

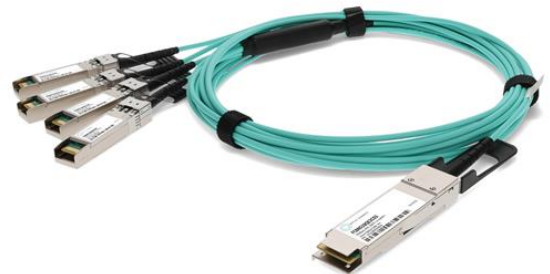


FCBN510QE2C03

Finisar® FCBN510QE2C03 Compatible TAA Compliant 40GBase-AOC QSFP+ to 4xSFP+ Direct Attach Cable (850nm, MMF, 3m)

Features

- Compliant to Standard SFF-8436 for QSFP+ and Standard SFF-8431 for SFP+
- High-Speed/High-Density: Supports up to 4x100Gbps Bi-Directional Operation
- Reliable VCSEL and PIN Photonic Devices
- I2C Standard Management Interface
- Excellent High-Speed Signal Integrity
- Operating Case Temperature: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



Applications:

- 10G/40G Ethernet
- Proprietary High-Speed/High-Density Data
- High Performance Computing, Server and Data Storage

Product Description

This is a Finisar® FCBN510QE2C03 Compatible 40GBase-AOC QSFP+ to 4xSFP+ active optical cable that operates over active fiber with a maximum reach of 3m. It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. We stand behind the quality of our products and proudly offer a limited lifetime warranty. This cable is TAA (Trade Agreements Act) compliant and is built to comply with MSA (Multi-Source Agreement) standards.

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

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S.-made or designated country end products."



Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|------------------------|--------|------|------|------|------|-------|
| Storage Temperature | Tstg | -40 | | 85 | °C | |
| Operating Temperature | Tc | 0 | 25 | 70 | °C | |
| Relative Humidity | RH | 5 | | 85 | | |
| Maximum Supply Voltage | Vcc | 0 | | 3.6 | V | |

Electrical Specifications

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|-------------------------|-------|------|--------|------|-------|
| Power Supply Voltage | Vcc | 3.135 | 3.3 | 3.465 | V | |
| Data Rate per Channel | | | | 4*10.3 | Gbps | |
| Low Speed Output: Transmitter Fault (Tx_Fault)/Loss of Signal (LOS) | V\ H | 2.0 | | Vcc | V | 1 |
| | V\ L | 0 | | 0.8 | V | 1 |
| Low Speed Input: Transmitter Disable (Tx_Disable), M\)_D- 71, M\)_D- 72 | V $\overline{\text{O}}$ | 2.0 | | Vcc | V | 2 |
| | V O | 0 | | 0.8 | V | 2 |
| Clock Rate - I2C | f | | | 400 | kHz | 3 |
| Module Turn On Time | | | | 2000 | ms | 4 |

Notes:

1. For all control input pins: LPMode, Reset, and ModSelL.
2. For all status output pins: ModPrsL and IntL.
3. For the management interface.
4. Time from module power on/insertion/ResetL de-assert to module fully functional.

Optical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---------|------|--------|------|------|-------|
| Transmitter | | | | | | |
| Reference Differential Input Impedance | Zd | | 100 | | Ω | 1 |
| Optical Return Loss Tolerance | | | | 12 | dB | |
| Differential Data Input Swing | VIN,pp | 180 | | 1200 | mV | |
| Differential Data Input Threshold | | | 50 | | mV | 2 |
| Receiver | | | | | | |
| Reference Differential Input Impedance | Zd | | 100 | | Ω | 1 |
| Differential Data Output Swing | VOUT,pp | 0 | | 800 | mV | |
| Pre-Emphasis Pulse Amplitude Percentage | | 0 | | | % | 3 |
| | | 10 | | | % | |
| | | 20 | | | % | |
| | | 40 | | | % | |
| Pre-Emphasis Pulse Duration | | | 30 | | ps | |
| Signal Speed | | | 4*10.3 | | Gbps | |
| Differential Data Output Swing | | 150 | | 850 | mV | |
| Differential Data Output Swing When Squelched | | | | 50 | mV | |
| Rise/Fall Time | | 24 | | | ps | |

Notes:

1. AC coupled inside the AOC module.
2. Input swing to trigger Tx_Squelch.
3. User-selectable. Percentage is the ratio of pre-emphasis amplitude to output swing.

