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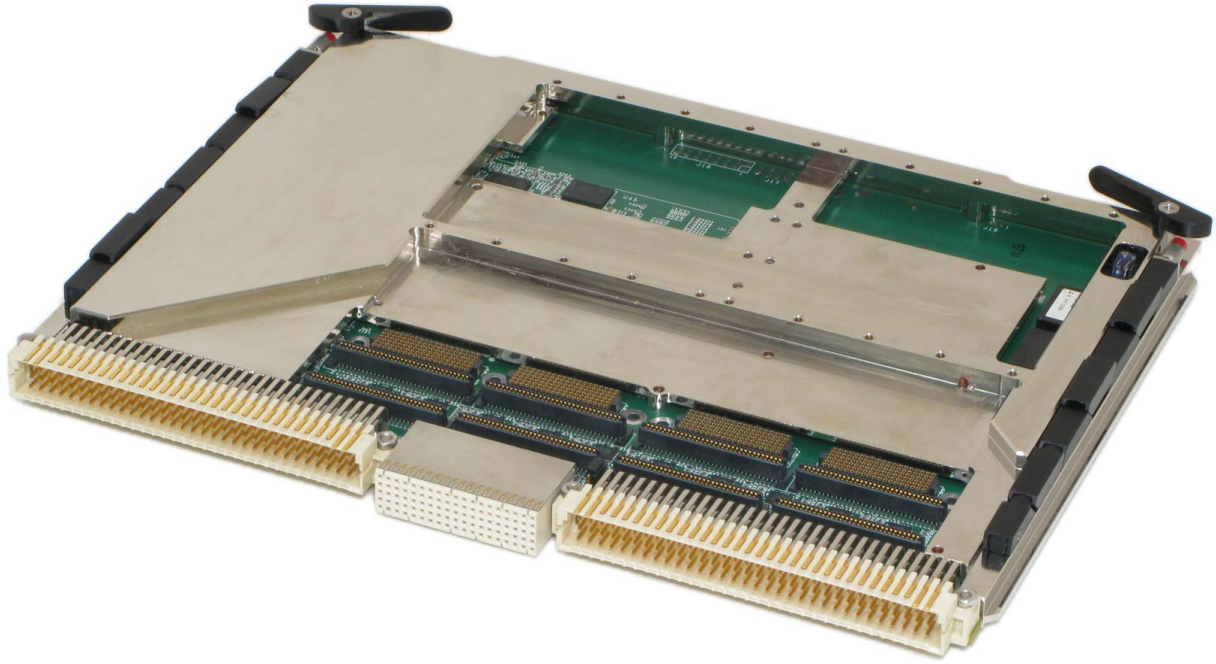
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Find the *Aitech Defense Systems C111* at our website: ***Click HERE***

C111

NXP QorIQ™ T4 6U VME SBC

Aitech
Embedded Computing *without* Compromise



- Rugged 6U VME Single-Slot SBC
- NXP QorIQ Multicore SOC Processor
  - 12/8/4 e6500 Dual Thread Cores (T4240/T4160/T4080)
  - Altivec Unit
  - Secure Boot and Trust Architecture 2.0
- 4 GB DDR3L with ECC
- 256 MB NOR Flash Memory
- 16 GB SATA Flash Drive
- 512 kB NVRAM (MRAM)
- Versatile Board I/O
  - USB
  - SATA
  - GbE
  - Serial
  - Discrete
  - MIL-STD-1553
- 2 PMC/XMC Slots
- WWDT, ETR, RTC, Temp. Sensors
- VxWorks®, Linux®, INTEGRITY® Support
- Conduction and Air-Cooled Versions
- Vibration and Shock Resistant



