AICPLIGHT

800G Twin-port 2x400Gb/s OSFP to 2x400Gb/s QSFP112 Passive Copper Spliter Cable

Features

- 800Gb/s to two 400Gb/s data rates

- Based on 100G-PAM4 modulation

- up to 3 meter lengths

- OSFP and QSFP112 ends each consume 0.1Watts

- Operating case temperature 0-70°C

- Hot pluggable

- RoHS compliant

- LF (Lead Free) HF (Halogen Free) PCB

- OSFP head end is CMIS based

- QSFP112 ends are SFF-8636 based

Applications

- 2x400G OSFP cage switch-to-two 400Gb/s QSFP112 adapters

Description

O2Q112-800G-DAC is an 800Gb/s Twin-port OSFP (Octal Small Form-factor Pluggable) to 2x 400Gb/s QSFP112 (Quad Small Form-factor Pluggable 112G) passive Direct Attach Copper (DAC) dual breakout (aka splitter) cable for 400Gb/s End-to-End Ethernet solutions.

The 8-channel Twin port OSFP end uses a finned top form-factor for use in OSFP cages. The two 400G ends support 4-channels of 100G-PAM4 (400G) and use a flat top QSFP112 for use in adapters using riding heat sinks on the connector cage.

DAC cables are the lowest-cost, lowest-latency, near zero power consuming high-speed links available due to their simplicity of design and minimal components. The ¨passive¨ term refers to the copper cable containing no electronics in the data path. Each end includes an EEPROM which provides product identification and characteristics to the host system.

Absolute Maximum Specifications

Absolute maximum ratings are those beyond which damage to the device may occur.

Between the operational specifications and absolute maximum ratings, prolonged operation is not intended and permanent device degradation may occur.

Table1-Absolute Maximum Specifications

Parameter	Min.	Typical	Max.	Unit	Note
Supply voltage	-0.3		3.6	V	
Data Input Voltage	-0.3		3.6	V	
Control Input Voltage	-0.3		3.6	V	

Environmental Specifications

This table shows the environmental specifications for the product.

Table2-Environmental Specifications

Parameter	Min	Typical	Max.	Units
Storage Temperature	-40		85	°C

Operational Specifications

Table3-Optical Specifications

Parameter	Min.	Typical	Max.	Unit	Note
Supply Voltage (Vcc)	3.135	3.3	3.465	V	
Power Consumption	--	--	0.1	W	
Operating Case Temperature	0		70	°C	
Operating Relative Humidity	5		85	%	

Electrical Specifications

Table4-Electrical Specifications					
Parameter	Min.	Typical	Max.	Unit	Note
Characteristic impedance	90	100	110	Ω	
Time propagation delay	–	–	4.5	ns/m	

Mechanical Performance Requirements

Table5-Mechanical Performance Requirements		
Parameter	Value	Units
Diameter	30AWG: 7.2 ±0.03 26AWG: 8.9 ±0.03	mm
Length tolerance	length ＜ 2 m, ±25 length ↗ 2 m, ±50	mm

Minimum Bend Radius

Table6-Minimum Bend Radius		
OPN	Length (m)	AWG (mm)
O2Q112-800G-CU1	1.0	30AWG, 2x8pairs
O2Q112-800G-CUB	1.5	30AWG, 2x8pairs
O2Q112-800G-CU2	2.0	26AWG, 2x8pairs
O2Q112-800G-CUC	2.5	26AWG, 2x8pairs
O2Q112-800G-CU3	3	26AWG, 2x8pairs

Note：

The minimum assembly bending radius (close to the connector) is 10x the cable's outer diameter. The repeated bend (far from the connector) is also 10x the cable's outer diameter. The single bend (far from the connector) is 5x the cable's outer diameter. 'Combined' end is the 'head' where the cables join together, inserted into the switch. 'Single end' is the 'tail' which plugs into the HCA/NIC in a server.

