VPX Compliant
- 2LM Option per VITA 48.2
- Conduction and Air-Cooled Versions
- Vibration and Shock Resistant



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Aitech's C875 is a high-performance 3U VPX SBC for embedded and harsh environment applications. The heart of the C875 is Intel's Coffee Lake platform, featuring a 6-Core 8th Generation Intel® Xeon® E-2176M processor with integrated Intel® UHD Graphics 630, coupled with a companion Intel® CM246 Chipset I/O Platform Controller Hub (PCH).

The processor's integrated 2D/3D graphics controller supports three independent graphics heads and the C875 can provide up to two HDMI outputs and one legacy RGBHV output.

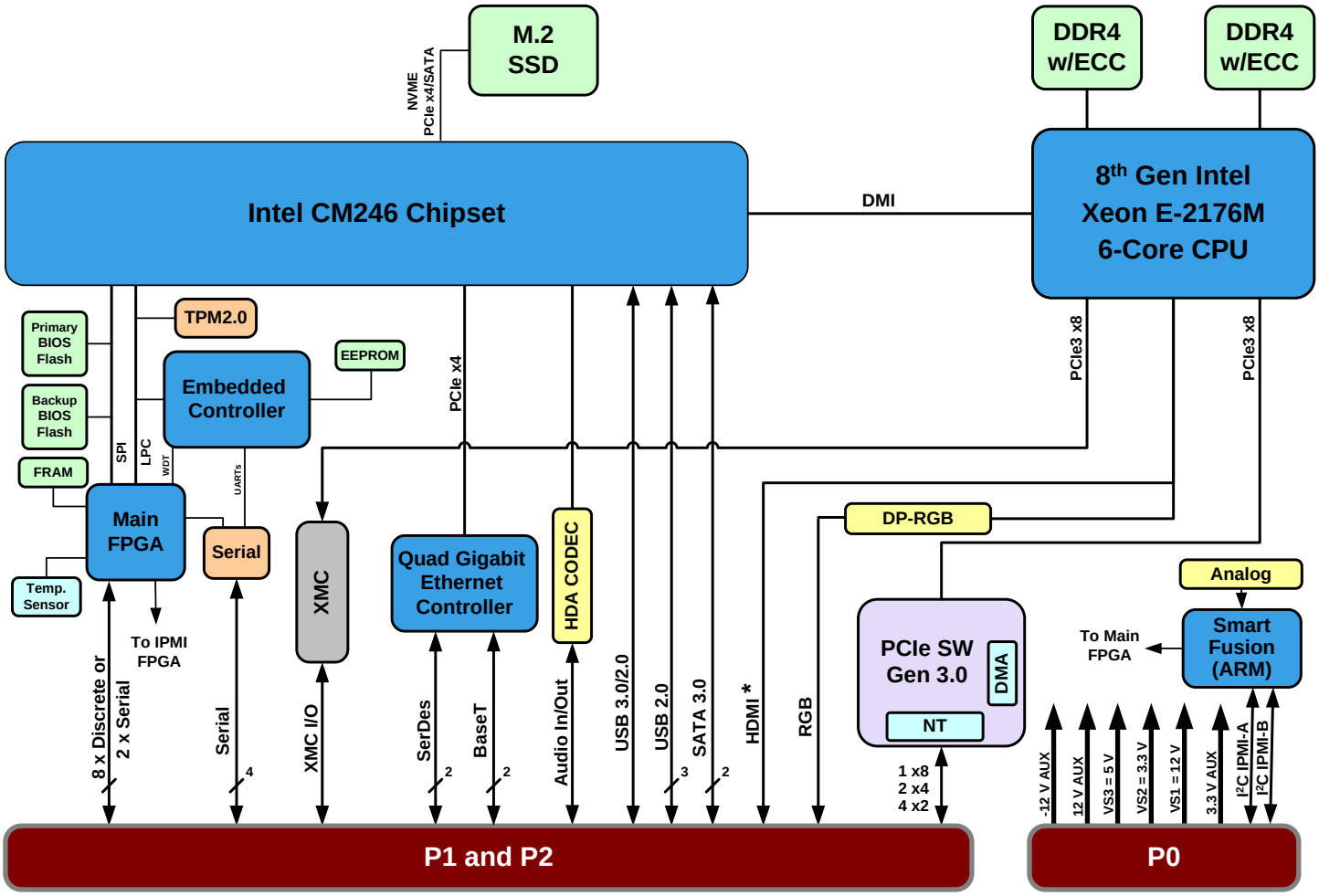
The C875 integrates large on-board RAM (DDR4) and mass storage (Flash disk) resources, and provides a variety of popular I/O interfaces to meet a wide range of system requirements. Expandability and further flexibility are supported by an industry standard XMC slot.

The C875 provides standard Intel CPU security features (TXT, secure boot, etc.), as well as an on-board TPM 2.0, and SSD options with AES 256 Encryption, Quick Erase, and Secure Erase features.

