PE310G2I71
10 Gigabit Ethernet Card Dual Port Fiber SFP+ Network Interface Card Intel® X710DA2 Based

Product Description

Silicom’s 10 Gigabit Ethernet Cards are designed for Servers and high-end appliances.

The Silicom 10 Gigabit Ethernet PCI Express Network Interface Cards offer simple integration into any PCI Express X8 to 10 Gigabit Networks.

The performance is optimized so that system I/O is not the bottleneck in high-performance networking applications.

The Silicom 10 Gigabit Ethernet PCI Express server adapters are based on Intel X710 Ethernet controller with fully integrated Gigabit Ethernet Media Access Control (MAC) and SFI Interface.

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. Using hardware acceleration, the controller offloads tasks from the host, such as TCP/UDP/IP checksum calculations and TCP segmentation.

Silicom’s 10 Gigabit Ethernet PCI-Express Network Interface Cards are the ideal solution for implementing multiple network segments, mission-critical high-powered networking applications and environments within high performance servers.

Key Features

SFP+ 10Gigabit Ethernet:
10Gigabit Ethernet Adapter with SFP cage support:

-SRD: Fiber 1/10 Gigabit Ethernet 1000Base-SX / 10GBASE-SR:
- 1000BASE-SX with 1G 850nM Small form Factor Pluggable (SFP+)
- 10GBASE-SR with 10Gigabit 850nM Small form Factor Pluggable (SFP+)

-LRD: Fiber 1/10 Gigabit Ethernet 1000Base-LX / 10GBASE-LR:
- 1000BASE-LX with 1G 1310nM Small form Factor Pluggable (SFP+)
- 10GBASE-LR with 10Gigabit 1310nM Small form Factor Pluggable (SFP+)
- **SRD: Fiber 1/10 Gigabit Ethernet 1000Base-SX / 10GBASE-SR:**
  - 10 Gigabit Fiber Ethernet port supports 10GBASE-SR (850nM LAN PHY)
  - 1Gigabit Fiber Ethernet port supports 1000BASE-SX (850nM LAN PHY)
  - 1/10Gigabit 850nM Small form Factor Pluggable (SFP+)

- **LRD: Fiber 1/10 Gigabit Ethernet 1000Base-LX / 10GBASE-LR:**
  - 10 Gigabit Fiber Ethernet port supports 10GBASE-LR (1310nM LAN PHY)
  - 1Gigabit Fiber Ethernet port supports 1000BASE-LX (1310nM LAN PHY)
  - 1/10Gigabit 1310nM Small form Factor Pluggable (SFP+)

**Performance Features:**
- Support for jumbo frame up to 9.5KB
- Flow control support
- Priority Flow Control (draft IEEE 802.1Qbb)
- Enhanced Transmission Selection (draft IEEE802.1az)
- Statistics management and RMON
- 802.1q VLAN support
- DCB/DCB-X support
- Message Signal interrupts (MSI-X)
- Storage – Enabling competitive performance with native OS intelligent offload solutions, including NAS, iSCSI and FCoE

**Host Interface:**
- PCI Express GEN3 X8 lanes
- Support PCI Express Base Specification 3.0 (8GT/sec)

**LAN and Virtualization Features:**
- Network Virtualization offloads for VXLAN and NVGRE
- Unified Networking Providing a single wire for LAN and storage: NAS (SMB, NFS) and SAN (iSCSI, FCoE)
- Virtual Bridging Support – VEPA/802.1Qbg, BPE/802.1Qbh
- Physical Functions – Up to 8 per port, up to 16 per device
- Support for 128 Virtual Device Queues (VMDq) per port
- Hardware Queue Pairs – Up to 1.5K (non-RDMA); up to 256K (RDMA)
- Virtualization – Alleviating hypervisor I/O bottlenecks by providing flow separation for Virtual Machines (VMs)
TCP/IP/L2 features:
- Receive Side Scaling (RSS)
- Large Send Offload (LSO)
- TCP/UDP/IP/SCTP Checksum Offload
- IPV4, IPV6

