

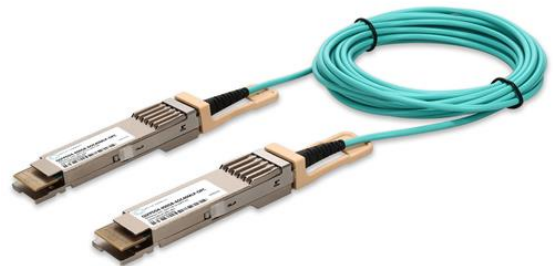


### **QSFPDD4-400GB-AOC40MLP-OPC**

MSA and TAA 400GBase-AOC QSFP-DD to QSFP-DD Low Power Active Optical Cable (850nm, MMF, 40m)

#### **Features**

- QSFP-DD MSA HW Rev. 5.0 compliant
- CMIS 4.0 compliant
- 8x26.56GBaud optical links with integrated CDR
- OM3 multi-mode fiber
- CML compatible electrical I/O
- PAM4 & NRZ compatible
- OFNP jacket
- Operating Temperature 0 to 70 Celsius
- Hot pluggable
- RoHS compliant and lead-free



#### **Applications:**

- 400GBase Ethernet

#### **Product Description**

This is an MSA compliant 400GBase-AOC QSFP28 to QSFP28 active optical cable that operates over active fiber with a maximum reach of 40.0m (131.2ft). At a wavelength of 850nm, it has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. This active optical cable is TAA (Trade Agreements Act) compliant, and is built to comply with MSA (Multi-Source Agreement) standards. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

OptioConnect's transceivers are RoHS compliant and lead-free.

## Absolute Maximum Ratings

| Parameter                     | Symbol            | Min. | Typ.  | Max. | Unit  | Notes |
|-------------------------------|-------------------|------|-------|------|-------|-------|
| Storage Ambient Temperature   | T <sub>stg</sub>  | -40  |       | 85   | °C    |       |
| Operating Case Temperature    | T <sub>c</sub>    | 0    | 25    | 70   | °C    | 1     |
| Module Supply Voltage         | V <sub>cc</sub>   | 3.14 | 3.3   | 3.46 | V     |       |
| Module Supply Voltage         | V <sub>cc</sub>   | -0.5 |       | 3.6  | V     |       |
| Single Module Supply Current  | I <sub>IN</sub>   |      | 2100  |      | mA    |       |
| Relative Humidity – Storage   | RH <sub>stg</sub> | 0    |       | 95   | %     | 2     |
| Relative Humidity – Operating | RH <sub>op</sub>  | 0    |       | 85   | %     | 2     |
| Signaling Speed Per Channel   | S                 |      | 26.56 |      | GBaud |       |

### Notes:

1. Commercial temperature range.
2. RH is a non-condensing condition.
3. Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the conditions of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.

## Cable Specifications

| Parameter           | Value      | Unit |
|---------------------|------------|------|
| Cable Diameter      | 3.0 ± 0.15 | mm   |
| Minimum Bend Radius | 30         | mm   |

## Electrical Characteristics

| Parameter                             | Symbol           | Min. | Typ. | Max.               | Unit | Notes |
|---------------------------------------|------------------|------|------|--------------------|------|-------|
| Transmitter                           |                  |      |      |                    |      |       |
| Tx_Data Differential Input Voltage    | V <sub>IN</sub>  | 400  |      | 900                | mV   |       |
| Tx_Data Differential Input Impedance  | Z <sub>IN</sub>  |      | 100  |                    | Ω    |       |
| Receiver                              |                  |      |      |                    |      |       |
| Rx_Data Differential Output Voltage   | V <sub>OUT</sub> |      |      | 900                | mV   |       |
| Rx_Data Differential Output Impedance | Z <sub>OUT</sub> | 90   | 100  | 110                | Ω    |       |
| Link BER                              | BER              |      |      | 2.4E <sup>-4</sup> |      | 1     |

