

HIGH-SPEED OPTICAL TRANSCEIVERS

400G PAM4 QSFP-DD SR8, SR4 and DR4

Regional Availability – Global



Siemon's 400G PAM4 DSP¹ transceivers are designed to meet and exceed industry performance standards. Each transceiver supports 50G per lane electrically (host-side) and is offered in a QSFP-DD (Double Density) form factor. These transceivers can either optically (fiber-side) support 100G per lane when utilizing a gearbox² or 50G per lane without a gearbox. Our DSP-based design is optimized for a significantly lower pre-FEC³ BER⁴, achieving error-free post-FEC performance. These transceivers support Ethernet applications and data center reaches of SR8 (Multimode), SR4 (Multimode/Gearbox), and DR4 (Singlemode/Gearbox).

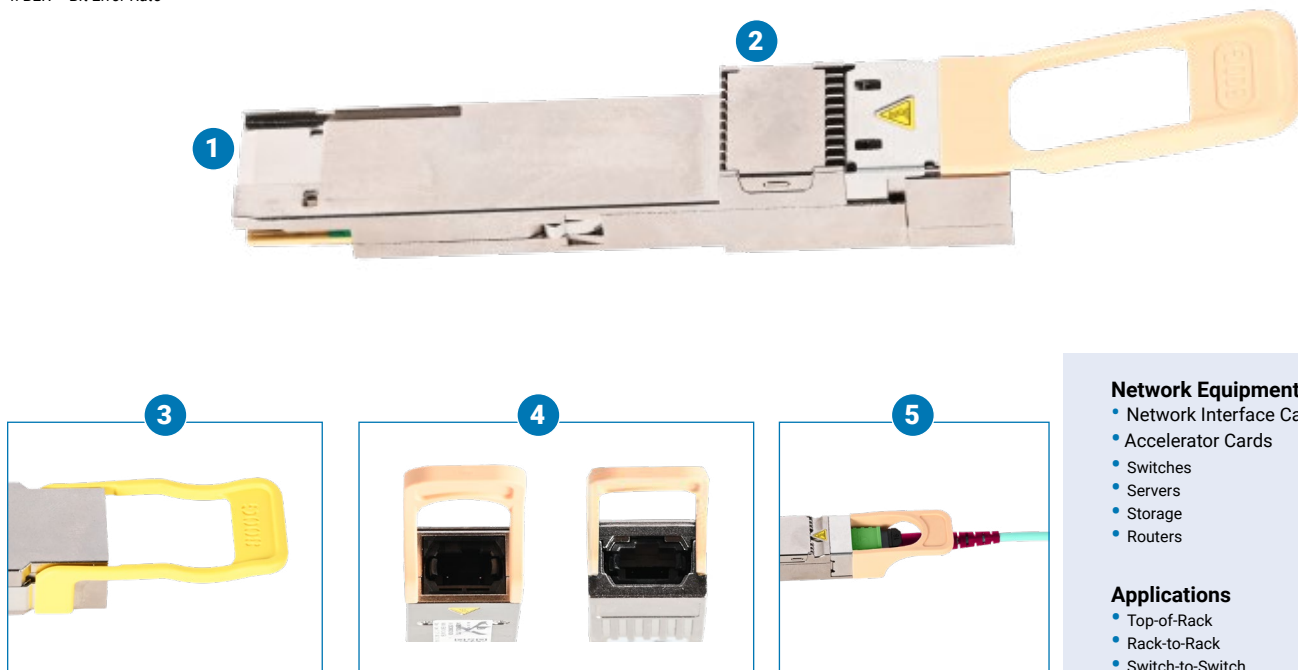
Siemon PAM4 transceivers complement Siemon's portfolio of high-speed fiber and copper connectivity solutions in addition to our End-to-End fiber solutions. Our transceivers are supported by expert technical resources, ensuring reliable connectivity for today's most demanding networks.

1: DSP – Digital Signal Processor

2: Gearbox – A data-rate/lane converter for electrical and optical interfaces of a transceiver (e.g. converts 50G/L SR8 -> 100G/L SR4)

3: FEC – Forward Error Correction

4: BER – Bit Error Rate



1. Error-Free Post-FEC Performance

2. MSA Compliant Connectors

3. Robust Pull-Tab Color-coded by Reach

4. Base-8 MPO-12 APC and Base-16 MPO-16 APC Versions

5. Singlemode and Multimode Fiber Options

Network Equipment

- Network Interface Card (NIC)
- Accelerator Cards
- Switches
- Servers
- Storage
- Routers

Applications

- Top-of-Rack
- Rack-to-Rack
- Switch-to-Switch
- Switch-to-Server
- AI/ML Clusters

Protocol Support

- Ethernet 400GbE
 - 400GAUI-8
 - 200GAUI-4
 - 100GAUI-2
 - 50GAUI-1

Standards Compliance

- IEEE 802.3ck
- QSFP-DD MSA Rev 7.1
- CMIS 4.0*
- IEC 60825-1
- Class 1 Laser 21 CFR 1040.10 & 1040.11
- RoHS / REACH

