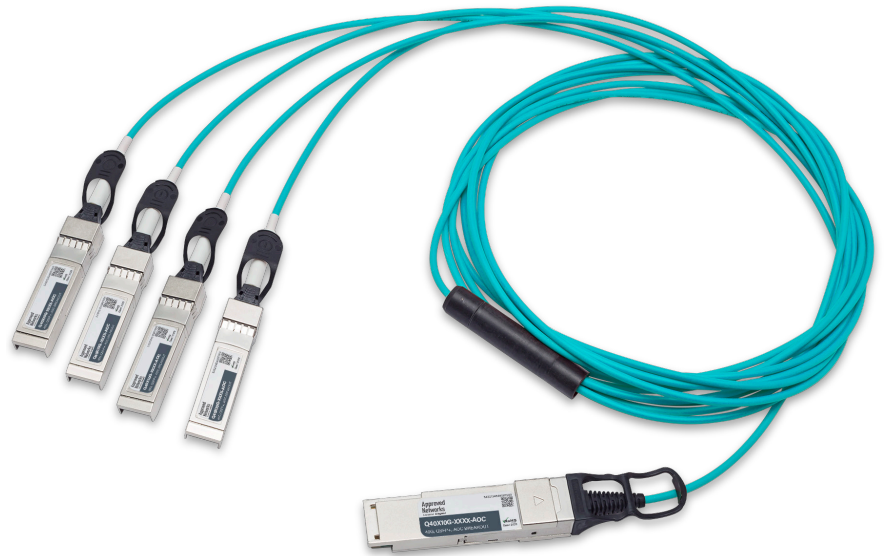


## Features

- Electrical interface compliant to QSFP+ connector
- (SFF-8436) and SFP+ connectors (SFF-8431)
- Hot Pluggable
- 850nm VCSEL transmitter, PIN photo-detector receiver
- Up to 100m on OM3 MMF
- Operating case temperature: 0 to 70 °C
- All-metal housing for superior EMI performance
- RoHS compliant (lead free)



- Fibre Channel Applications
- InfiniBand QDR, SDR, DDR
- High-performance computing clusters
- Servers, switches, storage and host card adapters

## Applications

- 40 Gigabit Ethernet

### 1. QSFP Interface Specifications

Parameter	Description
Module Form Factor	QSFP+ (Supports SFF8436/SFF8472)
Channel Data Rate	Rate 40Gbps
BER	<10 <sup>-12</sup>
Operating Case Temperature	0 to + 70°C
Storage Temperature	-20 to + 85°C
Supply Voltage	3.3V
Supply current	180mA per end typical
Management Interface	Serial I2C (Supports SFF8472)

## 2. Optical Characteristics

The following optical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Symbol	Min	Typ	Max	Unit	Notes
<b>Transmitter</b>						
Centre Wavelength	$\lambda_c$	840	850	860	nm	-
RMS spectral width	$\Delta\lambda$	-	-	0.65	nm	-
Average launch power, each lane	P <sub>out</sub>	-7.5	-	2.5	dBm	-
Difference in launch power between any two lanes (OMA)				4	dB	-
Extinction Ratio	ER	3	-	-	dB	-
Peak power, each lane				4	dBm	-
Transmitter and dispersion penalty (TDP), each lane	TDP			3.5	dB	-
Average launch power of OFF transmitter, each lane				-30	dB	-
Eye Mask coordinates: X1, X2, X3, Y1, Y2, Y3	SPECIFICATION VALUES 0.23, 0.34, 0.43, 0.27, 0.35, 0.4				Hit Ratio = 5x10 <sup>-5</sup>	
<b>Receiver</b>						
Centre Wavelength	$\lambda_c$	840	850	860	nm	-
Stressed receiver sensitivity in OMA, each lane				-5.4	dBm	1
Maximum Average power at receiver input, each lane				2.4	dBm	-
Receiver Reflectance				-12	dB	-
Peak power, each lane				4	dBm	-
LOS Assert		-30			dBm	-
LOS De-Assert – OMA				-7.5	dBm	-
LOS Hysteresis		0.5			dB	-

### Notes:

1. Measured with conformance test signal at TP3 for BER = 10e-12

### 3. SFP+ Interface Specifications

Parameter	Description
Module Form Factor	SFP+ (Supports SFF8431/SFF8432/SFF8472)
Channel Data Rate	Rate 1 to 10.3125Gbps
BER	<10 <sup>-12</sup>
Operating Case Temperature	0 to + 70°C
Storage Temperature	-20 to + 85°C
Supply Voltage	3.3V
Supply current	455mA maximum
Management Interface Serial	I <sup>2</sup> C (Supports SFF8472)