Pin Descriptions (QSFP+ End)

| Pin | Symbol | Name/Description | Notes |
|-----|---------|---|-------|
| 1 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 2 | Tx2- | Transmitter Inverted Data Input. | |
| 3 | Tx2+ | Transmitter Non-Inverted Data Input. | |
| 4 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 5 | Tx4- | Transmitter Inverted Data Input. | |
| 6 | Tx4+ | Transmitter Non-Inverted Data Input. | |
| 7 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 8 | ModSelL | Module Select. | 2 |
| 9 | ResetL | Module Reset. | 2 |
| 10 | VccRx | +3.3V Receiver Power Supply. | |
| 11 | SCL | 2-Wire Serial Interface Clock. | 2 |
| 12 | SDA | 2-Wire Serial Interface Data. | 2 |
| 13 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 14 | Rx3+ | Receiver Non-Inverted Data Output. | |
| 15 | Rx3- | Receiver Inverted Data Output. | |
| 16 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 17 | Rx1+ | Receiver Non-Inverted Data Output. | |
| 18 | Rx1- | Receiver Inverted Data Output. | |
| 19 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 20 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 21 | Rx2- | Receiver Inverted Data Output. | |
| 22 | Rx2+ | Receiver Non-Inverted Data Output. | |
| 23 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 24 | Rx4- | Receiver Inverted Data Output. | 1 |
| 25 | Rx4+ | Receiver Non-Inverted Data Output. | |
| 26 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 27 | ModPrs1 | Module Present. | |
| 28 | IntL | Interrupt. | 2 |
| 29 | VccTx | +3.3V Transmitter Power Supply. | |
| 30 | Vcc1 | +3.3V Power Supply. | |
| 31 | LPMode | Low-Power Mode. | 2 |
| 32 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 33 | Tx3+ | Transmitter Non-Inverted Data Input. | |
| 34 | Tx3- | Transmitter Inverted Data Input. | |
| 35 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |
| 36 | Tx1+ | Transmitter Non-Inverted Data Input. | |
| 37 | Tx1- | Transmitter Inverted Data Input. | |
| 38 | GND | Transmitter Ground (Common with Receiver Ground). | 1 |

Notes:

- 1. The module signal grounds are isolated from the module case.
- 2. This is an open collector/drain output that, on the host board, requires a 4.7kΩ to 10kΩ pull-up resistor to the Host_Vcc.

Electrical Pin-Out Details (QSFP+ End)



Pin Descriptions (SFP+ End)

| Pin | Symbol | Name/Description | Notes |
|-----|------------|---|-------|
| 1 | VeeT | Transmitter Ground. | 1 |
| 2 | Tx_Fault | Transmitter Fault. LVTTTL-O. "High" indicates a fault condition. | 2 |
| 3 | Tx_Disable | Transmitter Disable. LVTTTL-I. "High" or "open" disables the transmitter. | 3 |
| 4 | SDA | 2-Wire Serial Interface Data. LVCMOS-I/O. MOD_DEF2. | 4 |
| 5 | SCL | 2-Wire Serial Interface Clock. LVCMOS-I/O. MOD_DEF1. | 4 |
| 6 | MOD_ABS | Module Absent. Output. Connected to the VeeT or VeeR in the module. | 5 |
| 7 | RS0 | Rate Select 0. Not used. Presents high input impedance. | |
| 8 | Rx_LOS | Receiver Loss of Signal. LVTTTL-O. | 2 |
| 9 | RS1 | Rate Select 1. Not used. Presents high input impedance. | |
| 10 | VeeR | Receiver Ground. | 1 |
| 11 | VeeR | Receiver Ground. | 1 |
| 12 | RD- | Inverse Received Data Out. CML-O. | |
| 13 | RD+ | Receiver Data Out. CML-O. | |
| 14 | VeeR | Receiver Ground. | |
| 15 | VccR | +3.3V Receiver Power. | |
| 16 | VccT | +3.3V Transmitter Power. | |
| 17 | VeeT | Transmitter Ground. | 1 |
| 18 | TD+ | Transmitter Data In. CML-I. | |
| 19 | TD- | Inverse Transmitter Data In. CML-I. | |
| 20 | VeeT | Transmitter Ground. | 1 |

Notes:

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that, on the host board, requires a 4.7k Ω to 10k Ω pull-up resistor to the Host_Vcc.
3. This input is internally biased high with a 4.7k Ω to 10k Ω pull-up resistor to the VccT.
4. 2-wire serial interface clock and data lines require an external pull-up resistor dependent on the capacitance load.
5. This is a ground return that, on the host board, requires a 4.7k Ω to 10k Ω pull-up resistor to the Host_Vcc.

Electrical Pin-Out Details (SFP+ End)



Application Interface Circuit



Active Optical Cable Specifications

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|--------|------------|------|-------------|--------|
| AOC Cable Length ($L1 \leq 5m$) | L1 | $L - 0.06$ | L | $L + 0.06$ | M |
| AOC Cable Length ($L1 > 5m$) | L1 | $L * 95\%$ | L | $L * 105\%$ | M |
| AOC Cable Length of Branch ($L2 \leq 3m$) | L2 | $L - 0.06$ | L | $L + 0.06$ | M |
| Module Retention | | 90 | | 170 | N |
| Module Insertion | | 0 | | 18 | N |
| Module Extraction | | 0 | | 25 | N |
| Cable Pull Strength - Apply Load at 0° | | 25 | | | N |
| Cable Pull Strength - Apply Load at 90° | | 20 | | | N |
| Cable Bending Radius | | 30 | | | mm |
| Insertion/Removal Cycles | | 50 | | | cycles |

Mechanical Specifications





SFP+ End

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

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

Our Team

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.

Let's Connect

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

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