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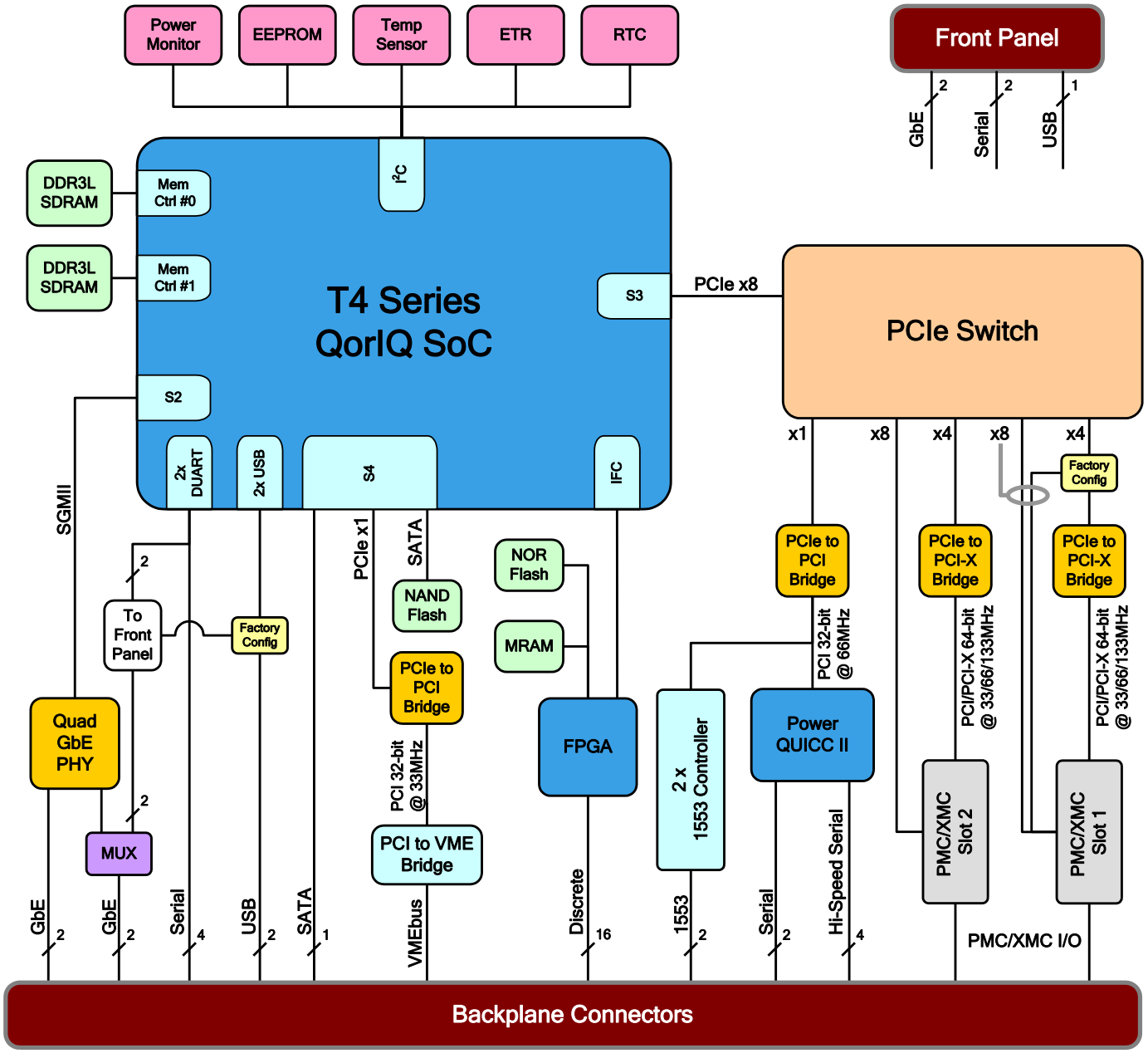
Aitech
Embedded Computing *without* Compromise

The C111 is Aitech's latest generation VME PowerPC SBC, based on NXP's new T4 Series QorIQ System-on-Chip (SoC) multi-core, multi-thread processors, with on-chip high speed L1 and L2 caches, and numerous integrated bus, memory, and I/O controllers.

The wide variety of on-board I/O and large memory resources, including on-board mass storage, in combination with the powerful SoC processor, make the C111 the right VME SBC for many applications, right out of the box. The two industry standard PMC/XMC slots provide flexibility and expandability, along with the availability, convenience, and cost benefits of COTS.

