

# QSFP-DD 400G DAC ACTIVE, CMIS 4.0

QSFP-DD Active Electrical Cable (AEC) 400GbE, AWG30/32, CMIS4.0, 0.5-5m, A-Version

## DQD004-xxxC-SO

The DQD004-xxxC-SO is an active Direct Attach Cable (DAC) solution of Twinax type, i.e. a copper cable similar to coaxial cable, but with two inner conductors instead of one. DQD004-xxxC-SO is a solution for 400Gbps connections within racks and across adjacent racks where the interconnected equipment uses QSFP-DD interfaces. It provides a cost-efficient solution as compared to using optical transceivers and it simplifies the patching since no separate transmit/receive direction has to be taken into account.

The electrical interface of the module is compliant with the electrical interfaces 4x100GAUI-2 and 400GAUI-8 as well as the QSFP-DD MSA.

DQD004-xxxC-SO integrates eight data lanes (25Gbd) in each direction using PAM4 modulation with 400Gbps aggregate bandwidth.

The DQD004-xxxC-SO cables have an I2C interface with Integrated Digital Diagnostic Monitoring according to the Common Management Interface Specification CMIS 4.0.

The DQD004-xxxC-SO is provided in lengths from 0.5 to 5 meters (1.6 to 16.4 ft).

## PRODUCT FEATURES

- 400G to 400G interconnect
- QSFP-DD compliant connectors
- 400GAUI-8 electrical interface
- Thin and flexible cables (AWG32 and AWG30)
- CMIS4.0 compliant I<sup>2</sup>C management interface
- BER < 10<sup>-15</sup> (post FEC)
- 0.5m to 5 meters (1.6 to 16.4 ft)
- Low power consumption; <4.5W per side
- Operating temperature 0°C to +70°C (32°F to +158°F)
- Storage temperature -40°C to +85°C (-40°F to +185°F)

## APPLICATIONS

- Data Center cabling infrastructure
- Storage Area Network (SAN)
- Network Attached Storage (NAS)
- Hub, switches, routers, servers

## ORDERING INFORMATION

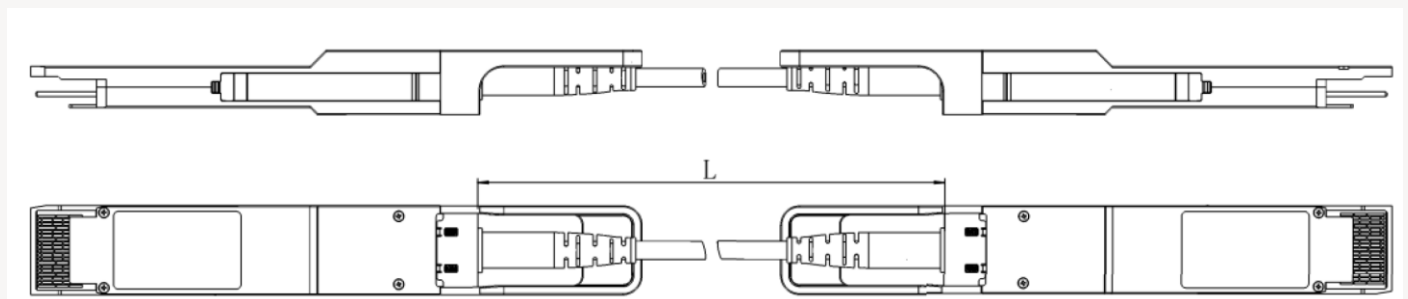
Parameter	Value
DQD004-0M5C-SO	QSFP-DD Active Electrical Cable (AEC) 400G Ethernet, AWG32, CMIS4.0, 0.5m, A-Version
DQD004-001C-SO	QSFP-DD Active Electrical Cable (AEC) 400G Ethernet, AWG32, CMIS4.0, 1m, A-Version
DQD004-1M5C-SO	QSFP-DD Active Electrical Cable (AEC) 400G Ethernet, AWG32, CMIS4.0, 1.5m, A-Version
DQD004-002C-SO	QSFP-DD Active Electrical Cable (AEC) 400G Ethernet, AWG32, CMIS4.0, 2m, A-Version
DQD004-2M5C-SO	QSFP-DD Active Electrical Cable (AEC) 400G Ethernet, AWG32, CMIS4.0, 2.5m, A-Version
DQD004-003C-SO	QSFP-DD Active Electrical Cable (AEC) 400G Ethernet, AWG32, CMIS4.0, 3m, A-Version
DQD004-005C-SO	QSFP-DD Active Electrical Cable (AEC) 400G Ethernet, AWG30, CMIS4.0, 5m, A-Version

## APPLICATION CODE LIST

CMIS Application Code	Host format	Electrical interface	Payload	FEC
1	400GBASE-R	1x 400GAUI-8 (8x 50G)	400G	RS-FEC <sup>1)</sup>
2	4 x 100GBASE-R	4x 100GAUI-2 (2x 50G)	400G	RS-FEC <sup>1)</sup>

1) FEC is provided by the host.

## MECHANICAL DRAWING



## GENERAL DEFINITIONS

Parameter	Description
Technology	Grey; Transceiver type for non-WDM applications. Electrical or optical. CWDM; Transceiver type for CWDM applications using G.694.2 channel grid. DWDM; Transceiver type for DWDM applications using G.694.1 channel grid. BiDi; Transceiver pair using two different wavelength channels operating on a single-fiber. DAC: Direct Attach Cable. Electrical cable with attached connectors. AOC: Active Optical Cable. Optical cable with attached connectors.
Transmission Media	Type of fiber, e.g. Multimode (MM) or Singlemode (SM). Number of and connector type within brackets (e.g. 2x LC, 1x MPO).
Typical reach	Nominal distance performance based on typical fiber dispersion, fiber loss and power budget properties, i.e. w/o dispersion compensation and optical amplification. Actual distance is dependent on actual optical path loss and dispersion properties.
Bit rate range	Supported bit rate range in Gigabit or Megabit per second (Gbps or Mbps).
Protocols	Protocols within supported bit rate range.
Nominal wavelength	Typical wavelength(s) from transmitter.
Interface standards	Referenced interface standards or MSA's, e.g. IEEE 802.3 standard for 10GbE services or 100G 4WDM-10 etc.
Power budget	Min and max power budget between Transmitter and Receiver w/o optical path penalties.
Dispersion tolerance/penalty	Maximum amount of tolerated dispersion and required reduction of power budget to maintain stipulated Bit Error Rate (BER) and at a given bit rate.
Temperature range	Max operating case temperature range. Standard temperature range (C-temp): 0°C to +70°C (32°F to +158°F) Extended temperature range (E-temp): typically -20°C to +75°C (-4°F to +167°F) Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F)
Power consumption	Worst case power consumption. Will vary over temperature.
Transmitter Output power	Average output power. Provided in min and max values.
Receiver minimum input power	Minimum average input power at specified BER, normally $1E^{-12}$ . Note that some protocols require FEC to achieve sufficient BER.
Receiver max input power	Maximum average input power giving a BER, normally $1E^{-12}$ .
DDM	Digital Diagnostic Monitoring functionality as defined in e.g. SFF-8472 MSA.

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