# Product Specification

3~5m 800G OSFP Finned Top to 4× 200G OSFP Finned Top Active Copper Breakout Cable

PN: O800-4O200-AC



## Features

- Supports 800G to 4×200G breakout connectivity
- 8 × 106.25 Gb/s PAM4 electrical lanes
- Two electrical lanes allocated to each 200G OSFP branch
- 53.125 GBd symbol rate per electrical lane
- Active signal-conditioning architecture
- Wire gauge: 26 AWG and 30 AWG
- Available in 4–5 m lengths
- Hot-pluggable OSFP interfaces
- Finned Top 800G host connector and Flat Top 200G branch connectors
- Single 3.3 V power supply
- Two-wire management interface with EEPROM identification
- Commercial operating temperature range: 0°C to +70°C

## Compliance

- Compliant with OSFP MSA Rev. 5.2
- Designed for OSFP 800GAUI-8 electrical interface architecture
- Designed for 4×200G two-lane breakout architecture
- Electrical signaling based on IEEE 802.3ck 100G-per-lane PAM4 requirements
- Supports 200GAUI-2 electrical interface architecture on each 200G branch
- CMIS-compliant management interface
- RoHS compliant

## Applications

- 800G to 4×200G Breakout Connectivity
- AI/ML and GPU Computing Networks
- High-Performance Computing (HPC)
- Hyperscale Data Centers and Cloud Networking
- Switch-to-Server and Switch-to-NIC Interconnections
- High-Density Rack-Level Network Interconnections

## Description

The O800-4O200-AC is a high-performance Active Copper Cable (ACC) breakout assembly designed for short-reach, high-bandwidth interconnections in AI computing, high-performance computing, and hyperscale data center environments. It connects one 800G OSFP Finned Top interface to four independent 200G OSFP Flat Top interfaces, enabling 800G-to-4×200G breakout connectivity.

The 800G host end utilizes eight 106.25 Gb/s PAM4 electrical lanes, with two lanes allocated to each 200G OSFP branch. Each electrical lane operates at 53.125 GBd PAM4, resulting in a raw electrical line rate of 850 Gb/s at the 800G host end and 212.5 Gb/s for each 200G branch.

Integrated active signal-conditioning electronics compensate for high-frequency copper-channel loss and extend the usable copper reach beyond conventional passive DAC solutions while maintaining low latency. The 800G OSFP Finned Top connector incorporates an integrated heatsink for thermal management, while the four 200G OSFP Flat Top connectors are designed for host cages equipped with external riding heatsinks.

The cable is available in 26 AWG and 30 AWG configurations with lengths from 4 m to 5 m. A two-wire management interface provides EEPROM-based product identification, configuration information, and cable management functions.

The O800-4O200-AC is designed in accordance with OSFP MSA Rev. 5.2, applicable IEEE 802.3ck 100G-per-lane electrical requirements, CMIS management requirements, and RoHS regulations.

## Product performance Specifications

### 1、Absolute Maximum Ratings

| Parameter | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|
| Storage Temperature | TS | -40 | | +85 | °C |
| Supply Voltage | VCC | -0.3 | | +3.6 | V |

### 2、Recommended Operating Conditions

| Parameter | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|
| Operating Case Temperature | TC | 0 | | +70 | °C |
| Power Supply Voltage | VCC | 3.135 | 3.3 | 3.465 | V |
| Relative Humidity | RH | 5 | | 85 | % |

### 3、General Product Specifications

| Parameter | Specification | Condition |
|---|---|---|

| | | |
|---|---|---|
| Product Type | Active Copper Cable (ACC) Breakout Cable | |
| Connector Configuration | 1 × 800G OSFP Finned Top to 4 × 200G OSFP Flat Top | 1-to-4 breakout |
| Aggregate Data Rate | 800 Gbps | 4 × 200 Gbps |
| Raw Electrical Line Rate | 850 Gbps | 8 × 106.25 Gb/s |
| Raw Electrical Line Rate per Branch | 212.5 Gbps | 2 × 106.25 Gb/s |
| Electrical Signaling | PAM4 | |
| Number of Host Data Lanes | 8 Full-Duplex Lanes | |
| Number of Data Lanes per Branch | 2 Full-Duplex Lanes | |
| Data Rate per Lane | 106.25 Gb/s | |
| Symbol Rate per Lane | 53.125 GBd | PAM4 |
| Electrical Lane Configuration | 8 Tx + 8 Rx differential pairs at the 800G end; 2 Tx + 2 Rx differential pairs per 200G branch | |
| Host Electrical Interface | 800GAUI-8 | |
| Branch Electrical Interface | 200GAUI-2 | |
| Cable Length | 4–5 m | |
| Cable Gauge | 26 AWG, 30 AWG | |
| Cable Type | Active Shielded Twinaxial Copper | |
| Host Connector Thermal Design | Finned Top | |
| Branch Connector Thermal Design | Flat Top | |
| Hot Pluggable | Supported | |
| Active Signal Conditioning | Supported | |
| Management Interface | Two-wire serial interface | |
| Module Identification | EEPROM | |

