



### M1E2G4i80

#### Quad Port Copper Gigabit Ethernet Express Module Server Adapter

##### Product Description

Silicom's Quad Port Copper Gigabit Ethernet ExpressModule server adapter is a PCI-Express X8 Four Copper Gigabit Ethernet network interface card that can fit into a 3.5" HD form factor. The Silicom Quad Port Copper ExpressModule is the front I/O module in Silicom Server to Network Appliance Converter (SETAC) architecture.

Silicom's Quad Port Copper Gigabit Ethernet ExpressModule server adapters are based on Intel 82580EB Ethernet controller with quad fully integrated Gigabit Ethernet Media Access Control (MAC) and PHY. In addition to managing MAC and PHY Ethernet layer functions, the controller manages PCI Express packet traffic across its transaction, link, and physical/logical layers.

Silicom's Quad Port Copper Gigabit Ethernet ExpressModule server adapters are the ideal solution for implementing multiple network segments, mission-critical high-powered networking applications and environments within high performance servers.

##### Key Features

###### Copper Gigabit Ethernet 1000Base-T :

- Independently copper Gigabit Ethernet channels support four Gigabit Ethernet (1000Base-T), Fast Ethernet (100Base-Tx) and Ethernet (10Base-T).
- Triple speed 1000Mbps (1000Base-T), 100 Mbps (100Base-Tx) and 10 Mbps (10Base-T) operation.
- Nway auto negotiation automatic sensing and switching between 1Gbps full duplex and 100 / 10 Mbps operations Simplex or Full Duplex.
- RJ-45 female connectors.

###### Performance Features:

- 8 Transmit and Receive queues per port.
- Up to 8 queues of Receive Side Scaling (RSS) minimize CPU utilization across multiple processor systems.
- Support for 8 pools (single queue) of virtual machine Device Queues (VMDq) per port.
- Support Direct Cache Access (DCA).
- Support Intel I/O Acceleration Technology v3.0.
- TSO interleaving for reduced latency
- Minimized number of device I/O interrupts using MSI and MSI-X
- UDP, TCP and IP checksum offload

- UDP and TCP transmit segmentation offload (TSO).
- SCTP receive and transmit checksum offload.
- Packet interrupt coalescing timers (packet timers) and absolute- delay interrupt timers for both transmit and receive operation.

**Common Key features:**

- PCI Express ExpressModule Electromechanical Specification Revision 1.0
- Support PCI Express Base Specification 2.0 (5 GTs)
- High performance, reliability, and low power use in Intel 82580 Quad integrated MAC + PHY and SERDES chip Controllers.
- Ultra deep, packet buffer per channel lowers CPU utilization.
- Hardware acceleration that can offload tasks from the host processor. The Controllers can offload TCP/UDP/IP checksum calculations and TCP segmentation
- Server class reliability, availability and performance features:
- Link Aggregation and Load Balancing
- Switch dependent: 802.3ad (LACP), Generic Trunking ( GEC / FEC)
- Switch and NIC Independent.
- Failover
- Priority queuing – 802.1p layer 2 priority encoding.
- Virtual LANs –802.1q VLAN tagging
- Jumbo Frame (9.5KB).
- 802.x flow control.
- Multicast/ broadcast Packet replication
- Statistics for SNMP MIB II, Ethernet like MIB, and Ethernet MIB (802.3z, Clause 30)
- Supports Vital Product Data (VPD)
- LEDs indicators for link/Activity Mode status.
- Hot Plug not supported. Can be supported by assembly change

**Technical Specifications**

<b>Copper Gigabit Ethernet Technical Specifications – (1000Base-T) Adapters:</b>	
<b>IEEE Standard / Network topology:</b>	Gigabit Ethernet, 1000Base-T Fast Ethernet, 100Base-TX Ethernet, 10Base-T
<b>Full duplex / Simplex</b>	Support both Simplex & Full duplex operation in all operating speeds

