# DDPQQM02E00028O

Arista Networks® CAB-D-D- 400G-2M Compatible 400GBase-CU QSFP-DD to QSFP-DD PAM-4 Direct Attach Cable (Passive Twinax, 2m)

**Product Description**

This is an Arista Networks® CAB-D-D- 400G-2M compatible 400GBase-CU QSFP-DD to QSFP-DD PAM-4 direct attach cable that operates over passive copper with a maximum reach of 2.0m (6.6ft). It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. This direct attach cable 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.

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

**Features:**

- Compliant to QSFP-DD MSA Standards
- Operating Temperature: 0 to 70 Celsius
- Compliant to IEEE802.3bs
- Built-In EEPROM Functions
- RoHS Compliant and Lead-Free
- Hot-Pluggable

**Applications:**

- 400GBase Ethernet

*For your product safety, please read the following information carefully before any manipulation of the transceiver:*

*ESD*

*This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 /JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.*

*LASER SAFETY*

*This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).*

***The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.***

## Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| **Supply Voltage** | Vcc | -0.3 | 3.3 | 3.6 | V | |
| **Storage Temperature** | Tstg | -40 | | 85 | °C | |
| **Operating Case Temperature** | Tc | 0 | | 70 | °C | |
| **Humidity** | RH | 5 | | 85 | % | |
| **Data Rate** | | | 400 | | Gbps | |
| **Wire Gauge** | | | 30 | | AWG | |

## Pin Descriptions

| Pin | Logic | Symbol | Name/Description | Plug Sequence |
|---|---|---|---|---|
| **1** | | GND | Module Ground. | 1B |
| **2** | CML-I | Tx2- | Transmitter Inverted Data Input. | 3B |
| **3** | CML-I | Tx2+ | Transmitter Non-Inverted Data Input. | 3B |
| **4** | | GND | Module Ground. | 1B |
| **5** | CML-I | Tx4- | Transmitter Inverted Data Input. | 3B |
| **6** | CML-I | Tx4+ | Transmitter Non-Inverted Data Input. | 3B |
| **7** | | GND | Module Ground. | 1B |
| **8** | LVTTL-I | ModSelL | Module Select. | 3B |
| **9** | LVTTL-I | ResetL | Module Reset. | 3B |
| **10** | | VccRx | +3.3V Receiver Power Supply. | 2B |
| **11** | LVCMOS-I/O | SCL | 2-Wire Serial Interface Clock. | 3B |
| **12** | LVCMOS-I/O | SDA | 2-Wire Serial Interface Data. | 3B |
| **13** | | GND | Module Ground. | 1B |
| **14** | CML-O | Rx3+ | Receiver Non-Inverted Data Output. | 3B |
| **15** | CML-O | Rx3- | Receiver Inverted Data Output. | 3B |
| **16** | | GND | Module Ground. | 1B |
| **17** | CML-O | Rx1+ | Receiver Non-Inverted Data Output. | 3B |
| **18** | CML-O | Rx1- | Receiver Inverted Data Output. | 3B |
| **19** | | GND | Module Ground. | 1B |
| **20** | | GND | Module Ground. | 1B |
| **21** | CML-O | Rx2- | Receiver Inverted Data Output. | 3B |
| **22** | CML-O | Rx2+ | Receiver Non-Inverted Data Output. | 3B |
| **23** | | GND | Module Ground. | 1B |
| **24** | CML-O | Rx4- | Receiver Inverted Data Output. | 3B |
| **25** | CML-O | Rx4+ | Receiver Non-Inverted Data Output. | 3B |
| **26** | | GND | Module Ground. | 1B |
| **27** | LVTTL-O | ModPrsL | Module Present. | 3B |
| **28** | LVTTL-O | IntL | Interrupt. | 3B |
| **29** | | VccTx | +3.3V Transmitter Power Supply. | 2B |