**L = Assembly Space. Minimum value depends on the backshell (connector housing) dimensions
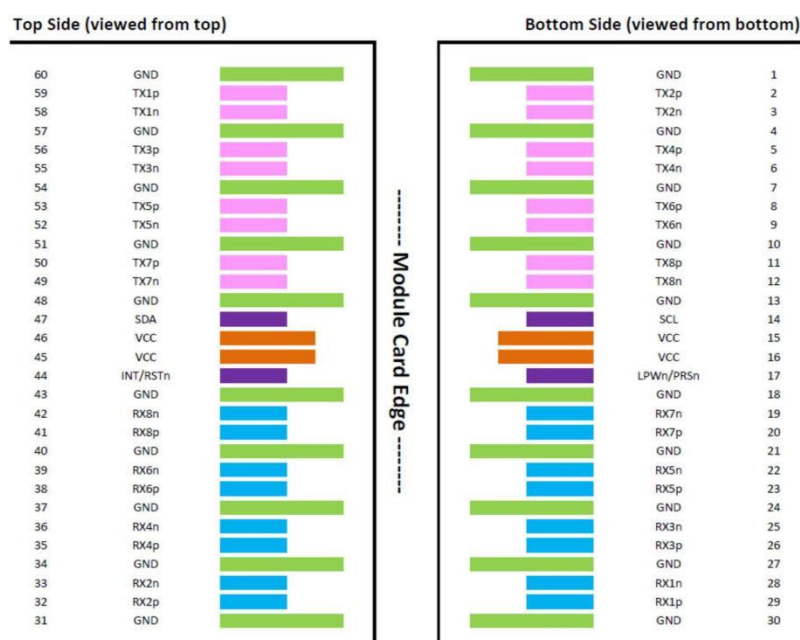
= the space for the cable assembly behind the rack door.

OSFP Pin Description

Table7-OSFP Pin Description					
Pin	Symbol	Description	Pin	Symbol	Description
1	GND	Ground	31	GND	Ground
2	Tx2p	Transmitter Non-Inverted Data Input	32	Rx2p	Receiver Non-Inverted Data Output
3	Tx2n	Transmitter Inverted Data Input	33	Rx2n	Receiver Inverted Data Output
4	GND	Ground	34	GND	Grounds
5	Tx4p	Transmitter Non-Inverted Data Input	35	Rx4p	Receiver Non-Inverted Data Output
6	Tx4n	Transmitter Inverted Data Input	36	Rx4n	Receiver Inverted Data Output
7	GND	Ground	37	GND	Ground
8	Tx6p	Transmitter Non-Inverted Data Input	38	Rx6p	Receiver Non-Inverted Data Output
9	Tx6n	Transmitter Inverted Data Input	39	Rx6n	Receiver Inverted Data Output
10	GND	Ground	40	GND	Ground
11	Tx8p	Transmitter Non- Inverted Data input	41	Rx8p	Receiver Non-Inverted Data Output
12	Tx8n	Transmitter Inverted Data Input	42	Rx8n	Receiver Inverted Data Output
13	GND	Ground	43	GND	Ground
14	SCL	2-wire serial interface clock	44	INT / RSTn	Module Interrupt / Module Reset
15	VCC	+3.3V Power	45	VCC	+3.3V Power
16	VCC	+3.3V Power	46	VCC	+3.3V Power
17	LPWn / PRSn	Low-Power Mode / Module Present	47	SDA	2-wire Serial interface data
18	GND	Ground	48	GND	Ground
19	Rx7n	Receiver Inverted Data Output	49	Tx7n	Transmitter Inverted Data Input
20	Rx7p	Receiver Non-Inverted Data Output	50	Tx7p	Transmitter Non-Inverted Data Input
21	GND	Ground	51	GND	Ground
22	Rx5n	Receiver Inverted Data Output	52	Tx5n	Transmitter Inverted Data Input
23	Rx5p	Receiver Non-Inverted Data Output	53	Tx5p	Transmitter Non-Inverted Data Input
24	GND	Ground	54	GND	Ground
25	Rx3n	Receiver Inverted Data Output	55	Tx3n	Transmitter Inverted Data Input
26	Rx3p	Receiver Non-Inverted Data Output	56	Tx3p	Transmitter Non-Inverted Data Input
27	GND	Ground	57	GND	Ground
28	Rx1n	Receiver Inverted Data Output	58	Tx1n	Transmitter Inverted Data Input
29	Rx1p	Receiver Non-Inverted Data Output	59	Tx1p	Transmitter Non-Inverted Data Input
30	GND	Ground	60	GND	Ground

OSFP Module Pad Layout

Top Side (viewed from top) | Bottom Side (viewed from bottom)

Top Side		Bottom Side	
60	GND	GND	1
59	TX1p	TX2p	2
58	TX1n	TX2n	3
57	GND	GND	4
56	TX3p	TX4p	5
55	TX3n	TX4n	6
54	GND	GND	7
53	TX5p	TX6p	8
52	TX5n	TX6n	9
51	GND	GND	10
50	TX7p	TX8p	11
49	TX7n	TX8n	12
48	GND	GND	13
47	SDA	SCL	14
46	VCC	VCC	15
45	VCC	VCC	16
44	INT/RSTn	LPWn/PRSn	17
43	GND	GND	18
42	RX8n	RX7n	19
41	RX8p	RX7p	20
40	GND	GND	21
39	RX6n	RX5n	22
38	RX6p	RX5p	23
37	GND	GND	24
36	RX4n	RX3n	25
35	RX4p	RX3p	26
34	GND	GND	27
33	RX2n	RX1n	28
32	RX2p	RX1p	29
31	GND	GND	30