The C875 designed with FAIL-SAFE architecture which includes Redundant FPGA configuration image, Redundant BIOS, SPD and FPGA CRC continues monitoring to avoid firm errors due to single event upset.

An optional pin compatible version of the C875 is available for backward compatibility with Aitech's C873/C874 Core i7 SBCs. Contact your Aitech sales representative for additional information.

C875 mechanical and electrical designs guarantee operation over the full range of rugged application environments. It is available in industry standard conduction-cooled and air-cooled versions.



* 2nd HDMI output available as special order option

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Board Architecture

Processor	Xeon E-2176M – 6 core/12 threads (Hyper-Threading) @ 2.7 GHz, 4.4 GHz Turbo Boost, 12 MB Cache
Chipset	Intel® CM246 Chipset Platform Controller Hub (PCH)
Board Resources	• Watchdog Timers (Windowed & Standard) • Real Time Clock • PCIe Non-Transparent (NT) Port support • Temperature Sensors • Elapsed Time Recorder • General Purpose DMA Engine • VITA 46.11 Tier 1 & Tier 2 IPMI (Intelligent Platform Management Interface)
OpenVPX (VITA 65) Slot Profiles	Default factory configuration: • MOD3-PAY-2F2U Payload board, 2 PCIe x4 ports, 2 1000Base-BX/KX ports Changes available by software (EEPROM programming): • **SLT3-PAY-1D** Payload board, 1 PCIe x8 port • **SLT3-PAY-2F** Payload board, 2 PCIe x4 ports • **SLT3-PAY-8U** Payload board, 4 PCIe x2 ports - *due to switch limitation, only ports 1, 3, 5, 7 are available • **SLT3-PER-2F** Peripheral board, 2 PCIe x4 ports • **SLT3-PER-1F** Peripheral board, 1 PCIe x4 ports • **SLT3-PER-1U** Peripheral board, 1 PCIe x1 port

Memory Resources

RAM	16/32 GB of DDR4 SDRAM in dual channels with ECC, operating at 2133 MT/s
NVME/SATA Flash Disk	Up to 1 TB NVME/SATA M.2 Flash SSD with advanced performance and security options (see *Security* section)
Boot Flash	Dual BIOS Flash devices (Primary device for normal board operation, Alternate device in case of BIOS failure)

I/O

	I/O Variant (1)
	Variant #1 – Default
USB 2.0	3
USB 3.0/2.0	1
RGBHV Out	1
DVI/HDMI Out	1
SATA III	2
Audio - Stereo	1 In + 1 Out
Serial Ports Software configurable as RS-232/422/485	4x RS-232 or 2x RS-422/485
Discrete/Serial I/O Lines: Software configurable as Discrete SE/Diff of Serial RS422	8x SE/4 Diff or 2x Serial RS-422
GbE Ports: 1000Base-T + 1000Base-BX/KX (SerDes)	2 + 2
VPX Backplane Fabric (per Ordering Information)	SLT3-PAY-2F2U
XMC I/O: Diff Pairs+SE Routed per VITA 46.9 pattern X24s+X8d+X12d	1x Diff Pair (A1, B1) + 17 x SE (C09, C12-C15, C17, F8-F15, F17-F18)

Notes: (1) C875 I/O Variants offer different combinations/quantities of on-board and XMC I/O via factory configuration; additional I/O routing options may be available per customer request, contact an Aitech representative for more information

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XMC Slot

XMC	PCIe x8 Gen3 port supporting x8/x4/x2/x1 port widths and Gen3/Gen2/Gen1 speeds, 12V VPWR

Software

Operating Systems	Windows®, WindRiver VxWorks® and Linux® are supported
Drivers	Operating system specific device drivers for board resources are available
BIT	Built-In Tests are available
IPMI	Per VITA 46.11

Graphics - Hardware Accelerated

Video Decoding	MPEG2, VC1/WMV9, AVC/H264, JPEG/MJPEG, H265, VP9
Video Encoding	MPEG2, AVC/H264, VP8, JPEG, HEVC/H265, VP9

Cyber Security

Security Architecture	Trusted Platform, Secure Boot, BIOS Guard based on Intel TXT, TPM 2.0, and BIOS Security SSD with Quick Erase, Secure Erase per DoD and AES256 encryption

Mechanical

	Form Factor & Dimensions	Pitch	Weight
Air-Cooled	3U VPX REDI per ANSI/VITA 48.1	1"	< 650 g (1.43 lbs.)
Conduction-Cooled 2LM	3U VPX REDI 2LM (Two Level Maintenance) per ANSI/VITA 48.2	1"	< 1000 g (2.2 lbs.)

