

Passive and Active Copper Cables

400G PAM4 QSFP112 Straight Throughs and Breakouts

Regional Availability – Global



Siemon's 400G (100G per lane) PAM4 Ethernet or InfiniBand™ QSFP112 passive and active copper cables are designed to exceed industry standard performance offering a cost-effective, low latency, lowest power option for high-speed data center network equipment direct connections. The industry's smallest minimum bend radius is achieved with our mesh sleeves.

Passive DACs¹ are available with the lowest power consumption up to 2 meters for Ethernet applications and 3 meters for InfiniBand. Active copper offers longer lengths up to 5 meters. ACCs² are only available in InfiniBand, while AECs³ are only Ethernet. All are available in 0.5 meter increments in 1:1 straight throughs and 1:2 and 1:4 breakouts.

- 1: DAC – Direct Attach Copper *Passive cable assembly with limited lengths and lowest power consumption requirement*
- 2: ACC – Active Copper Cable *Analog re-driver based active cable assembly with longer lengths than DACs*
- 3: AEC – Active Electrical Cable *Digital re-timer based active cable assembly with longer lengths than DACs*



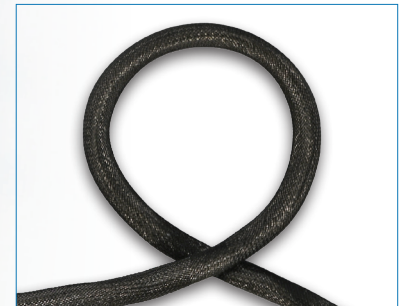
- 1. LSZH Compliant UL94 VW-1 Mesh Available for Global use
- 2. Ultra-Low Crosstalk for Enhanced Performance
- 3. Positive Retention Pull-Release Latch System
- 4. MSA Compliant Connectors



Half-Loaded Breakout Legs Available



Numbered Breakout Legs



Mesh Sleeve Provides Best-in-Class Cable Routing

STANDARDS COMPLIANCE	QSFP112	OSFP-RHS	SFP-DD	SFP112
CONNECTOR SPECIFIC	SFF-8661 SFF-8672 SFF-8679 QSFP112 MSA CMIS	OSFP MSA CMIS	SFP-DD MSA SFP-DD MIS	SFF-8071 SFF-8402 SFF-8419 SFF-8024 CMIS
ETHERNET	IEEE 802.3ck			
INFINIBAND	IEEE 802.3ck NDR	IEEE 802.3ck NDR	N/A	N/A

Applications

- Ethernet 400G-BASE CR4
- InfiniBand NDR 400G
- Top-of-Rack
- Rack-to-Rack
- Switch-to-Switch
- Switch-to-Server
- Network Interface Adapter
- Accelerator Cards
- Storage
- Routers
- Servers

PHYSICAL PROPERTIES – CONNECTOR

CONNECTOR TYPE	QSFP112	OSFP-RHS	OSFP-RHS	QSFP112	SFP-DD	SFP112
LANES UTILIZED	CR4	CR4	CR2	CR2	CR2	CR1
CONNECTOR SIDE(S)	B	B	B	B	B	B
CABLE ASSEMBLY CONFIGURATION	1:2	1:2	1:4	1:4	1:4	1:8
POWER CONSUMPTION PER END (Max)	DAC ETHERNET	0.1 W	0.1 W	0.1 W	0.1 W	0.1 W
	DAC INFINIBAND	0.1 W	0.1 W	0.1 W	0.1 W	
	ACC INFINIBAND	0.85 W	0.85 W	0.6 W	0.6 W	
	AEC ETHERNET	4 W	4 W	2.1 W	2.1 W	2.1 W
SUPPLY VOLTAGE	3.3VDC	3.3VDC	3.3VDC	3.3VDC	3.3VDC	3.3VDC
INSERTION FORCE (Max)	60N	55N	55N	60N	40N	18N
EXTRACTION FORCE (Max)	30N	45N	45N	30N	30N	12.5N
RETENTION FORCE (Max)	90N	125N	125N	90N	90N	90N
DURABILITY (Min)	250 cycles	50 cycles	50 cycles	250 cycles	50 cycles	250 cycles
OPERATING TEMPERATURE	0 to 70°C (32 to 158°F)					
STORAGE TEMPERATURE	-40 to 85°C (-40 to 185°F)					