Module Card Edge

QSFP112 Pin Description

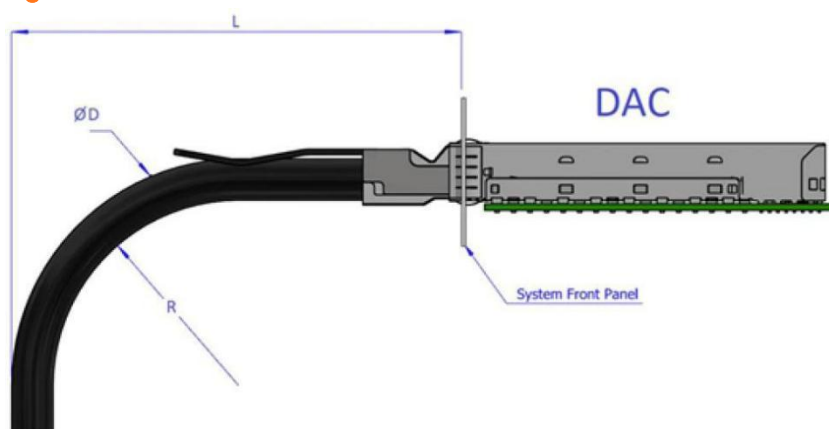| Table8-QSFP112 Pin Description						
Pin	Symbol	Description	Pin	Symbol	Description	
1	Ground	Ground	20	Ground	Ground	
2	Tx2n	Connected to Port 1 lane Rx2 Inverted Data	21	Rx2n	Connected to Port 1 lane Tx2 Inverted Data	
3	Tx2p	Connected to Port 1 lane Rx2 Non-Inverted Data	22	Rx2p	Connected to Port 1 lane Tx2 Non-Inverted Data	
4	Ground	Ground	23	Ground	Grounds	
5	Tx4n	Connected to Port 2 lane Rx2 Non-Inverted Data	24	Rx4n	Connected to Port 2 lane Tx2 Inverted Data	
6	Tx4p	Connected to Port 2 lane Rx2 Inverted Data	25	Rx4p	Connected to Port 2 lane Tx2 Non-Inverted Data	
7	Ground	Ground	26	Ground	Ground	
8	Mod-SelL	Cable Select	27	ModPrsL	Cable Present	
9	ResetL	Cable Reset	28	IntL	Interrupt	
10	Vcc Rx	+3.3V Power supply receiver	29	Vcc Tx	+3.3V Power supply transmitter	
11	SCL	2-wire serial interface clock	30	Vcc1	+3.3V Power Supply	
12	SDA	2-wire serial interface data	31	LPMode	Low Power Mode	
13	Ground	Ground	32	Ground	Ground	
14	Rx3p	Connected to Port 2 lane Tx1 Non-Inverted Data	33	Tx3p	Connected to Port 2 lane Rx1 Non-Inverted Data	

| 15 | Rx3n | Connected to Port 2 lane Tx1 Inverted Data | 34 | Tx3n | Connected to Port 2 lane Rx1 Inverted Data |

16	Ground	Ground	35	Ground	Ground
17	Rx1p	Connected to Port 1 lane Tx1 Non-Inverted Data	36	Tx1p	Connected to Port 1 lane Rx1 Non-Inverted Data
18	Rx1n	Connected to Port 1 lane Tx1 Inverted Data	37	Tx1n	Connected to Port 1 lane Rx1 Inverted Data
19	Ground	Ground	38	Ground	Ground

