

# 3M™ Active Optical Cable (AOC) Assemblies

## QSFP+ and CX4 Applications Low Power, Low Cost, High-Performance

Using industry leading VCSEL technology and an advanced new light-engine design, the 3M Active Optical Cable (AOC) Assembly provides excellent cost/performance value. The direct attach QSFP+ and CX4 AOC assemblies deliver four channels of bi-directional data while using minimal energy per end.

### Features

- Low power AOC
- Certified to the InfiniBand Integrator's List for 20 Gbps and 40 Gbps (DDR and QDR respectively)
- Quick, easy installation – plug and play
- Lightweight, flexible and routable
- Compliant with SFF, InfiniBand and ethernet specifications
- Qualified to Telcordia GR-486-CORE
- Bend-insensitive fiber
- Up to 100 m in length



3M™ Active Optical Cable (AOC) Assembly for QSFP+ Applications



3M™ Active Optical Cable (AOC) Assembly for CX4 Applications

### Applications

- High-performance computing clusters
- Data center networks
- IB and GigE switches
- High-speed servers
- Storage
- Routers, hubs, load balancer

# 3M™ Active Optical Cable (AOC) Assemblies

## Product Specifications

|                                     |                                                                              |                                                                             |
|-------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Module Form Factor</b>           | <b>QSFP+</b>                                                                 | <b>CX4</b>                                                                  |
| <b>Protocols Supported</b>          | Infiniband, 40G Ethernet                                                     | Infiniband, 3.125G per channel XAUI, Ethernet                               |
| <b>Channels</b>                     | 4 channels, bi-directional                                                   | 4 channels, bi-directional                                                  |
| <b>Channel Data Rate</b>            | 1 to 10.3125 Gbps/channel                                                    | up to 5 Gbps/channel                                                        |
| <b>Operating Optical Wavelength</b> | 850 nm                                                                       | 850 nm                                                                      |
| <b>Aggregate Bandwidth</b>          | 40 Gbps                                                                      | 20 Gbps                                                                     |
| <b>BER</b>                          | <10E-15                                                                      | <10E-15                                                                     |
| <b>Operating Case Temperature</b>   | 0 to +70°C                                                                   | 0 to +70°C                                                                  |
| <b>Storage Temperature</b>          | -40° to +70°C                                                                | -40° to +70°C                                                               |
| <b>Supply Voltage</b>               | 3.3 V                                                                        | 3.3 V                                                                       |
| <b>Electrical Interface</b>         | 38-pin edge connector                                                        | 34-pin edge connector                                                       |
| <b>Power Consumption</b>            | 540 mW per end*                                                              | <660 mW per end                                                             |
| <b>Management Interface</b>         | Serial, I2C                                                                  | N/A                                                                         |
| <b>Fiber Type</b>                   | OM2+, 50 µm Bend Insensitive                                                 | OM2+, 50 µm Bend Insensitive                                                |
| <b>Cable Length</b>                 | Up to 100 m                                                                  | up to 100 m                                                                 |
| <b>Outer Cable Diameter</b>         | 3 mm                                                                         | 3 mm                                                                        |
| <b>Cable Type</b>                   | Plenum and LSZH                                                              | Plenum and LSZH                                                             |
| <b>Compliance</b>                   | SFF-8436, FCC Class B and CE, RoHS* 6, Class 1M Laser, Telcordia GR-486-CORE | SFF-8470, FCC Class B and CE, RoHS 6, Class 1M Laser, Telcordia GR-468-CORE |

\*Tested as low as 480 mW in some use scenarios. Contact 3M for more information.

## Ordering Information

QSFP+ parts configurations are available on customer drawing 78-5100-2442-1. CX4 parts configurations are available on customer drawing 78-5100-2496-7. Please reference these drawings for additional details and availability.

**6AXX-X04X1-XXX.X-0**

22 = QSFP+  
44 = CX4

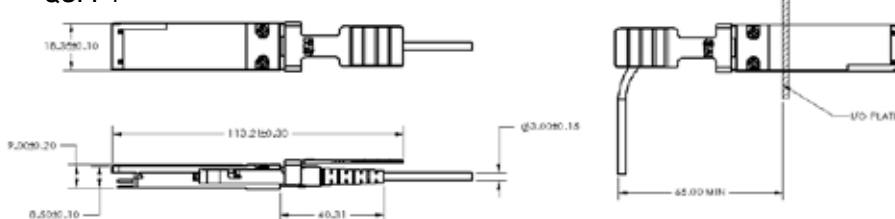
A = QSFP+  
B = CX4

**Cable Jacket**  
2 = Plenum  
4 = LSZH

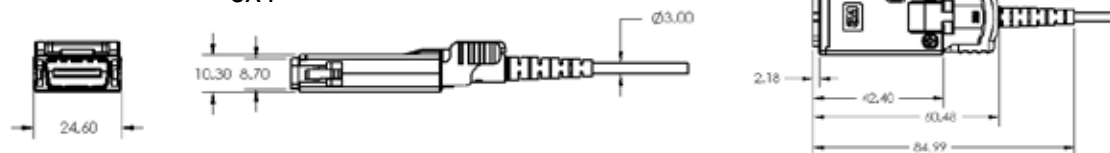
Standard Lengths: 2-30 meters, 35, 40, 45, 50, 60, 70, 80, 90 100 meters

Length in meters

QSFP+



CX4



## Related Products

### 3M™ High-Speed Copper Cable Assemblies for QSFP+ Applications

Made with 3M™ Twin Axial Cable technology, the QSFP+ direct attach copper cable assembly is a low-cost, flexible solution that complements QSFP+ AOC assemblies to address the diverse needs of customers seeking reliable, high-density 40 Gbps solutions.

### 3M™ Cable Assemblies for SFP+ Applications

The 3M Cable Assembly for SFP+ Applications is a passive copper cable assembly which utilizes 3M Twin Axial Cable technology to create a highly-flexible, foldable, high-performance solution, with up to 10 Gbps for storage, networking, high-performance computing and data center applications.

#### The First of Its Kind:

- Excellent SI performance
- Extremely low profile
- Light-weight
- Tightly packaged, flexible ribbon format
- Very small bend radius (2.5 mm) enables efficient routing
- Infiniband QDR/FDR; 40G Ethernet; FibreChannel / SAS-2.1
- SFF-8436 compliant



\*"RoHS Compliant 2002/95/EC" means that the product or part ("Product") does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under EU RoHS. This information represents 3M's knowledge and belief, which may be based in whole or in part on information provided by third party suppliers to 3M.

3M is a trademark of 3M Company.

#### Important Notice

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in 3M's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

#### Warranty; Limited Remedy; Limited Liability.

This product will be free from defects in material and manufacture for a period of one year from the time of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.



#### Electronic Solutions Division Interconnect Products

6801 River Place Blvd.  
Austin, TX 78726-9000  
1-800-225-5373  
www.3Mhighspeed.com

Please recycle. Printed in USA  
© 3M 2012. All rights reserved.  
80-4000-7012-6