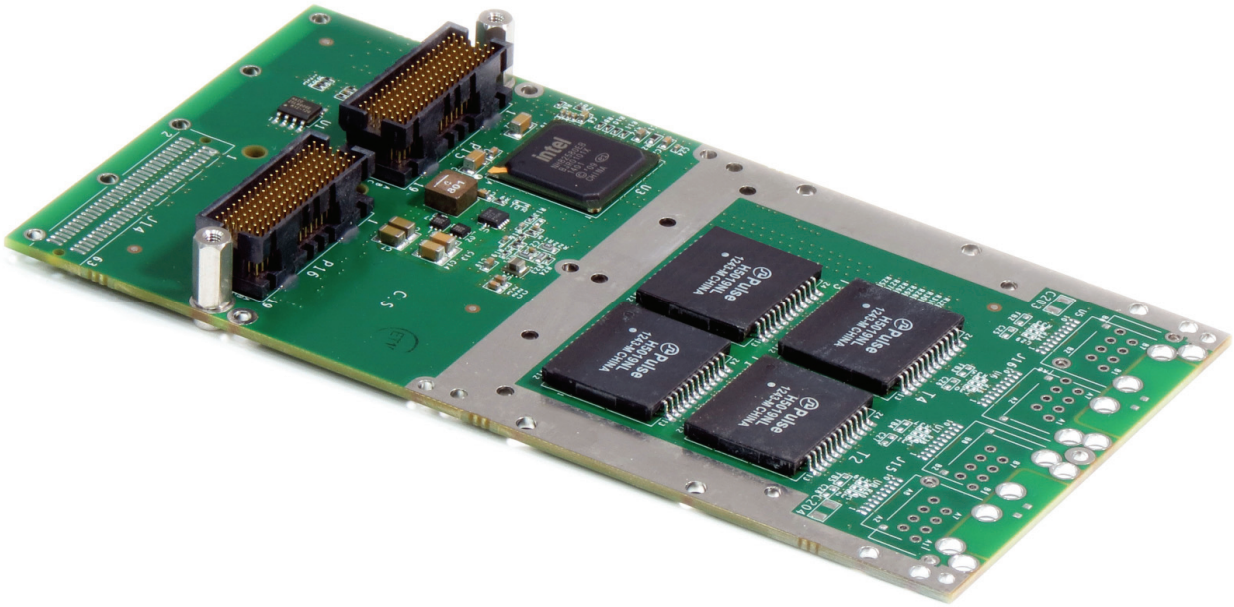
M611

Quad Gigabit Ethernet XMC

Aitech
Embedded Computing *without* Compromise



- Single-Width XMC
- Four Gigabit Ethernet Ports, several standard configuration options
  - 4 x 10/100/1000Base-T Ports at P16, P14, or Front Panel RJ45 connectors
  - 4 x 1000Base-BX/KX (SerDes) Ports at P16
- Intel Quad GbE Controller
- PCIe x4 Gen2 Host Interface
- Hardware Checksum Offload
- IEEE 1588 Precision Time Protocol
- 9.5 kB Jumbo Frames
- Flow Control
- Powered by Single +3.3 V Supply
- Low Cost and Low Power Consumption
- Windows®, Linux®, VxWorks®, INTEGRITY® Support
- Conduction and Air-Cooled Versions
- Vibration and Shock Resistant

