



### P425G410G8TS81 TimeSync Card STS4

## 25/10 Gigabit Ethernet Grand Master TimeSync PCIe GEN4 Server Adapter

### Product Description

5G Open RAN solutions rely on stringent time synchronization requirements for end-to-end latency and jitter. Timing synchronization has become a critical capability and now is fully available on COTS hardware using specific NICs with time synchronization support.

5G requires support of time synchronization accuracy across the whole network below 3 microseconds for Time-Division Duplex (TDD) carriers, and even more stringent when using MIMO or Carrier Aggregation. Contrary to non-Open RAN technologies, Frequency Division Duplex (FDD) carriers also require stringent synchronization to sustain eCPRI-based fronthaul interface.

Silicom announce today a new STS4 card with 12 ports 10/25G to ensure time precision on COTS hardware using PCIe NIC with Synchronous Ethernet (SyncE) and IEEE 1588v2 Precision Time Protocol (PTP). This breakthrough opens the 5G market to any COTS (Commercial of the Shelf Server) vendor to become a based station provider.

Silicom's STS4 capable to synchronize host system with external clock source using 1PPS and 10MHz. The STS TimeSync server adapter support both 1588v2/PTP and SyncE for high clock accuracy in Master and Slave mode. STS4 design is meeting O-RAN requirements for LLS-C1, LLS-C2 and LLS-C3, modes of operations with both Boundary and Transparent clocks.

Silicom STS line card for 4G and 5G NIC enable real-time data transmission with high timing accuracy at the lowest cost to power 5G DRAN and CRAN edge deployments:

- Support 1588/PTP over IPv4 / IPV6, IEEE1588v2
- Support SyncE /ITU-T G.8262
- T-BC/T-TSC Boundary Clock and TSC Slave Clock /G.8273.2
- T-GM Grand Master /G.8273.1 per G.8275.1 PTP Profile
- PRTC Primary Reference Time Clock Class B/G.8272
- T-TC Transparent Clock /G.8273.3
- 1588 Software Stack and Servo Software in x86



**STS**  
Silicom Time Sync  
Technology

### Key Features

### GM/TimeSync:

- Supports Grand Master clock per G.8275.1 Class-A PRTC/T-GM
- Supports Boundary Clock (BC) OC (Master / Slave)
- PTP over IPv4 / IPV6 (IEEE-1588v2) / SyncE
- One step and two step clock modes operation for PTP Master
- 10Mhz and 1PPS programmable output
- Full HW and SW GM/TimeSync solution based on industry leading DPLL, Servo stack and PTP1588
- Incorporates accurate OCXO
- Incorporates Global Navigation Satellite System (GNSS) receiver
- Packet and physical-layer frequency, phase and Grand Master GM/Time Synchronization
- Enable 5G/Class C wireless application

### LAN and Virtualization Features:

- SR-IOV (Single Root I/O Virtualization): up to 256 Virtual Functions
- Partially Programmable Pipeline and Advanced Traffic Steering
- Intel® Ethernet Flow Director – 8000 On-Die perfect match filters
- 1536 queues/Physical Function (PF), >64 RSS/PF and 256 VMDq/PF

### Technical Information

General Technical Specifications: 12 Ports: P425G410G8TS81	
Interface Standard:	PCI-Express Base Specification Revision 4.0 (16 GTs)
Board Size:	Dual slot Standard height add-in card, FHHL: 167.64mm X 111,15 mm(6.6"X 4.376") dual slot
PCI Express Card Type:	x16 Lane, 2x8 bifurcation
USB Connector:	uUSB
Voltage:	+12V +/-8% +3.3+/- 8% +3V3VAUX/ +12VAUX
PCI Connector:	Gold Finger: x16 Lane
Controllers:	Intel E810-CAM2 Intel E810-CAM1
1588/ SyncE PHY:	BCM81385 (4x25G) BCM82870 (8x10G)
DPLL:	1588 / SyncE Microchip ZL30793
GNSS:	U-blox, ZED-F9T