## 4、Power Supply and Management Interface

| Parameter | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|
| Power Supply Voltage | VCC | 3.135 | 3.3 | 3.465 | V |
| Management Interface | | | Two-wire serial interface | | |
| Module Identification | | | EEPROM | | |
| Management Architecture | | | CMIS | | |

## 5、High-Speed Electrical Characteristics

| Parameter | Symbol | Min | Typ. | Max | Unit | Condition |
|---|---|---|---|---|---|---|
| Differential Impedance | Zdiff | 90 | 100 | 110 | Ω | Differential |
| Symbol Rate per Lane | SRL | | 53.125 | | GBd | PAM4 |
| Raw Electrical Line Rate per Lane | DRL | | 106.25 | | Gb/s | PAM4 |
| Effective Data Rate per Lane | | | 100 | | Gb/s | |
| Host Electrical Lanes | | | 8 | | | Per direction |
| Electrical Lanes per Branch | | | 2 | | | Per direction |
| Aggregate Data Rate | | | 800 | | Gb/s | |
| Data Rate per Branch | | | 200 | | Gb/s | |
| Active Signal Conditioning | | | Supported | | | |

## 6、Active Signal Conditioning and Lane Architecture

| Parameter | Specification |
|---|---|
| Host Electrical Interface | 800GAUI-8 |
| Branch Electrical Interface | 200GAUI-2 |
| Signaling Architecture | 8 × 100G-class PAM4 |
| PAM4 Symbol Rate | 53.125 GBd |
| Host Transmit Lanes | 8 differential lanes |
| Host Receive Lanes | 8 differential lanes |
| Branch Transmit Lanes | 2 differential lanes per branch |
| Branch Receive Lanes | 2 differential lanes per branch |
| Total Differential Signal Pairs | 16 |
| Raw Electrical Rate per Lane | 106.25 Gb/s |
| Host Raw Electrical Line Rate | 850 Gb/s |
| Raw Electrical Line Rate per Branch | 212.5 Gb/s |
| Active Equalization | Supported |
| Signal Loss Compensation | Supported |
| Lane Mapping | 8 lanes to 4 × 2 lanes |

## 7、Cable Construction

| Parameter | Specification |
|---|---|
| Cable Architecture | 16 differential signal pairs total (8 Tx + 8 Rx) |
| Breakout Architecture | 4 × 4-pair branch cable groups |
| Cable Type | Shielded Active Twinaxial Copper |
| Conductor Gauge | 26 AWG, 30 AWG |
| Differential Impedance | 100 Ω nominal |
| High-Speed Signaling | 106.25 Gb/s PAM4 per lane |
| Signal Conditioning | Integrated active equalization electronics |
| Cable Management | EEPROM-based identification and configuration |
| Host Connector | OSFP Finned Top |
| Branch Connectors | 4 × OSFP Flat Top |

## 8、Cable Configuration by Length

| Cable Length | Recommended Wire Gauge | Host Connector | Branch Connectors |
|---|---|---|---|
| 3 m | 30 AWG | OSFP Finned Top | 4 × OSFP Flat Top |
| 4 m | 30 AWG | OSFP Finned Top | 4 × OSFP Flat Top |
| 5 m | 26 AWG | OSFP Finned Top | 4 × OSFP Flat Top |

## 9、Mechanical Interface

| Parameter | Specification |
|---|---|
| Host Connector Form Factor | OSFP |
| Host Connector Top Type | Finned Top |
| Branch Connector Form Factor | OSFP |
| Branch Connector Top Type | Flat Top |
| Number of Branch Connectors | 4 |
| Host High-Speed Lanes | 8 per direction |
| Branch High-Speed Lanes | 2 per direction per branch |
| Total Differential Signal Pairs | 16 |
| Latching Mechanism | Pull-to-release |