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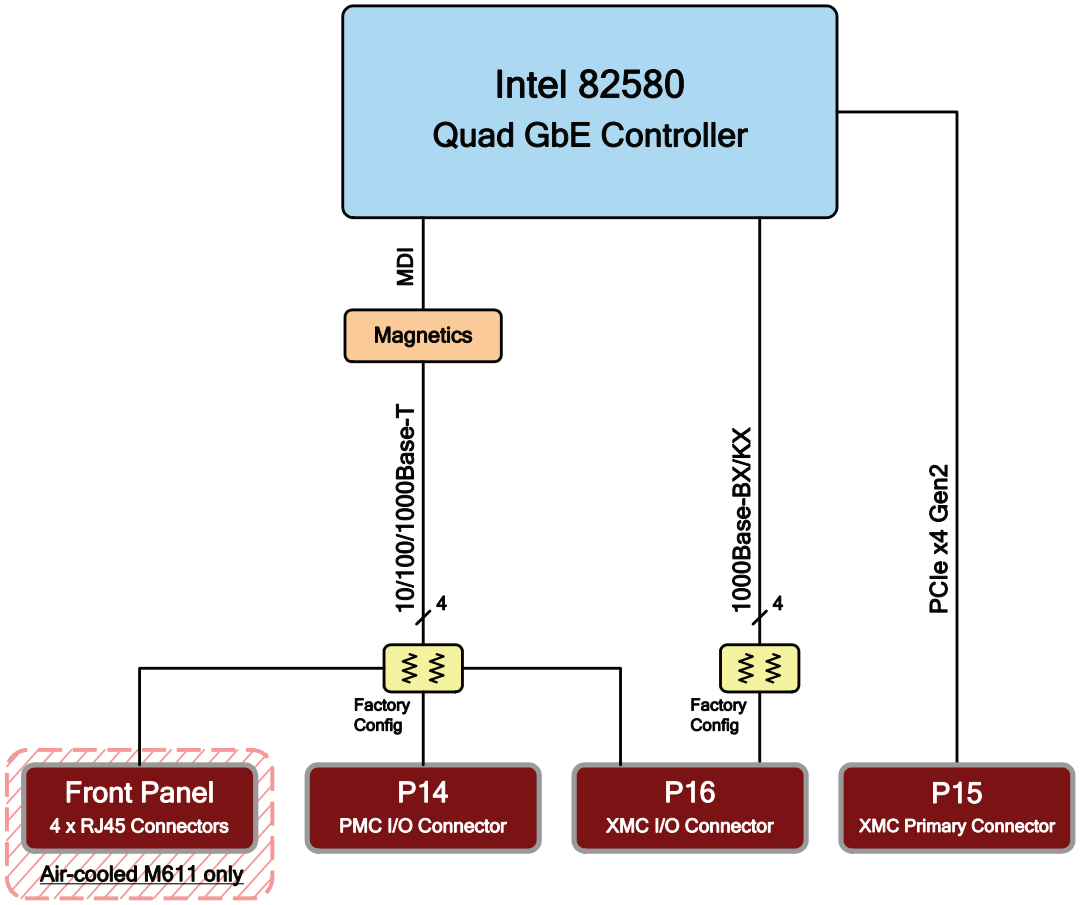
Aitech's M611 is a high-performance Gigabit Ethernet XMC for embedded harsh environment applications. The M611 is based on the Intel 82580 Quad-Port Gigabit Ethernet controller, which also provides the M611 PCIe x4 Gen2 host interface.

The M611 supports both copper (10/100/1000Base-T) and SerDes (1000Base-BX/KX) physical interfaces, and can be used on a variety of platforms, under common operating systems.



Board Architecture

GbE Controller	Intel 82580 Quad-Port Gigabit Ethernet Controller • IEEE 802.3x Flow Control • 9.5 kB Jumbo Frame support • Checksum offloading capabilities • TCP/UDP segmentation • PXE client support • Supports both IPv4 and IPv6 • IEEE 1588 Precision Time Protocol • IEEE 802.1q VLAN support • Supports half & full duplex at 10/100 Mb/s, full duplex at 1000 Mb/s • Large on-chip Tx and Rx FIFO buffers • Optimized Tx and Rx queues • Caches up to 64 packet descriptors (per queue) • 8 Tx and 8 Rx queues per port • Wide, pipelined internal data path architecture • Descriptor ring management hardware for Tx and Rx • Optimized descriptor fetching and write-back mechanisms
Ethernet Interfaces	Each port factory configured as 1000Base-T or 1000Base-BX/KX (SerDes), routed by factory configuration to P16, P14, or front panel connectors. See *Standard Configurations* below. • 10/100/1000Base-T ports with IEEE 802.3ab compliant and compatible PHYs, on-board GbE magnetics, and auto-negotiation and auto cross-over (MDI/MDI-X) support • 1000Base-BX/KX ports support backplane applications and external SFP modules
Host Interface	PCIe x4 port at P15 supports Gen2 and Gen1 speeds and port widths of x4/x2/x1