PHYSICAL PROPERTIES – CABLE

JACKET TYPE	MESH/VW-1			LSZH/AWM		
JACKET MATERIAL	PET Plastic Mesh			LSZH		
FLAMMABILITY RATING	UL94 VW-1			UL94 V-0 (AWM)		
TWINAX PAIRS PER CABLE LEG	8	4		8	4	2
CABLE ASSEMBLY CONFIGURATION	1:1	1:2		1:1	1:2	1:4
CABLE CONFIGURATION	CR4/CR4	CR4/CR2		CR4/CR4	CR4/CR2	CR4/CR1
CABLE O.D.	30AWG	5.7 mm (0.22 in)	5.1 mm (0.20 in)	7.5 mm (0.30 in)	6.0 mm (0.24 in)	4.6 mm (0.18 in)
	28AWG	7.0 mm (0.28 in)	5.8 mm (0.23 in)	-	-	-
	26AWG	8.3 mm (0.33 in)	6.8 mm (0.27 in)	9.8 mm (0.39 in)	7.4 mm (0.29 in)	5.6 mm (0.22 in)
	25AWG	8.3 mm (0.33 in)	6.8 mm (0.27 in)	-	-	-
MINIMUM BEND RADIUS	2.2X O.D.			7X O.D.		
CONSTRUCTION	Twinaxial			Twinaxial		
SHIELD	Braid/Foil			Braid/Foil		
CONDUCTOR	Solid			Solid		
IMPEDANCE	100± 5 ohms			100± 5 ohms		
GREEN FEATURES	RoHS, Lead-Free and REACH			RoHS, Lead-Free and REACH		

MAX LENGTH	CABLE O.D.	DAC MAX LENGTH				ACC MAX LENGTH		AEC MAX LENGTH	
		MESH/VW-1		LSZH/AWM		MESH/VW-1	LSZH/AWM	MESH/VW-1	LSZH/AWM
		Ethernet	InfiniBand	Ethernet	InfiniBand	InfiniBand	InfiniBand	Ethernet	Ethernet
MAX LENGTH	30AWG	-	-	-	-	2 m	2 m	2 m	2 m
	28AWG	1 m	1 m	-	-	3 m	-	3 m	-
	26AWG	2 m	2 m	2 m	2 m	4 m	4 m	3.5 m	3.5 m
	25AWG		3 m			5 m		5 m	

Ordering Information

400G PAM4 QSFP112

(XXX) (XXX) (X) (XX.X) -8 (X) (X)

CONNECTOR TYPE	Side A	Side B	PROTOCOL	CABLE TYPE	LENGTH*	JACKET TYPE	JACKET COLOR
Q1Q	QSFP (CR4)	QSFP (CR4)	112 = 100G/Lane PAM4 Ethernet	P = DAC <i>Direct Attach Copper</i>	00.5 = 0.5 m	Z = Mesh/VW-1	B = Black W = White R = Red U = Blue S = Silver N = Orange
Q2Q	QSFP (CR4)	2QSFP (CR2)		E = AEC <i>Active Electrical Cable</i>	01.0 = 1.0 m		
Q1R	QSFP (CR4)	OSFP-RHS (CR4)			01.5 = 1.5 m		
QSD	QSFP (CR4)	2SFP-DD (CR2)			02.0 = 2.0 m		
Q2R	QSFP (CR4)	2OSFP-RHS (CR2)			02.5 = 2.5 m		
Q4S	QSFP (CR4)	4SFP (CR1)			03.0 = 3.0 m		
			-N = 100G/Lane NDR Infiniband	P = DAC <i>Direct Attach Copper</i>	03.5 = 3.5 m	L = LSZH/AWM	B = Black
				A = ACC <i>Active Copper Cable</i>	04.0 = 4.0 m		
					04.5 = 4.5 m		
					05.0 = 5.0 m		

*See Max Lengths Table for appropriate lengths per cable configuration.

Please contact our Technical Sales Group if you require connectivity or cable configurations that are not listed above, for example, a length or color not listed.
Please contact our Technical Sales Group if you require connectivity solutions specifically for NVIDIA or Mellanox active equipment to ensure proper product selection.
Siemon is a provider of InfiniBand™ compliant cabling solutions and is a member of the InfiniBand Trade Association (IBTA).

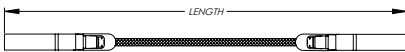
Part Number Examples:

Part Number	Description
Q1Q112P01.0-8ZB	DAC, 400G PAM4, CR4/CR4, QSFP112, 1m, Mesh/VW-1, Black
Q2Q-N-P03.0-8ZR	DAC, 400G NDR, CR4/CR2, QSFP112/2QSFP112, 3m, Mesh/VW-1, Red
Q2R-N-A05.0-8ZW	ACC, 400G NDR, CR4/CR2, QSFP112/4OSFP-RHS, 5m, Mesh/VW-1, White
Q4S112E03.5-8LB	AEC, 400G PAM4, CR4/CR1, QSFP112/4SFP112, 3.5m, LSZH/AWM, Black

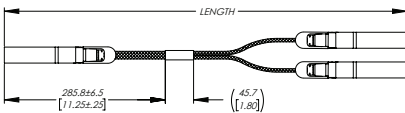
Notes:

OSFP-RHS is OSFP Riding Heat Sink (also called Flat Top).
SFP and SFP-DD are not supported by InfiniBand.
RS-FEC is always on.

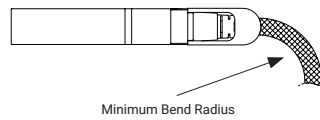
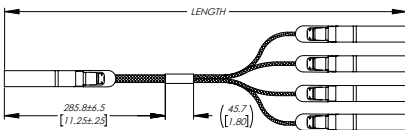
Straight Through



1:2 Breakout



1:4 Breakout



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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