### Notes:

1. Better than 2.4E<sup>-4</sup> @26.56GBaud PRBS31.

## Pin Descriptions

| Pin | Symbol    | Name/Description                           |
|-----|-----------|--------------------------------------------|
| 1   | GND       | Module Ground.                             |
| 2   | Tx2-      | Transmitter Inverted Data Input.           |
| 3   | Tx2+      | Transmitter Non-Inverted Data Input.       |
| 4   | GND       | Module Ground.                             |
| 5   | Tx4-      | Transmitter Inverted Data Input.           |
| 6   | Tx4+      | Transmitter Non-Inverted Data Input.       |
| 7   | GND       | Module Ground.                             |
| 8   | ModSelL   | Module Select.                             |
| 9   | ResetL    | Module Reset.                              |
| 10  | VccRx     | +3.3V Receiver DC Power Supply.            |
| 11  | SCL       | I <sup>2</sup> C Serial Clock.             |
| 12  | SDA       | I <sup>2</sup> C Serial Data.              |
| 13  | GND       | Module Ground.                             |
| 14  | Rx3+      | Receiver Non-Inverted Differential Output. |
| 15  | Rx3-      | Receiver Inverted Differential Output.     |
| 16  | GND       | Module Ground.                             |
| 17  | Rx1+      | Receiver Non-Inverted Differential Output. |
| 18  | Rx1-      | Receiver Inverted Differential Output.     |
| 19  | GND       | Module Ground.                             |
| 20  | GND       | Module Ground.                             |
| 21  | Rx2-      | Receiver Inverted Differential Output.     |
| 22  | Rx2+      | Receiver Non-Inverted Differential Output. |
| 23  | GND       | Module Ground.                             |
| 24  | Rx4-      | Receiver Inverted Differential Output.     |
| 25  | Rx4+      | Receiver Non-Inverted Differential Output. |
| 26  | GND       | Module Ground.                             |
| 27  | ModPrsL   | Module Present.                            |
| 28  | IntL      | Interrupt.                                 |
| 29  | VccTx     | +3.3V Transmitter DC Power Supply.         |
| 30  | Vcc1      | +3.3V DC Power Supply.                     |
| 31  | Init Mode | Initialization Mode.                       |
| 32  | GND       | Module Ground.                             |
| 33  | Tx3+      | Transmitter Non-Inverted Data Input.       |
| 34  | Tx3-      | Transmitter Inverted Data Input.           |

|    |           |                                            |
|----|-----------|--------------------------------------------|
| 35 | GND       | Module Ground.                             |
| 36 | Tx1+      | Transmitter Non-Inverted Data Input.       |
| 37 | Tx1-      | Transmitter Inverted Data Input.           |
| 38 | GND       | Module Ground.                             |
| 39 | GND       | Module Ground.                             |
| 40 | Tx6-      | Transmitter Inverted Data Input.           |
| 41 | Tx6+      | Transmitter Non-Inverted Data Input.       |
| 42 | GND       | Module Ground.                             |
| 43 | Tx8-      | Transmitter Inverted Data Input.           |
| 44 | Tx8+      | Transmitter Non-Inverted Data Input.       |
| 45 | GND       | Module Ground.                             |
| 46 | Reserved. | Not Connected.                             |
| 47 | NC        | Not Connected.                             |
| 48 | VccRx1    | +3.3V DC Power Supply.                     |
| 49 | NC        | Not Connected.                             |
| 50 | NC        | Not Connected.                             |
| 51 | GND       | Module Ground.                             |
| 52 | Rx7+      | Receiver Non-Inverted Differential Output. |
| 53 | Rx7-      | Receiver Inverted Differential Output.     |
| 54 | GND       | Module Ground.                             |
| 55 | Rx5+      | Receiver Non-Inverted Differential Output. |
| 56 | Rx5-      | Receiver Inverted Differential Output.     |
| 57 | GND       | Module Ground.                             |
| 58 | GND       | Module Ground.                             |
| 59 | Rx6-      | Receiver Inverted Differential Output.     |
| 60 | Rx6+      | Receiver Non-Inverted Differential Output. |
| 61 | GND       | Module Ground.                             |
| 62 | Rx8-      | Receiver Inverted Differential Output.     |
| 63 | Rx8+      | Receiver Non-Inverted Differential Output. |
| 64 | GND       | Module Ground.                             |
| 65 | NC        | Not Connected.                             |
| 66 | Reserved. | Not Connected.                             |
| 67 | VccTx1    | +3.3V DC Power Supply.                     |
| 68 | Vcc2      | +3.3V DC Power Supply.                     |
| 69 | Reserved  | Not Connected.                             |
| 70 | GND       | Module Ground.                             |

|    |      |                                      |
|----|------|--------------------------------------|
| 71 | Tx7+ | Transmitter Non-Inverted Data Input. |
| 72 | Tx7- | Transmitter Inverted Data Input.     |
| 73 | GND  | Module Ground.                       |
| 74 | Tx5+ | Transmitter Non-Inverted Data Input. |
| 75 | Tx5- | Transmitter Inverted Data Input.     |
| 76 | GND  | Module Ground.                       |

# Electrical Pin-Out Details



# Block Diagram



Electrical Interface



## Mechanical Specifications



### Notes:

1. Tolerance  $\pm 0.1$ mm.
2. Others according with QSFP-DD MSA or customer specifications.
3. Light Port according with fiber connector specifications.
4. For cable lengths greater than 5m, the cable length tolerance is  $+4\%/-0\%$ .

## **OptioConnect**

### **Innovation for the Future of High-Speed Networking**

#### **Who We Are**

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

#### **What We Do**

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

#### **Smarter Networks by Design**

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Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

#### **Our Mission**

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

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Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

[www.optioconnect.com](http://www.optioconnect.com) | [info@optioconnect.com](mailto:info@optioconnect.com)

