

# Expanded Beam Connector / HMA

## Description:

The OPTOKON HMA optical modules are designed for connection of the nodes of harsh environmental network by the help of cables with optical fibers. The used „Expanded beam technology“ preserves all advantages of signals transmission through the optical lines in field harsh environmental conditions. Benefiting from expanded beam technology, with a long and proven industry track record, the precision optical alignment system creates immunity from water, mud, dust, oil and other contaminants. The HMA Hermaphroditic coupling eliminates the need for adaptors and male and female mating halves. Hermaphroditic housings allow for rapid deployment, creating low loss Single mode, Multimode and Hybrid daisy chained links in a variety of planforms ranging from simplex fiber to a copper Hybrid. The OPTOKON HMA is ideally suited for environmental extremities where low maintenance and quick repairability is necessary, the connectors are uniquely field installable and rapidly field repairable.

There are two different types of OPTOKON HMA connection modules:

1. LD type cable with OPTOKON HMA plugs at both sides
2. Hybrid connection module OPTOKON HMA to standard fiber optic connectors (FC, SC, ST, LC, ...)

## Features:

- Advanced expanded beam technology
- Hermaphroditic interconnection
- 1 to 8 Fiber channels Single mode or Multimode
- Rugged field repairable connector design
- Two versions
- - HMA plug cable
- - HMA bulkhead hybrid cable



### Specifications:

Insertion loss1 (typ.)	0.5 - 0.7 dB (MM) 0.7 - 1.0 dB (SM)
Return loss1	>32 dB (SM)
Operating temperature	-55 to +85 °C
Storage temperature	-55 to +85 °C
Water immersion	up to 2 m depth, 24 hrs
Vibration Sinusoidal	10-500 Hz, 0.75 amplitude @ 10 g acceleration
Free fall resistance	500 falls onto concrete from 1.2 m height
Bump resistance	4000 bumps @ 40 g acceleration
Tensile Strength	Tensile of 1500 N cable dependent
Cable Variations	Compatible with tactical cable1: Plug < 6 mm o/d, Bulkhead < 3 mm o/d



Cable with HMA plug connectors  
on SBD-200 drum. HMA-J/LD4 S7A-JC-200



HMA-J-BN-SCD/D8 OM2-002  
Hybrid cable with HMA connector and SC



HMA-J-4xSL/LD4 OM2-0.5-002  
Hybrid cable with HMA connector and ST

### Planforms:

HMA-J / HMA-M		HMA-S			
2 CH	4 CH	2 CH	4 CH	6 CH	8 CH

## Application:

- Harsh environmental communications
- Broadcast
- Industrial, Petrochemical

## Ordering code:

HMA-X(x) <sup>5</sup> - (NxAAA) <sup>4</sup>	/ CCC FFF	- XX	- (L2) - LLL
<b>Connector type<sup>1</sup></b> Up to 4 fibers <b>HMA-J</b> Plug (J type) <b>HMA-J-BN(B)<sup>3</sup></b> Bulkhead jam-nut <b>HMA-J-BF(B)<sup>3</sup></b> Bulkhead flange  <b>HMA-M</b> Plug (type mini) <b>HMA-M-BN</b> Bulkhead jam-nut <b>HMA-M-BF</b> Bulkhead flange <sup>1</sup> <b>HMA-M-BX</b> Bulkhead flange <sup>1</sup>  Up to 8 fibers <b>HMA-S</b> Plug (S type) <b>HMA-S-BN</b> Bulkhead jam-nut <b>HMA-S-BF</b> Bulkhead flange	<b>CCC - Cable type</b> <b>LD2</b> Tactical cable 2 fibers <b>LD4</b> Tactical cable 4 fibers <b>LD6</b> Tactical cable 6 fibers <b>LD8</b> Tactical cable 8 fibers <b>LDAC4<sup>7</sup></b> Armored cable 4 fibers <b>D8</b> Duplex 2.8 x 5.5 mm <b>28</b> Cable Ø 2.8 mm  <b>FF - Fiber type</b> <b>OM1</b> MM 62.5/125 µm <b>OM2</b> MM 50/125 µm <b>OM3</b> MM 50/125 µm <b>S2D</b> SM 9/125 µm (G.652D) <b>S7A<sup>6</sup></b> SM 9/125 µm (G.657A1)		<b>Cable length</b> L, L2 Length (m)
		<b>Cable type</b> <b>P</b> Pigtail <b>JC</b> jumper crossed <sup>2</sup> <b>JS</b> jumper straight	

Note:

- 1) Other type of rugged connector (S900, ...) on demand, Detailed information concerning connectors: HMA-J: STR\_02-08\_EN-Connector\_HMA-J  
HMA-S: STR\_03-08\_EN-Connector\_HMA-S  
HMA-M: STR\_01-12\_EN-Connector\_HMA-M
- 2) HMA cables: JC - standard, JS cable straight - on demand  
Hybrid cable: HMA to single fiber connectors (FC, SC, ST, LC, ..): JS - standard
- 3) -BNB, -BFB boot version, more information refer to STR\_02-08\_EN-Connector\_HMA-J
- 4) Hybrid cable - HMA to standard connectors (defined according to the CON\_13-01\_EN-ORD\_CODE)
- 5) x -if cable configuration is different than planform configuration please use x=2, 4, 6 or 8 according to planform
- 6) S7A - G.657A1 standard, other on request
- 7) LDAC - armored flexible cable
- 8) Cable dependant



**Cable Connection:**



Straight cable Connected pins

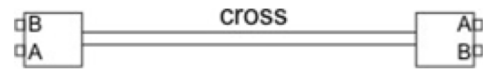
2 fibers connector      4 fibers connector

A1 - A1                  A1 - A1

B1 - B1                  A2 - A2

B1 - B1

B2 - B2



Cross cable Connected pins

2 fibers                  4 fibers                  6 fibers                  8 fibers

A1 - B1                  A1 - B1                  1 - 6                  1 - 5

B1 - A1                  A2 - B2                  2 - 5                  2 - 6

B1 - A1                  3 - 4                  3 - 7

B2 - A2                  4 - 3                  4 - 8

5 - 2                  5 - 1

6 - 1                  6 - 2

7 - 3

8 - 4