## 10、Environmental and Regulatory Characteristics

| Parameter | Specification |
|---|---|
| Operating Temperature | 0°C to +70°C |
| Storage Temperature | -40°C to +85°C |
| Operating Relative Humidity | 5% to 85% |
| RoHS | Compliant |

## Pin-out Definition

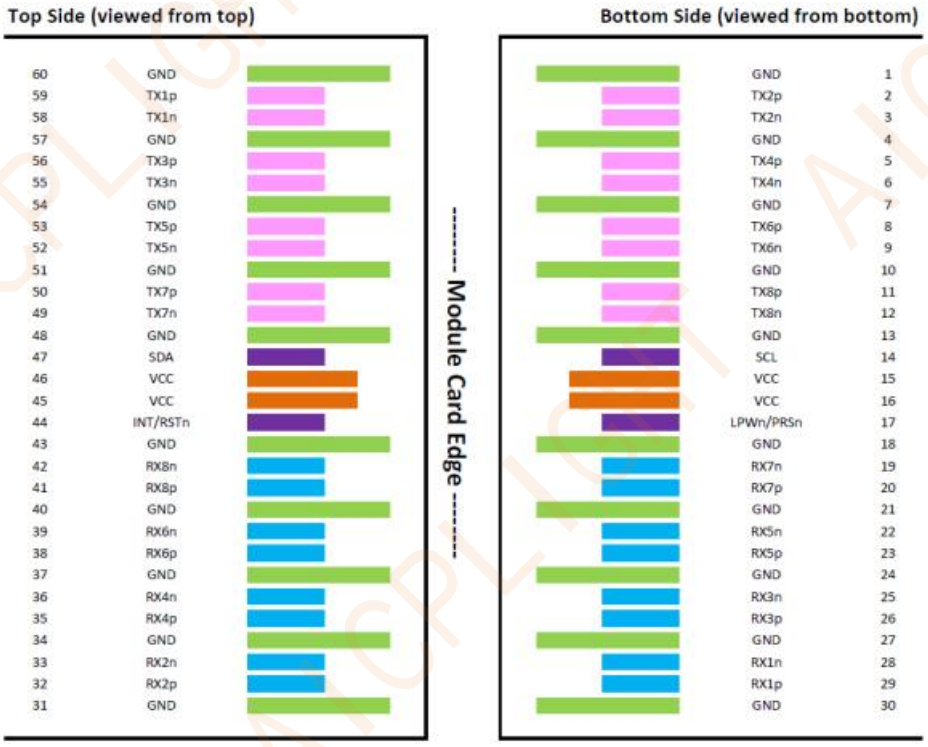



Figure4:Pin view

## Pin Function Definitions

| Pin | Logic | Symbol | Description | Note |
|---|---|---|---|---|
| 1 | | GND | Ground | |
| 2 | CML-I | TX2p | Transmitter Data Non-Inverted | |
| 3 | CML-I | TX2n | Transmitter Data Inverted | |
| 4 | | GND | Ground | |
| 5 | CML-I | TX4p | Transmitter Data Non-Inverted | |
| 6 | CML-I | TX4n | Transmitter Data Inverted | |
| 7 | | GND | Ground | |
| 8 | CML-I | TX6p | Transmitter Data Non-Inverted | |
| 9 | CML-I | TX6n | Transmitter Data Inverted | |

