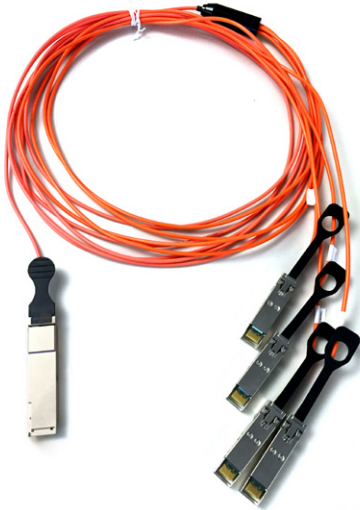
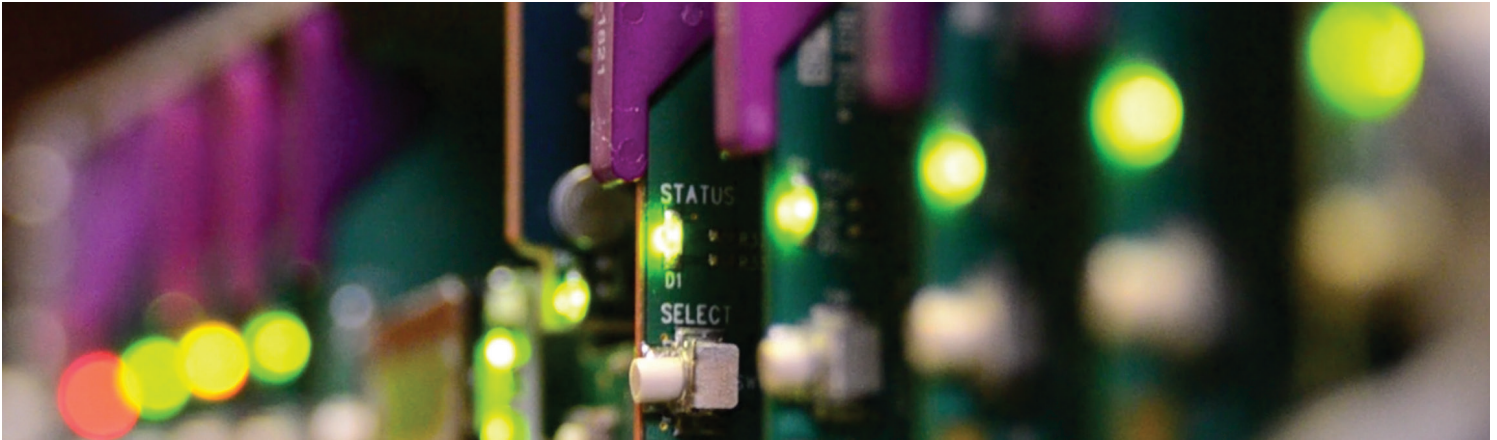


QSFP+ to 4 SFP+ Active Optical Cable

40 Gb/s Integrated Fan Out Active Optical Cable (Fan Out AOC)



The QSFP-SFP-CBL-5MM, QSFP to 4x SFP+ 40 Gb/s fan out active optical cable (fan out AOC) is an adapter cable which provides connectivity between device using QSFP+ port on one end and SFP+ ports on the other end.

Offering a lower cost solution than 1 QSFP+ transceivers with 4 SFP+ transceivers and an MPO to LC beak-out cable, the QSFP-SFP-CBL-5MM assembly from Grass Valley, a Belden Brand, transmits 4x10 Gb/s data on the QSFP+ side and 1x10 Gb/s data on the SFP+ side in duplex mode over a loose tube fiber cable with distance up to 5m (16 ft.).

The electrical interfaces use 20-contact edge type SFF-8431 compliant connectors (SFP+ side) and 38-contact edge type SFF-8436 compliant connector (QSFP+ side). It is MSA compliant, with low power consumption and a light weight.