*Compliant to CMIS 4.0. Compatible with CMIS 4.0 and above

QSFP-DD Transceiver Product Information

ABSOLUTE RATINGS

REACH TYPE	SYMBOL	SR8	SR4	DR4
STORAGE TEMPERATURE	T _C	-40 to 85°C (-40 to 185°F)	-40 to 85°C (-40 to 185°F)	-40 to 85°C (-40 to 185°F)
RELATIVE HUMIDITY	RH	5 to 85%	5 to 95%	5 to 95%
SUPPLY VOLTAGE (MAX)	V _{CC}	3.6 V	3.6 V	3.6 V

OPERATIONAL SPECIFICATIONS

REACH TYPE	SYMBOL	SR8	SR4	DR4
OPERATING CASE TEMPERATURE	T _{OPR}	0 to 70°C (32 to 158°F)	0 to 70°C (32 to 158°F)	0 to 70°C (32 to 158°F)
SUPPLY VOLTAGE (TYP)	V _{CC}	3.3 V	3.3 V	3.3 V
POWER CONSUMPTION (MAX)	P _{MAX}	8.0 W	7.0 W	10.0 W
DATA RATE PER ELECTRICAL LANE	-	50G	50G	50G
SIGNALING RATE PER ELECTRICAL LANE	SRL _{EL}	26.5625 GBd	26.5625 GBd	26.5625 GBd
DATA RATE PER OPTICAL LANE	-	50G	100G	100G
SIGNALING RATE PER OPTICAL LANE	SRL _{OP}	26.5625 GBd	53.125 GBd	53.125 GBd
WAVELENGTH	λ _C	850 nm	850 nm	1311 nm
POWER BUDGET ¹ (MIN)	PB	2.0 dB	1.8 dB	3.1 dB
TRANSMIT OUTER OPTICAL MODULATION AMPLITUDE (OMA _{OUTER}) PER LANE	T _{OMA}	-4.5 to 3.0 dBm	-2.6 to 3.5 dBm	-0.8 to 4.2 dBm
RECEIVER SENSITIVITY (OMA _{OUTER}) PER LANE (MAX)	S _{OMA}	-6.5 dBm	-4.4 dBm	-4.4 dBm
TRANSMITTER AND DISPERSION EYE CLOSURE (TDECQ) PER LANE (MAX)	TDECQ	4.5 dB	4.4 dB	3.4 dB
DAMAGE THRESHOLD / RECEIVER OVERLOAD (MIN)	DT	5.0 dBm	5.0 dBm	5.0 dBm
EXTINCTION RATIO (MIN)	ER	3.0 dB	2.5 dB	3.5 dB
BIT ERROR RATIO (BER)	BER	Pre-FEC BER = 1E-8 Post-FEC BER = 1E-15	Pre-FEC BER = 1E-8 Post-FEC BER = 1E-15	Pre-FEC BER = 1E-8 Post-FEC BER = 1E-15
OPERATING DISTANCE (MAX)	L _{MAX}	70m (OM3) 100m (OM4)	30m (OM3) 50m (OM4)	500m (OS2)

1. Power Budget (MIN) is calculated using the minimum value from the following equation for each end of a given channel. Optical Channel Loss should not exceed this value.

$$\text{Minimum Power Budget} = \left(\text{Minimum Transmit } OMA_{OUTER} \text{ per Lane} \right) - \left(\text{Maximum Receiver Sensitivity } OMA_{OUTER} \text{ per Lane} \right)$$

MECHANICAL PROPERTIES

CONNECTOR TYPE	QSFP-DD
INSERTION FORCE (MAX)	90N
EXTRACTION FORCE (MAX)	50N
RETENTION FORCE (MAX)	90N
DURABILITY (MIN)	50 Cycles

Additional information available upon request. Please contact our Technical Sales Group if you require further information.

Ordering Information

400G PAM4 Ethernet

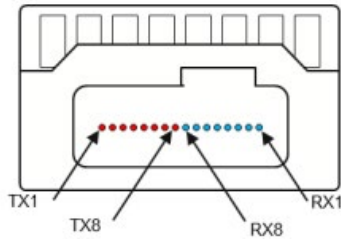
Multimode Part Numbers	Connector Type	Reach Type	Max Length	Optical Interface
XCRD400SR8-3A1S	QSFP-DD	SR8	70m (OM3) 100m (OM4)	MPO-16/APC BASE-16
XCRD400SR4-3A1G	QSFP-DD*	SR4	30m (OM3) 50m (OM4)	MPO-12/APC BASE-8

Singlemode Part Numbers	Connector Type	Reach Type	Max Length	Optical Interface
XCRD400DR4-3S1G	QSFP-DD*	DR4	500m (OS2)	MPO-12/APC BASE-8

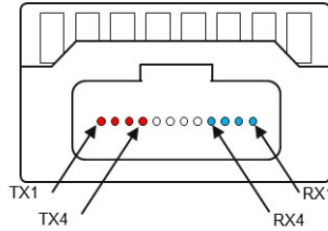
* Gearbox

Please contact our Technical Sales Group if you require connectivity or cable configurations that are not listed above.
All transceivers have pinned optical connectors and require unpinned mating fiber connectors unless otherwise specified

BASE-16 MPO-16 APC Versions



BASE-8 MPO-12 APC



Product Label



SCAN TO DOWNLOAD
SPEC SHEET

Because we continuously improve our products, Siemon reserves the right to change specifications and availability without prior notice.

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