### 4. Optical Characteristics

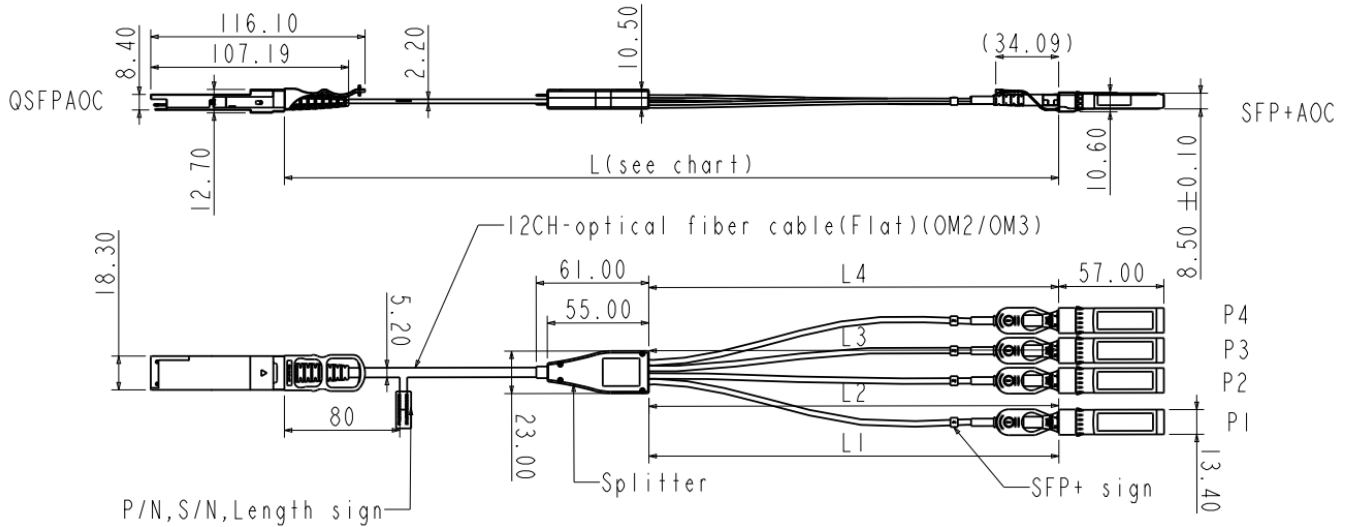
The following optical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
<b>Transmitter</b>						
Center Wavelength	$\lambda_t$	840	850	860	nm	
RMS spectral width	$P_m$	-	-	nm		
Average Optical Power	$P_{avg}$	-6.5	-	-1	dBm	2
Extinction Ratio	ER	3.5	-	-	dB	3
Transmitter Dispersion Penalty	TDP	-	-	3.9	dB	
Relative Intensity Noise	$R_{in}$	-	-	-128	dB/Hz	1
Optical Return Loss Tolerance		-	-	12	dB	
<b>Receiver</b>						
Center Wavelength	$\lambda_r$	840	850	860	nm	
Receiver Sensitivity $P_{sens}$	-	-	-11.1	dBm	4	
Stressed Sensitivity in OMA	-	-	-7.5	dBm	4	
Los function	$Los$	-30	-	12	dBm	
Overload	$P_{in}$	-	-	-1.0	dBm	4
Receiver Reflectance	-	-	-12	dB		

**Notes:**

- 12dB reflection
- The optical power is launched into MMF
- Measured with a PRBS 2<sup>31</sup>-1 test pattern @10.3125Gbps
- Measured with a PRBS 2<sup>31</sup>-1 test pattern @10.3125Gbps, BER ≤ 10<sup>-12</sup>.

## 5. Mechanical Diagram



**Note:** External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.

## 6. Ordering Information

Our 40GBase QSFP+ Multi-vendor active optical cables come in varying lengths and OEM connection options. To build the perfect fit for you, please view how to create your part number below.

Example:

For a **Brocade** to **Cisco** AOC measuring the length of **1m**, the part number would be as follows:  
Q40X10G-**BRCS**-AOC-**1M**.

Please note that OEM abbreviations should be listed in alphabetical order.

Sample	OEM	OEM Abbreviations	Length <L>
<b>Q40X10G-XXXX-AOC-&lt;L&gt;M</b>	Arista	AN	1m
	Brocade	BR	3m
	Cisco	CS	5m
	Dell	DF	7m
	Intel	IN	10m
	Juniper	JN	12m
	Mellanox	MX	15m
	MSA	MS	20m
	-	-	25m

## 7. Contact Information

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