

## Data Sheet



### Cable description

The AFBR-HUXYYYYZ series of plastic fiber optic cables are constructed of a single step-index fiber sheathed in a black polyethylene jacket. The duplex fiber consists of two simplex fibers joined with a zipcord web.

Cables comply with UL VW-1 flame retardant specification (UL file #E116331 / Style #5538).

Cables are available in unconnectorized options. Refer to the Ordering Guide for part number information.

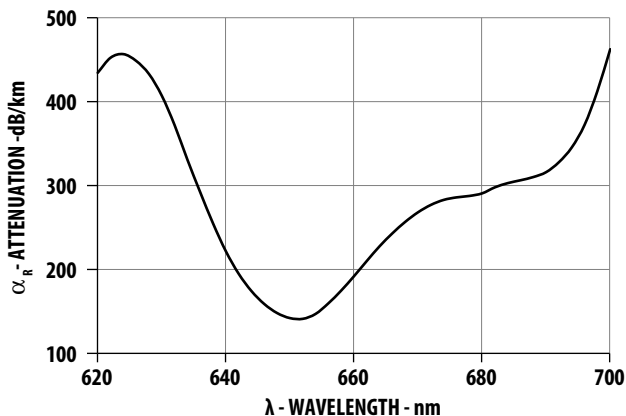


Figure 1. Typical POF attenuation vs. wavelength

### Features

- Compatible with Avago Versatile Link Family of connectors and fiber optic components
- 1 mm diameter Plastic Optical Fiber (POF) in 1 grade with 0.19 dB/m typical attenuation (-40°C to +85°C)
- Halogen-free
- High performance extra low loss POF with 0.19dB/m typical attenuation (-40°C to +85°C)

### Applications

- Industrial data links for factory automation and plant control
- Intra-system links; board-to-board, rack-to-rack
- Telecommunications switching systems
- Computer-to-peripheral data links, PC bus extension
- Proprietary LANs
- Digitalized video
- Medical instruments
- Reduction of lighting and voltage transient susceptibility
- High voltage isolation

## Plastic Optical Fiber Specifications: AFBR-HUXYYZ

### Absolute Maximum Ratings

| Parameter                            | Symbol         | Min. | Max. | Unit   | Note    |
|--------------------------------------|----------------|------|------|--------|---------|
| Recommended Storage Temperature      | T <sub>S</sub> | -55  | +85  | °C     |         |
| Recommended Operating Temperature    | T <sub>O</sub> | -40  | +85  | °C     |         |
| Recommended Installation Temperature | T <sub>i</sub> | -20  | +70  | °C     | 1       |
| Short Term Tensile Force (simplex)   | F <sub>T</sub> |      | 50   | N      | 2, 3    |
| Short Term Bend Radius               | r              | 20   |      | mm     | 2, 4, 5 |
| Long Term Bend Radius                | r              | 35   |      | mm     | 6, 4, 5 |
| Long Term Tensile Load (simplex)     | F <sub>T</sub> |      | 1    | N      | 6, 3    |
| Flexing (r=20mm)                     |                |      | 1000 | Cycles | 7, 8    |

UL VW-1 Flame Retardant

### Mechanical Characteristics, T<sub>A</sub> = -40°C to +85°C unless otherwise specified

| Parameter                    | Symbol | Min. | Typ. <sup>[12]</sup> | Max. | Unit | Note                 |
|------------------------------|--------|------|----------------------|------|------|----------------------|
| Numerical Aperture           | NA     |      | 0.48                 |      |      | 9                    |
| Diameter Core and Cladding   | DC     | 0.94 | 1.00                 | 1.06 | mm   |                      |
| Diameter Jacket              | DJ     | 2.13 | 2.20                 | 2.27 | mm   | Simplex cable        |
| Refractive Index             | n      |      | 1.492                |      |      |                      |
| Core<br>Cladding             |        |      | 1.412                |      |      |                      |
| Mass per Unit Length/Channel |        |      | 5.2                  |      | g/m  | 10                   |
| Cable Leakage Current        | IL     |      | <5x10 <sup>-5</sup>  |      | nA   | 1KV,<br>l=0.11meters |