QSFP112 Module Pad Layout

Top Side Viewed From Top

Bottom Side Viewed From Bottom

Assembly Bending Radius

AI CPLIGHT
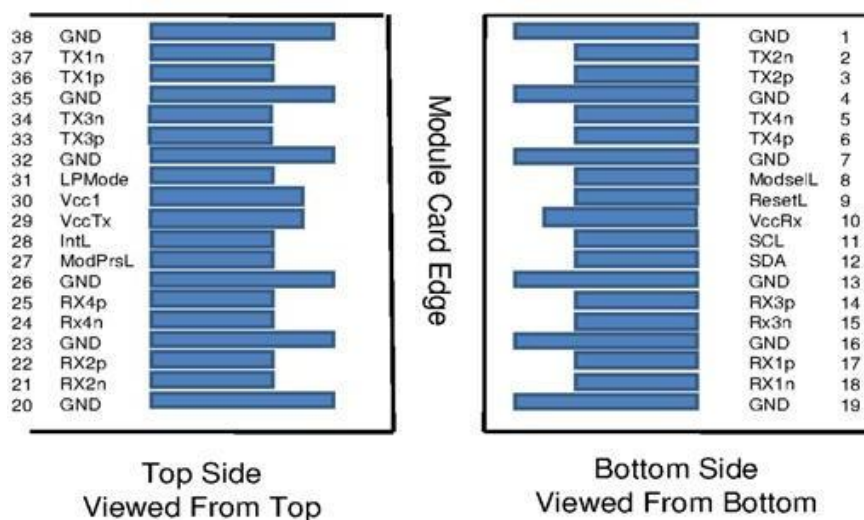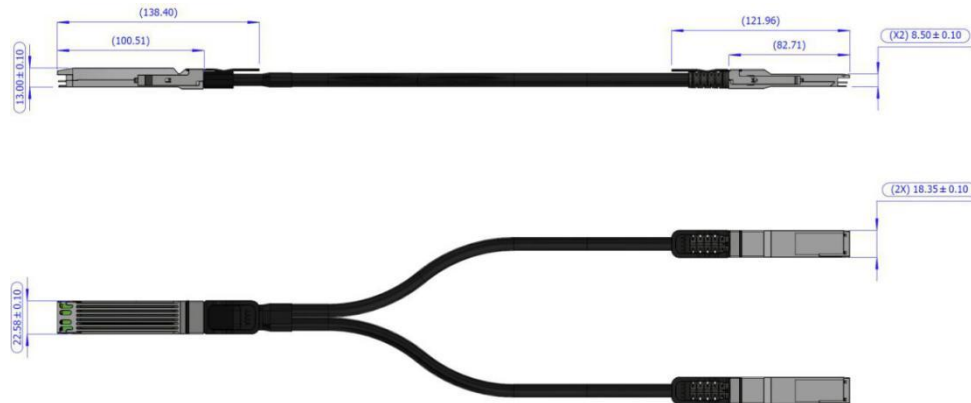
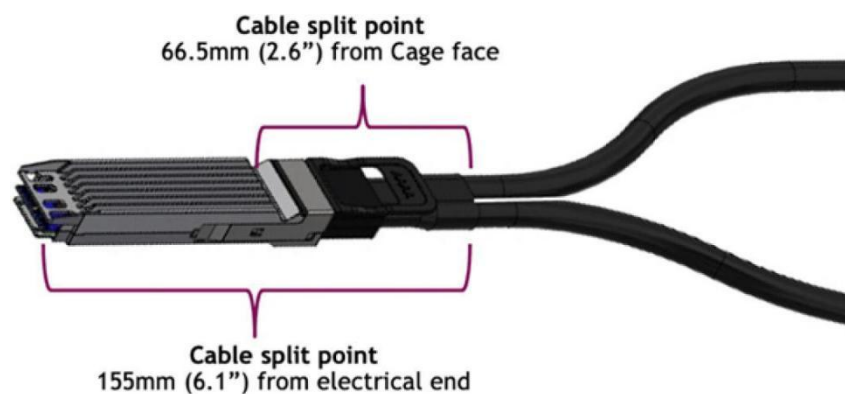## Cable Dimensions