| | | | | |
|---|---|---|---|---|
| 10 | | GND | Ground | |
| 11 | CML-I | TX8p | Transmitter Data Non-Inverted | |
| 12 | CML-I | TX8n | Transmitter Data Inverted | |
| 13 | | GND | Ground | |
| 14 | LVCMOS-I/O | SCL | 2-wire Serial interface clock | 1 |
| 15 | | VCC | +3.3V Power | |
| 16 | | VCC | +3.3V Power | |
| 17 | Multi-Level | LPWn/PRSn | Low-Power Mode / Module Present | 2 |
| 18 | | GND | Ground | |
| 19 | CML-O | RX7n | Receiver Data Inverted | |
| 20 | CML-O | RX7p | Receiver Data Non-Inverted | |
| 21 | | GND | Ground | |
| 22 | CML-O | RX5n | Receiver Data Inverted | |
| 23 | CML-O | RX5p | Receiver Data Non-Inverted | |
| 24 | | GND | Ground | |
| 25 | CML-O | RX3n | Receiver Data Inverted | |
| 26 | CML-O | RX3p | Receiver Data Non-Inverted | |
| 27 | | GND | Ground | |
| 28 | CML-O | RX1n | Receiver Data Inverted | |
| 29 | CML-O | RX1p | Receiver Data Non-Inverted | |
| 30 | | GND | Ground | |
| 31 | | GND | Ground | |
| 32 | CML-O | RX2p | Receiver Data Non-Inverted | |
| 33 | CML-O | RX2n | Receiver Data Inverted | |
| 34 | | GND | Ground | |
| 35 | CML-O | RX4p | Receiver Data Non-Inverted | |
| 36 | CML-O | RX4n | Receiver Data Inverted | |
| 37 | | GND | Ground | |
| 38 | CML-O | RX6p | Receiver Data Non-Inverted | |
| 39 | CML-O | RX6n | Receiver Data Inverted | |
| 40 | | GND | Ground | |
| 41 | CML-O | RX8p | Receiver Data Non-Inverted | |
| 42 | CML-O | RX8n | Receiver Data Inverted | |
| 43 | | GND | Ground | |
| 44 | Multi-Level | INT/RSTn | Module Interrupt / Module Reset | 2 |
| 45 | | VCC | +3.3V Power | |
| 46 | | VCC | +3.3V Power | |
| 47 | LVCMOS-I/O | SDA | 2-wire Serial interface data | 1 |
| 48 | | GND | Ground | |
| 49 | CML-I | TX7n | Transmitter Data Inverted | |

| | | | | |
|---|---|---|---|---|
| 50 | CML-I | TX7p | Transmitter Data Non-Inverted | |
| 51 | | GND | Ground | |
| 52 | CML-I | TX5n | Transmitter Data Inverted | |
| 53 | CML-I | TX5p | Transmitter Data Non-Inverted | |
| 54 | | GND | Ground | |
| 55 | CML-I | TX3n | Transmitter Data Inverted | |
| 56 | CML-I | TX3p | Transmitter Data Non-Inverted | |
| 57 | | GND | Ground | |
| 58 | CML-I | TX1n | Transmitter Data Inverted | |
| 59 | CML-I | TX1p | Transmitter Data Non-Inverted | |
| 60 | | GND | Ground | |