KEY FEATURES

- Four independent bidirectional links, all operating at 10 Gb/s per direction
- Allows optical interoperability up to 5m (16 ft.) using an integrated Active Optical Cable assembly
- Multimode at 850 nm
- Hot pluggable
- Interoperable with other IEEE-compliant 40GBASE and 10GBASE interfaces
- RoHS-6 compliance

Applications

- 40G to 4 x 10G Ethernet interconnects

QSFP+ to 4SFP+ Active Optical Cable (Fan out AOC)

SPECIFICATIONS

QSFP-SFP-40G-AOC Quick Specifications

Part Number: QSFP-SFP-CBL-5MM

Form Factor: QSFP+ to 4 x SFP+

TX Optical Wavelength: 850 nm

Distance: 5m/16 ft.

Cable Type: MMF

Rate Category: 40GBASE and 10GBASE

Interface Type: AOC

Digital Optical Mon. (DOM): Yes

Connector Types: QSFP+ and SFP+

Power Consumption:

1.5W (the QSFP+ cartridge)

1.0W (each SFP+ cartridge)

For specifications parameters definition, please refer to IEEE Std 802.3-2012 or 2015, IEEE Standard for Ethernet, SECTION FOUR, Clause 52, SECTION SIX, Clause 86 and Annex 86A.

Absolute Maximum Ratings

Parameters	Symbols	Min	Max	Unit	Remarks
Storage temperature	T_s	-20	+85	deg.C	
Storage relative humidity	RH		85		
Supply voltage	V_{cc}	-0.3	+3.6	V	
ESD (HBM)	V_{ESD}	-1000	+1000	V	High speed interfaces
		-2000	+2000	V	Others
Transmitter single end input voltage	$V_{in\ p-p}$		1400	mV _{p-p}	

Recommended Operating Conditions

Parameters	Symbols	Min	Typ.	Max	Unit	Remarks
Operating case temperature	T_c	0		+70	deg.C	
Supply voltage	V_{cc}	3.13	3.3	3.47	V	
Supply current	I_{cc}	240	300	360	mA	
Supply current	I_{cc}	80	100	120	mA	Each SFP+ module
Power supply noise tolerance				200	mV _{p-p}	
Bit rate	BR		10.3125		Gb/s	
Rate tolerance		-100		+100	ppm	

Electrical Interfaces

Transmitter Input Specification

Parameters	Min	Typ.	Max	Unit	Remarks
Single ended input voltage	-0.3		4	V	
AC common mode input voltage tolerance			15	mV _{rms}	
TJ			0.28	UI	SFP+ terminals
DDJ	0.1			UI	
DDPWS	0.055			UI	
UJ	0.023			UI	
Eye mask coordinate: X1, X2, Y1, Y2		0.12, 0.33 95, 350		UI mV	
J2 jitter tolerance			0.17	UI	QSFP+ terminals
J9 jitter tolerance			0.29	UI	
DDPWS			0.07	UI	
Eye mask coordinate: X1, X2, Y1, Y2		0.11, 0.31 95, 350		UI mV	

Receiver Output Specification

Parameters	Min	Typ.	Max	Unit	Remarks
Single ended output voltage	-0.3		4	V	
AC common mode output voltage			7.5	mV _{rms}	
J2 jitter			0.42	UI	@BER=1e-12
J9 jitter			0.7	UI	
Output transition time (20% to 80%)	28			ps	
Eye mask coordinate: X1, X2, Y1, Y2		0.35, 0.5 150, 425		UI mV	SFP+ terminals
Eye mask coordinate: X1, X2, Y1, Y2		0.29, 0.5 150, 425		UI mV	QSFP+ terminal

Cable Specification

(Condition: Tc = 0 to 70° C)

Parameters	Value	Remarks
Type	OM2 Multimode Loose tube fiber	
Minimum Bend radius (mm)	30	
Cable diameter (mm)	3.0 ± 0.15	
Cable length (m/ft.)	5/16	
Fanout length (m)	1	

ORDERING

QSFP-SFP-CBL-5MM QSFP+ to 4 x SFP+ Fan Out Active Optical Cable (Fan out AOC), length = 5m (16 ft.)