OSFP Finned Head Dimensions
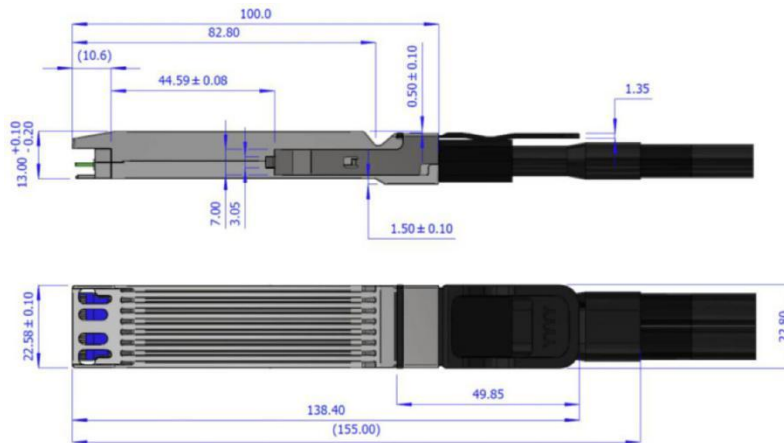
QSFP112 Flat Ends Dimensions
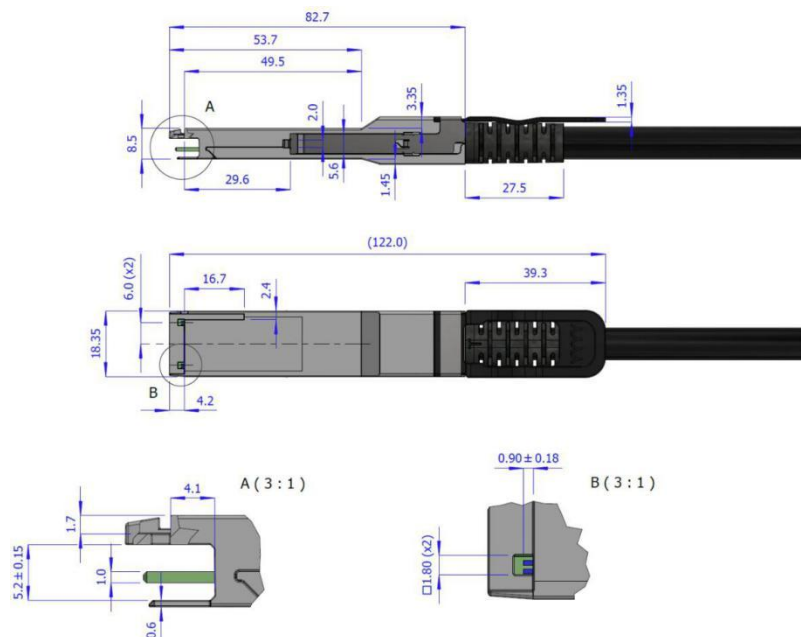
Cable Length Definition
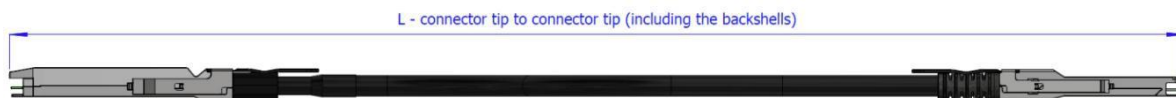
Cable Splitting Point

Ordering Information

Table9-Ordering Information	
PN	Description
O2Q112-800G-CU1	passive copper splitter cable, 800Gb/s to 2x 400Gb/s, OSFP to 2x QSFP112, 1m
O2Q112-800G-CUB	passive copper splitter cable, 800Gb/s to 2x 400Gb/s, OSFP to 2x QSFP112, 1.5m
O2Q112-800G-CU2	passive copper splitter cable, 800Gb/s to 2x 400Gb/s, OSFP to 2x QSFP112, 2m
O2Q112-800G-CUC	passive copper splitter cable, 800Gb/s to 2x 400Gb/s, OSFP to 2x QSFP112, 2.5m
O2Q112-800G-CU3	passive copper splitter cable, 800Gb/s to 2x 400Gb/s, OSFP to 2x QSFP112, 3m

Notice

This document is provided for information purposes only and shall not be regarded as a warranty of a certain functionality, condition, or quality of a product. Neither AICPLIGHT make any representations or warranties, expressed or implied, as to the accuracy or completeness of the information contained in this document and assumes no responsibility for any errors contained herein. AICPLIGHT shall have no liability for the consequences or use of such information or for any infringement of patents or other rights of third parties that may result from its use. This document is not a commitment to develop, release, or deliver any material (defined below), code, or functionality.

AICPLIGHT reserves the right to make corrections, modifications, enhancements, improvements, and any other changes to this document, at any time without notice. Customer should obtain the latest relevant information before placing orders and should verify that such information is current and complete.

AICPLIGHT makes no representation or warranty that products based on this document will be suitable for any specified use. Testing of all parameters of each product is not necessarily performed by AICPLIGHT. It is customer's sole responsibility to evaluate and determine the applicability of any information contained in this document, ensure the product is suitable and fit for the application planned by customer, and perform the necessary testing for the application in order to avoid a default of the application or the product.

AICPLIGHT products are sold subject to the AICPLIGHT standard terms and conditions of sale supplied at the time of order acknowledgement, unless otherwise agreed in an individual sales agreement signed by authorized representatives of AICPLIGHT and customer ("Terms of Sale"). AICPLIGHT hereby expressly objects to applying any customer general terms and conditions with regards to the purchase of the AICPLIGHT product referenced in this document. No contractual obligations are formed either directly or indirectly by this document.