For improved security assurance in real time/embedded systems, the C111 also includes the latest QorIQ Secure Boot and Trust Architecture 2.0.

The C111 mechanical and electrical designs guarantee its operation over the full range of rugged application environments.



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Board Architecture

Processor	NXP QorIQ T4 Series SOC: 12 (T4240), 8 (T4160), or 4 (T4080) dual-threaded cores with integrated memory, bus, and I/O controllers. Includes on-chip 32k/32k L1 per core, and 2 MB shared L2 caches per cluster (cluster = 4 cores).
VMEbus	VME64 per ANSI/VITA 1 and VME64x per ANSI/VITA 1.1
Board Resources	• Watchdog Timers (Windowed + Standard) • Secure Boot and Trust Architecture 2.0 • Real Time Clock • Elapsed Time Recorder • Temperature Sensors • 8 Counters/Timers

Memory Resources

RAM	4 GB of DDR3L SDRAM with ECC operates at 1600 MT/s, configured in dual channels
Flash Disk	Optional 16 GB SATA Flash Disk
Boot Flash	256 MB NOR Flash - 64 MB allocated for Boot; 192 MB available to user
NVRAM	512 kB high speed MRAM with unlimited writes & long term data retention

I/O

C111 I/O variants offer different combinations/quantities of on-board and PMC/XMC I/O	I/O Variant		
	1 **PMC 1 + PMC 2**	**2** **PMC 1+ XMC 2**	**3** **XMC 1 + XMC 2**
USB 2.0	2 (1)	1 (no Vcc) (1)	2 (1)
SATA 2.0	1	1	1
Ethernet - Gigabit: 10Base-T/100Base-TX/1000Base-T	4 (2)	1 (3) / 2 (2)	4 (2)
Ethernet - Fast: 10Base-T/100Base-TX	-	1 (2)	-
Serial Ports – High speed Multi-protocol synchronous/asynchronous ports supporting common serial communications protocols (UART, USART, SDLC, HDLC, etc.). Software configurable as RS-232/422/485	4	1	4
Serial Ports – Standard: RS-232/422 Asynchronous UARTs. Software configurable as RS-232/422.	6	4	6
MIL-STD-1553B BC or Multi RT operation with Concurrent Bus Monitor. Controllers support 66 MHz operation & DMA engine	Up to 2 - see *Ordering Information*		
Discrete I/O Lines Individually software configurable as input (with optional interrupts) or output, and as SE (1 line per channel) or Diff RS-422 (2 lines per channel)	16	2	16
PMC 1 I/O Pins Routed per VITA 35	40	64	N/A
PMC 2 I/O Pins Routed per VITA 35	35	N/A	N/A
XMC 1 I/O Pins: Diff Pairs + SE	N/A	N/A	8 + 24
XMC 2 I/O Pins: Diff Pairs + SE	N/A	20 + 38	6 + 26
Front Panel I/O (Air-Cooled only)	1 x USB (1), 2 x Gigabit Ethernet (2), 2 x Std. Serial Ports (4)		

Notes:
(1) Air-cooled boards: one of the USB interfaces is routed to a front panel connector at the expense of one USB interface at the VME backplane connectors. Vcc is always present at the front panel USB interface.
(2) Air-cooled boards: One (or two) of the backplane Ethernet ports can be software routed to the front panel (if no port is rerouted, only one port is available; if at least one port is rerouted to the FP, 2 are available). All front panel Ethernet interfaces are Gigabit: 10Base-T/100Base-TX/1000Base-T.
(3) When no Ethernet is routed to the front panel, a single VME backplane connection is available.
(4) Wired in parallel to two serial ports at the VME backplane connectors.