| | | | | |
|---|---|---|---|---|
| **30** | | Vcc1 | +3.3V Power Supply. | 2B |
| **31** | LVTTL-I | InitMode | Initialization Mode. In legacy QSFP applications, the InitMode pad is called LPMode. | 3B |
| **32** | | GND | Module Ground. | 1B |
| **33** | CML-I | Tx3+ | Transmitter Non-Inverted Data Input. | 3B |
| **34** | CML-I | Tx3- | Transmitter Inverted Data Input. | 3B |
| **35** | | GND | Module Ground. | 1B |
| **36** | CML-I | Tx1+ | Transmitter Non-Inverted Data Input. | 3B |
| **37** | CML-I | Tx1- | Transmitter Inverted Data Input. | 3B |
| **38** | | GND | Module Ground. | 1B |
| **39** | | GND | Module Ground. | 1A |
| **40** | CML-I | Tx6- | Transmitter Inverted Data Input. | 3A |
| **41** | CML-I | Tx6+ | Transmitter Non-Inverted Data Input. | 3A |
| **42** | | GND | Module Ground. | 1A |
| **43** | CML-I | Tx8- | Transmitter Inverted Data Input. | 3A |
| **44** | CML-I | Tx8+ | Transmitter Non-Inverted Data Input. | 3A |
| **45** | | GND | Module Ground. | 1A |
| **46** | | OPEN | | 3A |
| **47** | | OPEN | | 3A |
| **48** | | OPEN | | 2A |
| **49** | | OPEN | | 3A |
| **50** | | OPEN | | 3A |
| **51** | | GND | | 1A |
| **52** | CML-O | Rx7+ | Receiver Non-Inverted Data Output. | 3A |
| **53** | CML-O | Rx7- | Receiver Inverted Data Output. | 3A |
| **54** | | GND | Module Ground. | 1A |
| **55** | CML-O | Rx5+ | Receiver Non-Inverted Data Output. | 3A |
| **56** | CML-O | Rx5- | Receiver Inverted Data Output. | 3A |
| **57** | | GND | Module Ground. | 1A |
| **58** | | GND | Module Ground. | 1A |
| **59** | CML-O | Rx6- | Receiver Inverted Data Output. | 3A |
| **60** | CML-O | Rx6+ | Receiver Non-Inverted Data Output. | 3A |
| **61** | | GND | Module Ground. | 1A |
| **62** | CML-O | Rx8- | Receiver Inverted Data Output. | 3A |
| **63** | CML-O | Rx8+ | Receiver Non-Inverted Data Output. | 3A |
| **64** | | GND | Module Ground. | 1A |
| **65** | | OPEN | Not Connected. | 3A |
| **66** | | OPEN | For Future Use. | 3A |
| **67** | | OPEN | +3.3V Transmitter Power Supply. | 2A |
| **68** | | OPEN | +3.3V Power Supply. | 2A |
| **69** | | OPEN | For Future Use. | 3A |
| **70** | | GND | Module Ground. | 1A |
| **71** | CML-I | Tx7+ | Transmitter Non-Inverted Data Input. | 3A |
| **72** | CML-I | Tx7- | Transmitter Inverted Data Input. | 3A |

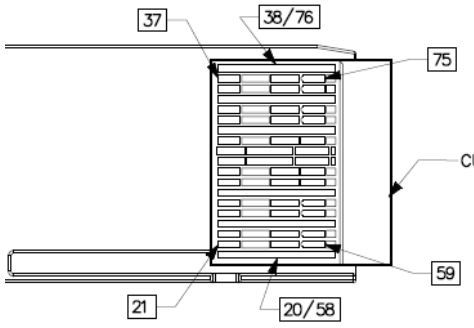
| | | | | |
|---|---|---|---|---|
| **73** | | GND | Module Ground. | 1A |
| **74** | CML-I | Tx5+ | Transmitter Non-Inverted Data Input. | 3A |
| **75** | CML-I | Tx5- | Transmitter Inverted Data Input. | 3A |
| **76** | | GND | Module Ground. | 1A |