Power

	+12 V	+5 V	+3.3 V	+3.3 V_AUX	±12 V_AUX (3)	Total (1) (2)	PassMark CPUMark
Xeon E-2176M (6-core)	2.5 A	3 A	1.2 A	0.25A	0 A	50 W	12093

Notes:
(1) Power measured during PassMark CPUMark test at room temperature
(2) Total power consumption depends on configuration and assembly options. Tests performed on fully featured configuration with 1TB NVME, no XMC installed. Contact an Aitech representative for configuration specific power consumption.
(3) ±12V_AUX required for XMC only (not installed during test)

Environmental

Specs per VITA 47	Air-Cooled			Conduction-Cooled	
	Commercial	**Rugged**	**Military**	**Rugged**	**Military**
Operating Temp.	AC1 (0 to +55 ºC) (2)	AC3 (-40 to +70 ºC) (2)	AC4 (-40 to +85 ºC) (1,2)	CC3 (-40 to +70 ºC) (3)	CC4 (-40 to +85 ºC) (1,3)
Non-Operating Temp.	C1 (-40 to +85 ºC)	C3 (-50 to +100 ºC)	C4 (-55 to +125 ºC)	C3 (-50 to +100 ºC)	C4 (-55 to +125 ºC)
Vibration	V1	V2	V2	V3	V3
Operating Shock	OS1	OS1	OS1	OS2	OS2
Altitude	15,000 ft.	35,000 ft.	70,000 ft.	35,000 ft.	70,000 ft.
Relative Humidity (4)	0 - 90%	0 - 95% with Acrylic (Standard), 0 - 100% with Urethane (Optional)			
Conformal Coating	N/A				

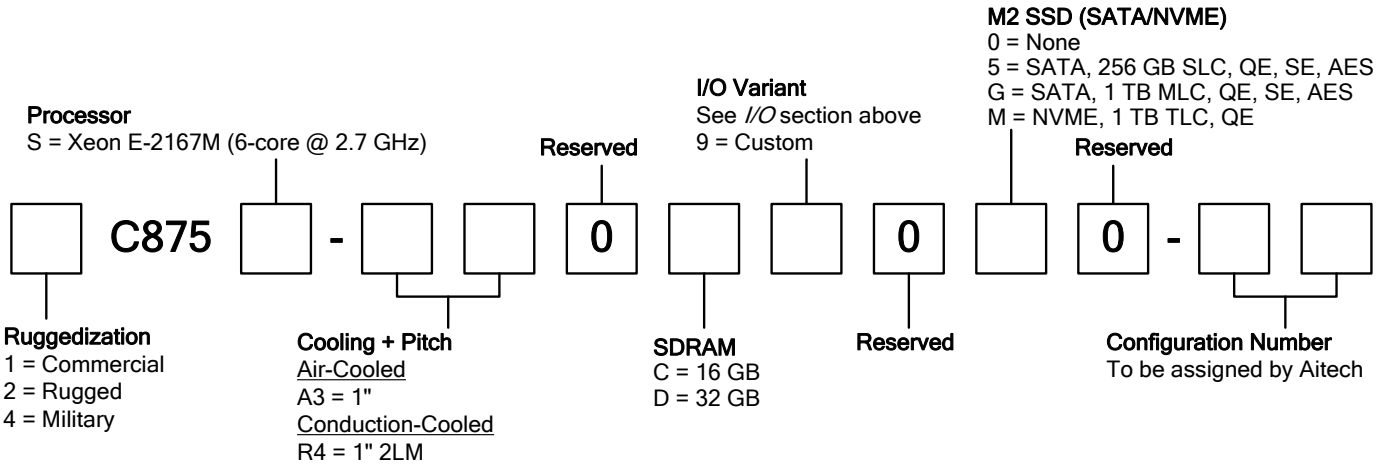
Notes:
(1) -55 ºC available, contact an Aitech representative for more information
(2) Operating ambient air temperature (with sufficient airflow)
(3) Operating card edge temperature
(4) Non-condensing

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Ordering Information



Example: 4C875S-R40D1050-00

SLC: Single Level Cell; MLC: Multi Level Cell; QE: Quick Erase; SE: Secure Erase; AES: AES256 Encryption

Various special order options are also available. For example:

- Additional SLC & MLC Disks may be available
- VPX: MOD3-PAY-2F2T
- I/O: Dual HDMI/DVI, Dual Display Port, 10GBase-T (with XMC), additional XMC I/O (Max I/O routing pattern 24S+8D+12D)

Optional Accessories

TM875-21-00	Rear dual slot Transition Module (RTM) providing convenient access to C875 I/O interfaces via standard connectors, and to all XMC I/O via headers.
CM870	3U VPX PMC/XMC carrier board. Using one or more CM870s, system functionality can be significantly expanded, enabling the C875 to control additional PMCs/XMCs over the VPX backplane. Refer to the CM870 datasheet for further information.
3UVPX2S-SK875-00	Development kit including: • Commercial air-cooled enclosure with Power Supply and Fan Unit • Two 3U VPX slots with 1 x DFP (PCIe x8) connected between slots • TM875

Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the C875 and additional software support.



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