### Technical Specifications

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<tr>
<th>SFP+ 10Gigabit Ethernet Technical Specifications Adapters:</th>
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<tr>
<td>SFP+ (Small Form Factor Pluggable) supports:</td>
<td>SFI interfaces supports 10GBase-R PCS and 10 Gigabit PMA in order to connect with SFP+ to 10GBase-SR / / 1000Base-SX / 10GBase-LR and SFP+ Direct Attach</td>
</tr>
<tr>
<td>10GBase-SR SFP+:</td>
<td>Fiber 10Gigabit Ethernet, 10GBASE-SR (850nM LAN PHY)</td>
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<tr>
<td>IEEE Standard / Network topology:</td>
<td></td>
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<tr>
<td>10GBase-SR SFP+:</td>
<td>10.3125GBd</td>
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<tr>
<td>Data Transfer Rate:</td>
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<tr>
<td>10GBase-SR SFP+:</td>
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<tr>
<td>Cables and Operating distance Up to:</td>
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<tr>
<td>62.5um, 160MHz/Km 26m</td>
<td></td>
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<tr>
<td>62.5um, (OM1)200MHz/Km 33m</td>
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</tr>
<tr>
<td>50um, 400MHz/Km 66m</td>
<td></td>
</tr>
<tr>
<td>50um, (OM2)500 MHz/Km 82m</td>
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<tr>
<td>50um, (OM3)2000MHz/Km 300m</td>
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<tr>
<td>10GBase-LR SFP+:</td>
<td>Fiber 10Gigabit Ethernet, 10GBASE-LR (1310nM LAN PHY)</td>
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<tr>
<td>IEEE Standard / Network topology:</td>
<td></td>
</tr>
<tr>
<td>10GBase-LR SFP+:</td>
<td>10.3125GBd</td>
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<tr>
<td>Data Transfer Rate:</td>
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<tr>
<td>10GBase-LR SFP+:</td>
<td></td>
</tr>
<tr>
<td>Cables and Operating distance Up to:</td>
<td>Single-Mode: 10000m at 9um</td>
</tr>
<tr>
<td>10GSFP+Cu :</td>
<td>Copper 10Gigabit Ethernet, 10GSFP+Cu (Direct Attach)</td>
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<tr>
<td>IEEE Standard / Network topology:</td>
<td></td>
</tr>
<tr>
<td>1000Base-SX / 10GBase-SR</td>
<td>Fiber Gigabit Ethernet, 1000Base-SX (850nM LAN PHY)</td>
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<tr>
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<tr>
<td>1000Base-SX / 10GBase-SR SFP+: Data Transfer Rate:</td>
<td>10.3125GBd / 1.25GBd</td>
</tr>
<tr>
<td>1000Base-SX / 10GBase-SR SFP+: Cables and Operating distance Up to:</td>
<td><strong>1000Base-SX</strong>: 62.5um, 160MHz/Km 220m 62.5um, (OM1)200MHz/Km 275m 50um, 400MHz/Km 500m 50um, (OM2)500 MHz/Km 550m 50um, (OM3)2000MHz/Km &gt;550m</td>
</tr>
<tr>
<td>1000Base-SX / 10GBase-SR SFP+:</td>
<td><strong>10GBase-SR</strong>: 62.5um, 160MHz/Km 26m 62.5um, (OM1)200MHz/Km 33m 50um, 400MHz/Km 66m 50um, (OM2)500 MHz/Km 82m 50um, (OM3)2000MHz/Km 300m</td>
</tr>
<tr>
<td>1000Base-LX / 10GBase-LR SFP+: IEEE Standard / Network topology:</td>
<td>Fiber Gigabit Ethernet, 1000Base-LX (1310nM LAN PHY)</td>
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<tr>
<td>1000Base-LX / 10GBase-LR SFP+: Data Transfer Rate:</td>
<td>10.3125GBd / 1.25GBd</td>
</tr>
<tr>
<td>1000Base-LX / 10GBase-LR SFP+: Cables and Operating distance Up to:</td>
<td><strong>1000Base-LX</strong>: Single-Mode: 5000m at 9um <strong>10GBase-LR</strong>: Single-Mode: 10000m at 9um</td>
</tr>
<tr>
<td>1000Base-T SFP: IEEE Standard / Network topology:</td>
<td>1000BASE-T Ethernet</td>
</tr>
</tbody>
</table>

**-SRD: Fiber 1000BASE-SX / 10GBASE-SR Technical Specifications:**

| Optical Output Power (1G): | Minimum: -9.5 dBm |
| Optical Receive Sensitivity | Maximum: -17 dBm |
### Maximum Input Power (1G):
- Maximum: +0.5dBm