<b>OCXO:</b>	Default: OX-2281-EAE-5000-10M000, 2 ppb Option (1) Vectron, OX-601, 20MHz 10ppb Option (2) Vectron OX-401, 10MHz 5ppb
<b>Network ports:</b>	QSFP28, QSFP, 4xSFPP
<b>Management port:</b>	RJ45
<b>Holder:</b>	Metal Bracket
<b>Power Consumption:</b>	52[w]
<b>Operating Temperature:</b>	0°C – 45°C (32°F – 113°F)
<b>Air Flow Requirements:</b>	700 ft./min
<b>Storage:</b>	-40°C–65°C (-40°F–149°F)
<b>Regulation:</b>	CE, FCC Class A, ROHS requirements
<b>LEDs:</b>	Ports 0-3 : 4 LEDs Green for Link, 4 LEDs Yellow for Act Ports 4-7 : 4 LEDs Green Link/Act Ports 8-11: 4 LEDs Green Link/Act
<b>LEDs location:</b>	Ports 0-3 : On Metal Bracket, next 4 SFPPs Ports 4-7 : On Metal Bracket, left from QSFP Ports 8-11: On Metal Bracket left from QSFP28
<b>General Technical Specifications: 8 Ports: P410G8TS81</b>	
<b>Interface Standard:</b>	PCI-Express Base Specification Revision 4.0 (16 GTs)
<b>Board Size:</b>	Full Height, Half-length (FHHL) add-in card, single slot: 167.64mm X 111,15 mm (6.6"X 4.376")
<b>PCI Express Card Type:</b>	x16 Lane
<b>On Board Connector Voltage:</b>	+12V +/-8% +3.3 +/- 8% +3V3VAUX/ +12VAUX
<b>PCI Connector:</b>	Gold Finger: x16 Lane
<b>USB Connector:</b>	uUSB
<b>Controllers:</b>	Intel E810-CAM2
<b>1588/ SyncE PHY:</b>	BCM82870 (8x10G)
<b>DPLL:</b>	1588 / SyncE Microchip ZL30793
<b>GNSS:</b>	U-blox, ZED-F9T

<b>OCXO:</b>	Default: OX-2281-EAE-5000-10M000, 10MHz, 2 ppb Option (1) Vectron, OX-601, 20MHz, 10ppb Option (2) Vectron OX-401, 10MHz, 5ppb
<b>Network ports:</b>	4xSFP+, 1xQSFP28
<b>Holder:</b>	1xQSFP28, 4xSFP28
<b>Management Port:</b>	RJ45 (on rear side of card)
<b>Power Consumption:</b>	28[w]
<b>Operating Temperature:</b>	0°C – 45°C (32°F – 113°F)
<b>Air Flow Requirements:</b>	600 ft./min
<b>Storage:</b>	-40°C–65°C (-40°F–149°F)
<b>Regulation:</b>	CE, FCC Class A, ROHS requirements
<b>LEDs:</b>	Ports 0-3: 4 Green LEDs for Link, 4 Yellow LEDs for Act Ports 4-7: 4 Green LEDs for Link/Act
<b>LEDs location:</b>	Ports 0-3: On Metal Bracket, next 4 SFPPs Ports 4-7: On Metal Bracket, left from QSFP

## Order Information

P/N	Description	Notes
<b>P425G410G8TS81-XR</b>	12 Port 25/10 Gigabit Ethernet GM/ TimeSync PCI Express Server Adapter	x16 Gen4, bifurcation 2x G4, FHHL, dual slot
<b>P425G410G8TS81-SR</b>	12 Port 25/10 Gigabit (SR) Ethernet GM/ TimeSync PCI Express Server Adapter	x16 Gen4, (w/ SR transceivers) bifurcation 2x G4, FHHL, dual slot
<b>P410G8TS81-XR</b>	8 Port 10 Gigabit Ethernet GM/ TimeSync PCI Express Server Adapter	x16 Gen4, bifurcation 2x8 G4, FHHL single slot
<b>P410G8TS81-SR</b>	8 Port 10 Gigabit (SR) Ethernet GM/ TimeSync PCI Express Server Adapter	x16 Gen4, (w/ SR transceivers) bifurcation 2x8 G4, FHHL single slot
<b>TS-MB-F5-200X5</b>	TimeSync SMA MB Kit, Full height,5xSMA,5x200mm cables	
<b>TS-MB-L5-200X5</b>	TimeSync SMA MB Kit, LP,5xSMA, 200mm cables	