<b>Auto negotiation:</b>	Auto-negotiation between Full duplex and simplex operations and between 10Mb/s 100Mb/s speeds and duplex 1000Mb/s.
<b>Data Transfer Rate:</b>	1000 Mbit/s, 100 Mbit/s and 10 Mb/s in simplex mode per port. 2000Mb/s 200 and 20 Mb/s in full duplex mode per port
<b>Cables and Operating distance:</b>	10Base-T Category 3, 4, or 5 maximum 100m * 100Base-Tx Category 5 maximum 100m * 1000Base-T Category 5E maximum 100m *
<b>Operating Systems Support</b>	
<b>Operating system support:</b>	Windows Linux VMware
<b>General Technical Specifications</b>	
<b>Interface Standard:</b>	PCI ExpressModule Specification revision 1.0 Silicom SETAC PCI-Express Base Specification Revision 2.0 ( 5 GTs)
<b>Board Size:</b>	168.2mm x 98mm (6.62"X3.858")
<b>PCI Express Card Type:</b>	X8
<b>PCI Voltage:</b>	+12V ± 15%
<b>PCI Express Connector:</b>	Gold Finger: X4
<b>Controller:</b>	Intel 82580
<b>Holder:</b>	Not included.
<b>I/O:</b>	Quad RJ45 located on edge of the board
<b>Weight:</b>	100 gr (3.88 oz)
<b>Power Consumption:</b>	4.80W, 0.40A at 12V: Typical all ports operate at 1000Mb/s. 3.24W, 0.27A at 12V: Typical all ports operate at 100Mb/s. 3.00W, 0.25A at 12V: Typical all ports operate at 10Mb/s. 4.32W, 0.36A at 12V: Typical all ports Link 1000Mb/s. 1.92W, 0.16A at 12V: Typical No link at all ports

<b>Operating Temperature:</b>	-5°C – 40°C (23°F – 104°F)
<b>Storage Temperature:</b>	-40°C–65°C (-40°F–149°F)
<b>EMC Certifications:</b>	<p>FCC Part 15, Subpart B Class A</p> <p>Conducted Emissions</p> <p>Radiated Emissions</p> <p>CE EN 55022: 1998 Class A Amendments A1: 2000; A2: 2003</p> <p>Conducted Emissions</p> <p>Radiated Emissions</p> <p>CE EN 55024: 1998 Amendments A1: 2000; A2: 2003</p> <p>Immunity for ITE Amendment A1: 2001</p> <p>CE EN 61000-3-2 2000, Class A</p> <p>Harmonic Current Emissions</p> <p>CE EN 61000 3-3 1995, Amendment A1: 2001</p> <p>Voltage Fluctuations and Flicker</p> <p>CE IEC 6100-4-2: 1995</p> <p>ESD Air Discharge 8kV. Contact Discharge 4kV.</p> <p>CE IEC 6100-4-3:1995</p> <p>Radiated Immunity (80-1000Mhz), 3V/m 80% A.M. by 1kHz</p> <p>CE IEC 6100-4-4:1995</p> <p>EFT/B: Immunity to electrical fast transients 1kV Power Leads, 0.5Kv Signals Leads</p> <p>CE IEC 6100-4-5:1995</p> <p>Immunity to conductive surges COM Mode; 2kV, Dif. Mode 1kV</p> <p>CE IEC 6100-4-6:1996</p> <p>Conducted immunity (0.15-80 MHz) 3VRMS 80% A.M. By 1kHz</p> <p>CE IEC 6100-4-11:1994</p> <p>Voltage Dips and Short Interruptions</p> <p>V reduc &gt;95%, 30% &gt;95% Duration 0.5per, 25per, 250per</p>
<b>MTBF:</b>	<p>283</p> <p>*According to Telcordia SR-332 Issue 2</p> <p>Environmental condition – GB (Ground, Fixed, Controlled).</p> <p>Ambient temperature 40°C</p>
<b>LEDs</b>	
<b>LEDs:</b>	<p>(2) LEDs per port</p> <p>Left LED: Link/Act :</p> <p>Turns on link (Green),</p> <p>Blinks on activity (Green)</p> <p>Right LED : Link Speed:</p>

	Turns on Yellow 1G Link. Turns on Green 100M Link Turn off on 10M link
<b>LEDs location:</b>	LEDs are located on the PCB, visible via holes in the metal bracket. Each Green Link/Act and Bi-Color SPD LEDs are located above their own RJ45 connector port.
<b>Connectors:</b>	(1) Shielded quad RJ-45

### Order Information

P/N	Description	Notes
<b>M1E2G4I80-SD-R</b>	Quad Port Copper Gigabit Ethernet ExpressModule Server Adapter	X4, Based on Intel 82580EB, PCI-E ExpressModule, RoHS compliant

Note: Model P/N

-R: RoHS Compliant / Lead free adapter

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