### Output Transmit Power (10G):
- Minimum: -5 dBm

### Optical Receive Sensitivity (10G):
- Maximum: -11.1 dBm

### Maximum Input Power (10G):
- Maximum: +0.5dBm

#### LRD: Fiber 1000BASE-LX / 10GBASE-LR Technical Specifications:

### Optical Output Power (1G):
- Minimum: -11 dBm

### Optical Receive Sensitivity (1G):
- Maximum: -19 dBm

### Maximum Input Power (1G):
- Maximum: +0.5dBm

### Output Transmit Power (10G):
- Minimum: -8.2 dBm

### Optical Receive Sensitivity (10G):
- Maximum: -12.5 dBm

### Maximum Input Power (10G):
- Maximum: +0.5dBm

### Operating Systems Support

### Operating System Support:
- Windows
- Linux
- FreeBSD
- VMware

### General Technical Specifications

### Interface Standard:
- PCI-Express Base Specification Revision 3.0 (8 GTs)

### Board Size:
- Low profile short add-in card: 145.542mm X 64.389mm (5.730"X2.535")

### PCI Express Card Type:
- X8 Lane

### On Board Connector Voltage:
- +12V +/-8%
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<tr>
<th><strong>PCI Connector:</strong></th>
<th>X8 Lane</th>
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<tr>
<td><strong>Controllers:</strong></td>
<td>Intel X710DA2</td>
</tr>
<tr>
<td><strong>Holder:</strong></td>
<td>Metal Bracket</td>
</tr>
<tr>
<td><strong>Operating Temperature:</strong></td>
<td>0°C – 45°C (32°F – 113°F)</td>
</tr>
<tr>
<td><strong>Storage:</strong></td>
<td>-40°C–65°C (-40°F–149°F)</td>
</tr>
</tbody>
</table>
| **EMC Certifications:** | FCC 47CFR Part 15:2013, Subpart B Class B  
Conducted emissions  
Radiated emissions  
EN 55022: 2010, Class B  
Conducted disturbance at mains terminals  
Conducted disturbance at telecommunication port  
Radiated disturbance  
EN 61000-3-2: 2006+A1(09)+A2(09)  
Harmonic current emissions  
EN 61000-3-3: 2008  
Voltage fluctuations and flicker  
EN 55024: 2010  
Immunity to electrostatic discharge (ESD)  
Radiated immunity to radio frequency electromagnetic field  
Conducted immunity to electrical fast transients / bursts (EFT/ B)  
Conducted immunity to voltage surges  
Conducted immunity to disturbances induced by radio frequency field  
Conducted immunity to voltage dips and short interruptions |
| **LEDs:** | (2) LEDs per port  
Link Speed:  
Turns on Green 10G Link.  
Turn on Yellow on 1G Link  
Link/Act :  
Turns on link (Green),  
Blinks on activity (Green) |
<p>| <strong>LEDs location:</strong> | LEDs are located on the PCB, visible via holes in the metal bracket |
| <strong>Connectors:</strong>  | (2) SFP+ cage |</p>
<table>
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<tr>
<th>P/N</th>
<th>Description</th>
<th>Notes</th>
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<tr>
<td>PE310G2i71-XR</td>
<td>Dual Port SFP+ 10 Gigabit Ethernet PCI Express Server Adapter</td>
<td>X8 Gen3, Low Profile, Based on Intel X710-AM1, Support Direct Attached Copper cable, Support Silicom SFP+ approved transceiver. RoHS compliant</td>
</tr>
<tr>
<td>PE310G2i71-SRD</td>
<td>Dual Port Fiber (SX/SR) 1/10 Gigabit Ethernet PCI Express Server Adapter</td>
<td>X8 Gen3, Based on Intel X710-AM1, Low-profile, on board support for Fiber SX/SR, RoHS compliant</td>
</tr>
<tr>
<td>PE310G2i71-LRD</td>
<td>Dual Port Fiber (LX/LR) 1/10 Gigabit Ethernet PCI Express Server Adapter</td>
<td>X8 Gen3, Based on Intel X710-AM1, Low-profile, on board support for Fiber LX/LR, RoHS compliant</td>
</tr>
</tbody>
</table>

Model P/N -LP

-LP: Assemble Low Profile Metal Bracket

1V2