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Software

Operating Systems	Microsoft Windows®, Linux®, Wind River VxWorks®, and Green Hills INTEGRITY® are supported

Mechanical

Form Factor	Single-Width XMC per ANSI/VITA 42.0-2008
Dimensions	Per ANSI/VITA 42.0-2008
Weight	Conduction-cooled: < 110 g [0.25 lbs]; Air-cooled: < 120 g [0.26 lbs]

Power

	+3.3 V	Total (3)
Typical (1)	1 A	3.3 W
Maximum (2)	1.5 A	5.0 W

Notes:
(1) Only 2 (SerDes or copper) channels used
(2) 4 copper channels active
(3) M611 is powered by the host +3.3 V supply; VPWR, ±12 V, and +3.3 V_AUX are not required

Environmental

Specs per VITA 47	Air-Cooled			Conduction-Cooled	
	Commercial	**Rugged**	**Military**	**Rugged**	**Military**
Operating Temp.	AC1 (0 to +55 °C) (2)	AC3 (-40 to +70 °C) (2)	AC4 (-40 to +85 °C) (1,2)	CC3 (-40 to +70 °C) (3)	CC4 (-40 to +85 °C) (1,3)
Non-Operating Temp.	C1 (-40 to +85 °C)	C3 (-50 to +100 °C)	C4 (-55 to +125 °C)	C3 (-50 to +100 °C)	C4 (-55 to +125 °C)
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 - 100%			
Conformal Coating	N/A	Acrylic (Silicone and Urethane Optional)			

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

Standard Configurations

Variant	Cooling	Ethernet Ports	I/O Routing
A50	Air	4 x 1000Base-T	Front panel RJ45 connectors
R41	Conduction	4 x 1000Base-BX/KX	P16 XMC I/O connector
R51	Conduction	4 x 1000Base-T	P16 XMC I/O connector
R52	Conduction	4 x 1000Base-T	P14 PMC I/O connector

Note: Additional port configuration/routing options may be available per customer request, contact an Aitech representative for more information

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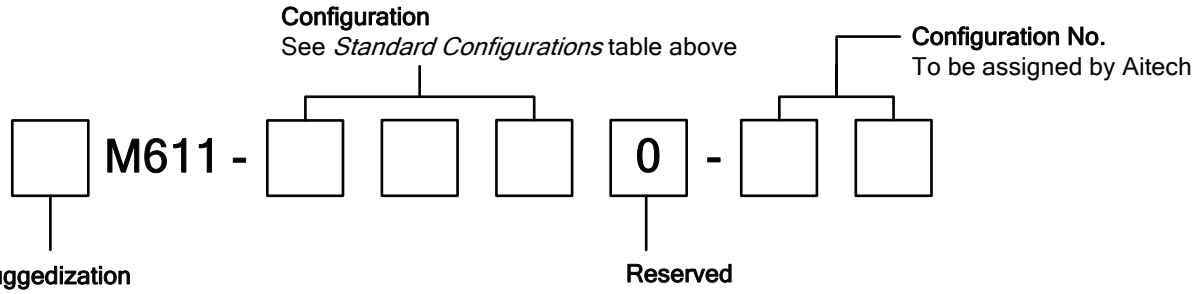
Ordering Information



Ruggedization
1 = Commercial
2 = Rugged
4 = Military

Reserved

Example: 4M611-R410-00

Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the M611 and additional software support.

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