**Note1:**Open-Drain with pull up resistor on Host.

**Note2:**See pin description for required circuit.

## Monitoring Specification

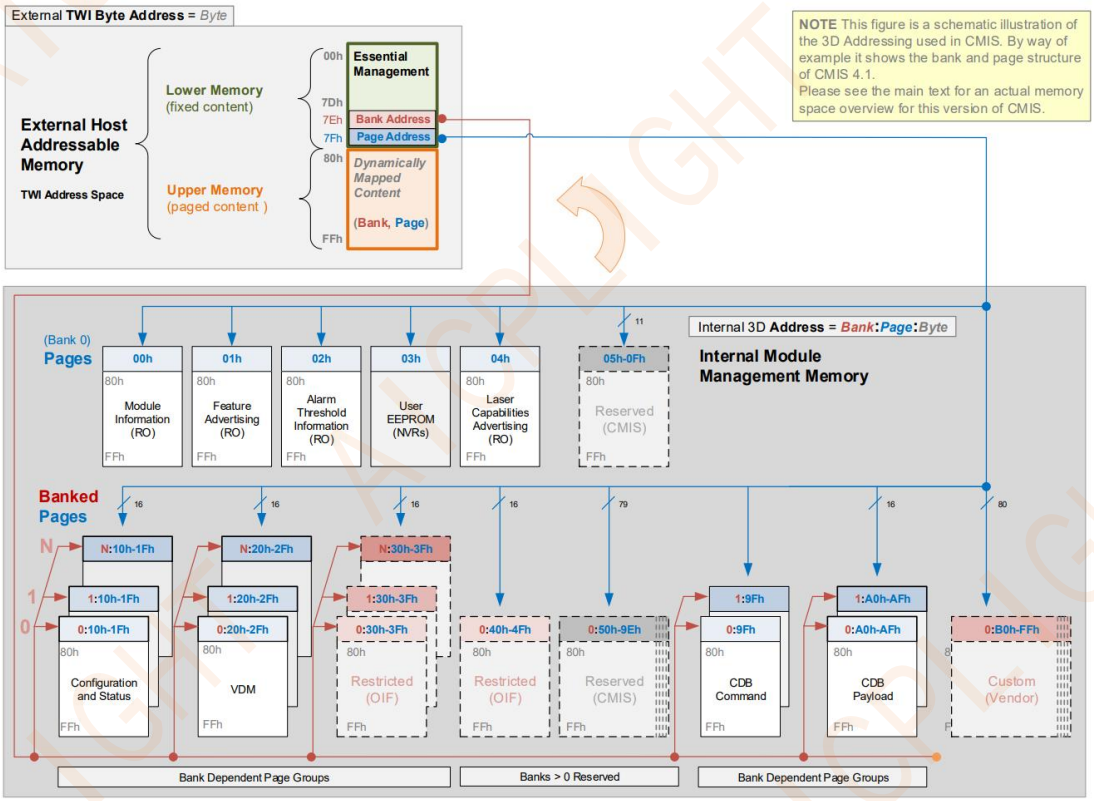
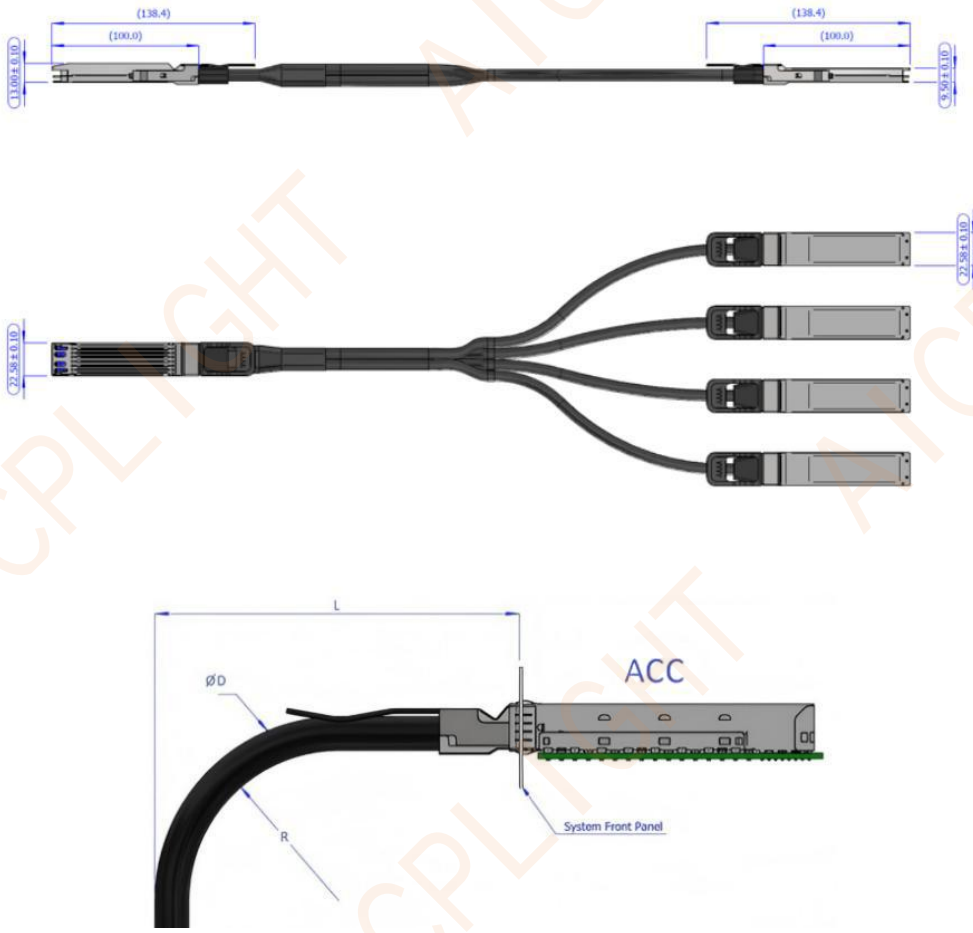