## Wiring Diagram

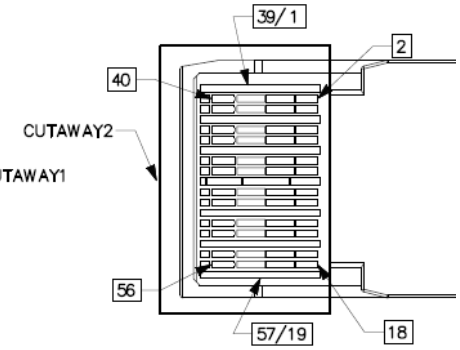
| LOW SPEED SIGNALS P1 &P2 | |
|---|---|
| PAD | SIGNAL |
| 8 | MODSELL |
| 9 | RESETL |
| 10 | VCCRX |
| 11 | SCL |
| 12 | SDA |
| 27 | MODPRSL |
| 28 | INTL |
| 29 | VCCTX |
| 30 | VCC1 |
| 31 | INIT_MODE |
| 46 | OPEN |
| 47 | OPEN |
| 48 | OPEN |
| 49 | OPEN |
| 50 | OPEN |
| 65 | OPEN |
| 66 | OPEN |
| 67 | OPEN |
| 68 | OPEN |
| 69 | OPEN |

| WIRING DIAGRAM | | | | |
|---|---|---|---|---|
| P1 END | | | P2 END | |
| Pad | Signal | | Pad | Signal |
| 1 | GND | — | 20 | GND |
| 2 | TX2n | → | 21 | RX2n |
| 3 | TX2p | → | 22 | RX2p |
| 4 | GND | — | 23 | GND |
| 5 | TX4n | → | 24 | RX4n |
| 6 | TX4p | → | 25 | RX4p |
| 7 | GND | — | 26 | GND |
| 13 | GND | — | 32 | GND |
| 14 | RX3p | ← | 33 | TX3p |
| 15 | RX3n | ← | 34 | TX3n |
| 16 | GND | — | 35 | GND |
| 17 | RX1p | ← | 36 | TX1p |
| 18 | RX1n | ← | 37 | TX1n |
| 19 | GND | — | 38 | GND |
| 20 | GND | — | 1 | GND |
| 21 | RX2n | ← | 2 | TX2n |
| 22 | RX2p | ← | 3 | TX2p |
| 23 | GND | — | 4 | GND |
| 24 | RX4n | ← | 5 | TX4n |
| 25 | RX4p | ← | 6 | TX4p |
| 26 | GND | — | 7 | GND |
| 32 | GND | — | 13 | GND |
| 33 | TX3p | → | 14 | RX3p |
| 34 | TX3n | → | 15 | RX3n |
| 35 | GND | — | 16 | GND |
| 36 | TX1p | → | 17 | RX1p |
| 37 | TX1n | → | 18 | RX1n |
| 38 | GND | — | 19 | GND |

| WIRING DIAGRAM | | | | |
|---|---|---|---|---|
| P1 END | | | P2 END | |
| Pad | Signal | | Pad | Signal |
| 39 | GND | — | 58 | GND |
| 40 | TX6n | → | 59 | RX6n |
| 41 | TX6p | → | 60 | RX6p |
| 42 | GND | — | 61 | GND |
| 43 | TX8n | → | 62 | RX8n |
| 44 | TX8p | → | 63 | RX8p |
| 45 | GND | — | 64 | GND |
| 51 | GND | — | 70 | GND |
| 52 | RX7p | ← | 71 | TX7p |
| 53 | RX7n | ← | 72 | TX7n |
| 54 | GND | — | 73 | GND |
| 55 | RX5p | ← | 74 | TX5p |
| 56 | RX5n | ← | 75 | TX5n |
| 57 | GND | — | 76 | GND |
| 58 | GND | — | 39 | GND |
| 59 | RX6n | ← | 40 | TX6n |
| 60 | RX6p | ← | 41 | TX6p |
| 61 | GND | — | 42 | GND |
| 62 | RX8n | ← | 43 | TX8n |
| 63 | RX8p | ← | 44 | TX8p |
| 64 | GND | — | 45 | GND |
| 70 | GND | — | 51 | GND |
| 71 | TX7p | → | 52 | RX7p |
| 72 | TX7n | → | 53 | RX7n |
| 73 | GND | — | 54 | GND |
| 74 | TX5p | → | 55 | RX5p |
| 75 | TX5n | → | 56 | RX5n |
| 76 | GND | — | 57 | GND |