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PMC/XMC Slots

PMC 1 & 2	64-bit PCI/PCI-X @ 133/100/66/33 MHz, universal site supports 3.3 V and 5 V PCI I/O signaling levels; no voltage key
XMC 1 & 2	Connects to CPU subsystem through PCIe x8 port (there is a separate x8 port for each site), supporting x8, x4, x2, and x1 bus widths, 5 V VPWR supply (default), with an option for 12 V VPWR

Software

Operating Systems	WindRiver VxWorks®, Linux®, and Green Hills INTEGRITY® are supported
Drivers	Operating system specific device drivers for board resources are available
BIT	Built-In Tests are available

Mechanical

Form Factor	6U VME per IEEE Std 1101.10-1996 (air-cooled) and IEEE Std 1101.2-1992 (conduction-cooled)
Dimensions	Air-cooled per IEEE Std 1101.10-1996; Conduction-cooled per IEEE Std 1101.2-1992
Weight	Air-cooled: < 675 g (1.5 lbs); Conduction-cooled: <1350 g (3.0 lbs)

Power Typ/Max (1)

SoC Option	+3.3 V	+5.0 V	+12 V (2)	-12 V (2)	Total
T4080	1.5 / 1.7 A	7.0 / 8.5 A	0 A	0 A	40 / 48 W
T4160	1.5 / 1.7 A	7.4 / 9.1 A	0 A	0 A	42 / 51 W
T4240	1.5 / 1.7 A	8.0 / 9.7 A	0 A	0 A	45 / 54 W

Notes: (1) Typical power consumption measured running Dhrystone benchmark in Linux @ +25 ºC
Maximum power consumption measured running Dhrystone benchmark in Linux @ +85 ºC
Actual power consumption depends on configuration and assembly options
(2) ±12V required for PMC/XMCs 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				

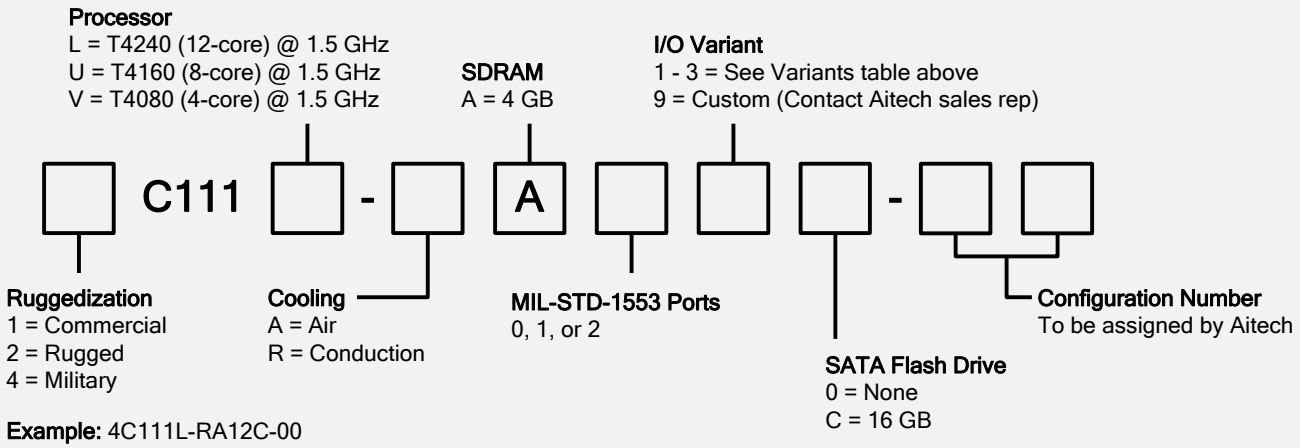
Notes: (1) -55 ºC available, contact an Aitech representative for more information
(2) Operating ambient air temperature (with sufficient airflow)
(3) Operating card edge temperature
(4) Non-condensing

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Ordering Information



Example: 4C111L-RA12C-00

Optional Accessories

TM102	Rear Transition Module (RTM) providing convenient access to C111 I/O interfaces via standard connectors and to all PMC/XMC I/O via headers. Supports both air and conduction-cooled C111 mounted in commercial air-cooled chassis. Refer to the TM102 datasheet for further information.

Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the C111 and additional software support.



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