**Figure5:**Memory map

## Memory map Table

| Byte | Unit | Name | Description |
|---|---|---|---|
| | | **Lower Page 00h** | |
| 0-2 | 3 | Management Characteristics | Basic Information about how this module is managed |
| 3 | 1 | Global Status Information | Current state of Module, Interrupt signal status |
| 4-7 | 4 | Flag Summary | Summary of Flags set on specific Pages (and Banks) |
| 8-13 | 6 | Module-Level Flags | Flags that are not lane or Data Path specific |
| 14-25 | 12 | Module-Level Monitors | Monitors that are not lane or Data Path specific |
| 26-30 | 5 | Module-Level Controls | Controls applicable to the module as a whole |
| 31-36 | 6 | Module-Level Masks | Mask bits for the Module-Level Flags |
| 37-38 | 2 | CDB Command Status | Status of current CDB command |
| 39-40 | 2 | Module Active Firmware Version | Module Active Firmware Version number |
| 41 | 1 | Fault Information | Fault cause for entering ModuleFault state |
| 42-63 | 22 | | Reserved |
| 64-84 | 21 | | Custom |
| 85-117 | 33 | Supported Applications Advertising | Applications supported by module Data Path(s) |
| 118-125 | 8 | Password Facilities | Password Entry and Change (mechanism only) |
| 126-127 | 2 | Page Mapping | Page mapping into host addressable Upper Memory |
| | | **Upper Page 00h** | |
| 128 | 1 | SFF8024IdentifierCopy | Copy of Byte 00h:0 |
| 129-144 | 16 | VendorName | Vendor name (ASCII) |
| 145-147 | 3 | Vendor OUI | Vendor IEEE company ID |
| 148-163 | 16 | Vendor PN | Part number provided by vendor (ASCII) |
| 164-165 | 2 | Vendor Rev | Revision level for part number provided by vendor (ASCII) |
| 166-181 | 16 | Vendor SN | Vendor Serial Number (ASCII) |
| 182-189 | 8 | DateCode | Manufacturing Date Code (ASCII) |
| 190-199 | 10 | CLEICode | Common Language Equipment Identification Code (ASCII) |
| 200-201 | 2 | ModulePowerCharacteristics | Module power characteristics |
| 202 | 1 | CableAssemblyLinkLength | Cable length (for cable assembly modules only) |
| 203 | 1 | ConnectorType | Connector type of the media interface |
| 204-209 | 6 | Copper Cable Attenuation | Attenuation characteristics (passive copper cables only) |
| 210 | 1 | MediaLaneInformation | Supported near end media lanes (all modules) |
| 211 | 1 | Cable Assembly Information | Far end modules information (cable assemblies only) |
| 212 | 1 | MediaInterfaceTechnology | Information on media side device or cable technology |
| 213-220 | 8 | | Reserved |
| 221 | 1 | | Custom |
| 222 | 1 | PageChecksum | Page Checksum over bytes 128-221 |
| 223-255 | 33 | | Custom |

## Mechanical Dimension




### Note:

- All dimensions are in mm.
- Unless otherwise specified, dimensional tolerance is ±0.1 mm.
- Latch color: Black.
- Cable length tolerance: ±25 mm for L < 2 m and ±50 mm for L ≥ 2 m.

### Handling and Safety Precautions:

- ESD Precautions: Follow standard ESD handling procedures when handling or installing the cable assembly, particularly at the connector ends.
- Bend Radius: Do not bend the cable below the specified minimum bend radius. Avoid sharp bends or repeated bending near the connector strain-relief area.
- Cable Handling: Avoid excessive pulling, twisting, crushing, kinking, or other mechanical stress that may damage the cable or affect signal integrity.
- Installation and Removal: Use the pull tab or release mechanism when inserting or removing the cable assembly. Do not pull directly on the cable.
- Connector Protection: Keep the electrical connector contacts clean and protected from dust, moisture, and contamination when not installed.
- Cable Assembly Protection: Do not disassemble, modify, splice, or attempt to repair the cable assembly or connector housing. Replace the cable if physical damage is observed.

## Ordering Information

| PN | Description |
|---|---|
| O800-4O200-AC3 | 800G OSFP Finned Top to 4× 200G OSFP Finned Top Active Copper Breakout Cable,3m |
| O800-4O200-AC4 | 800G OSFP Finned Top to 4× 200G OSFP Finned Top Active Copper Breakout Cable,4m |
| O800-4O200-AC5 | 800G OSFP Finned Top to 4× 200G OSFP Finned Top Active Copper Breakout Cable,5m |