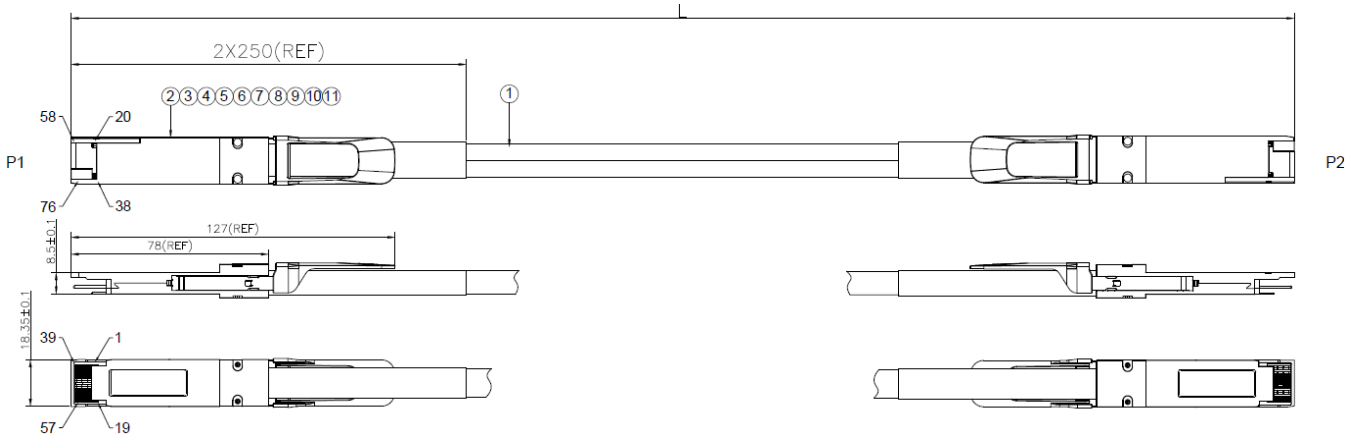



TOP VIEW




BOTTOM VIEW

**Mechanical Specifications**




| Item | Name | Description | Quantity |
|---|---|---|---|
| **1** | Raw Cable | 8 Pairs, PVC Jacket, Black | A/R |
| **2** | PCBA | PCB, 76P, Au 30u" Minimum | 2 |
| **3** | Top Shell | Zinc Alloy, Plated Nickel Over Copper | 2 |
| **4** | Bottom Shell | Zinc Alloy, Plated Nickel Over Copper | 2 |
| **5** | Pull Tab | Pull Tab, TPV, Black | 2 |
| **6** | Rivet | Aluminum Alloy | 4 |
| **7** | Spring | Stainless Steel | 4 |
| **8** | Blackshell Label | Blackshell Label | 2 |
| **9** | Inner Mold | Hot-Melt Glue | A/R |
| **10** | Copper Tape | T=0.15MM | A/R |
| **11** | Heat Shrinkable Tube | Black Tube | A/R |

**Notes:**

1. Raw cable impedance: $100^{+10}_{-5}\Omega$. Mated connector impedance: $100^{+10}_{-15}\Omega$. Rise time: 25ps (20-80%).
2. 100% conductor test. Test condition: voltage 5V. Insulation resistance: 10mΩ. Conduction resistance maximum: 3Ω.
3. High-frequency test according to IEEE802.3cd standard.
4. All materials are RoHS complaint.

# About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.