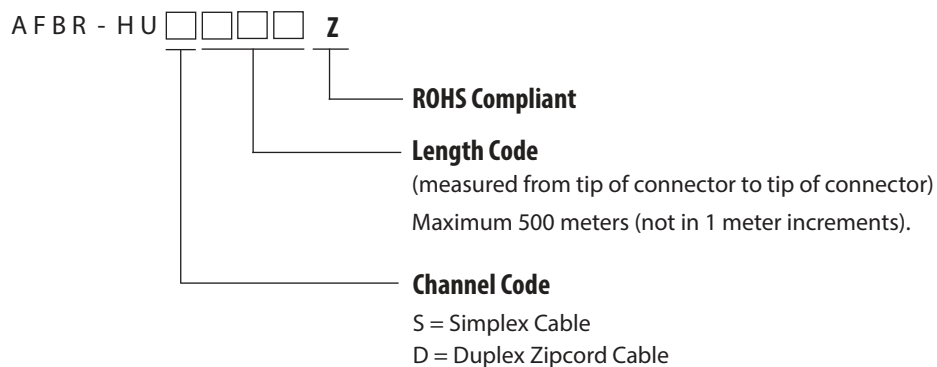
### Optical Characteristics, T<sub>A</sub> = -40°C to +85°C unless otherwise specified

| Parameter  | Symbol         | Min. | Typ. <sup>[12]</sup> | Max. | Unit | Note |
|--|----------------|------|----------------------|------|------|------|
| Cable Attenuation<br>Source: 660nm LED, 0.5 NA (HFBR-15xxZ)  | α <sub>O</sub> | 0.15 | 0.19                 | 0.23 | dB/m |      |
| Reference attenuation<br>Source: 650nm monochromatic, 0.15NA | α <sub>R</sub> |      | 0.15                 | 0.19 | dB/m |      |
| Propagation Delay Constant                                   | l/v            |      | 5.0                  |      | ns/m | 11   |

Notes:

1. Installation temperature is the range over which the cable can be bent and pulled without damage. Below -20°C the cable becomes brittle and should not be subjected to mechanical stress.
2. Short term: 30mins.
3. Fail criteria for tensile force test: elongation higher than 5% of original length.
4. Bend angle is 90°. Bend radius is the radius of the mandrel around which the cable is bent.
5. Fail criteria for bend radius test: increase in attenuation higher than 0.5dB.
6. Long term: 24hours.
7. Bend angle is ±90°. Bend radius is the radius of the mandrel around which the cable is bent.
8. Fail criteria for flexing test: increase in attenuation higher than 0.5dB.
9. Fiber length longer than 2 meters.
10. Without connectors
11. Propagation delay constant is the reciprocal of the group velocity for propagation delay of optical power. Group velocity is v=c/n, where c is the velocity of light in free space (3x10<sup>8</sup> m/s) and n is the effective core index of refraction.
12. Typical data measured at 25°C.

## Ordering Guide for POF Cable



Note: Not all possible combinations reflect available part numbers.  
Please contact your local Avago representative for a list of current available cable part numbers.

For Example:

AFBR-HUS500Z is a Simplex, 500m cable

AFBR-HUD100Z is a Duplex, 100m cable

### Cable Length Tolerances:

The plastic cable length tolerances are: +10% / -0%

## Ordering Guide for POF Connectors and Accessories

### Plastic Optical Fiber Connectors

|            |   |
|------------|---|
| HFBR-4501Z | Gray Simplex Connector/Crimp Ring               |
| HFBR-4511Z | Blue Simplex Connector/Crimp Ring               |
| HFBR-4503Z | Gray Simplex Latching Connector with Crimp Ring |
| HFBR-4513Z | Blue Simplex Latching Connector with Crimp Ring |
| HFBR-4506Z | Parchment Duplex Connector with Crimp Ring      |
| HFBR-4516Z | Gray Duplex Latching Connector with Crimp Ring  |
| HFBR-4505Z | Gray Adapter (Bulkhead/Feedthrough)             |
| HFBR-4515Z | Blue Adapter (Bulkhead/Feedthrough)             |

### Plastic Optical Fiber Accessories

|            |   |
|------------|---|
| HFBR-4522Z | 500 HFBR-0500 Products Port Plugs   |
| HFBR-4525Z | 1000 Simplex Crimp Rings  |
| HFBR-4526Z | 500 Duplex Crimp Rings  |
| AFBR-4594Z | Polishing Kit (one polishing tool, two pieces 600 grit abrasive paper, and two pieces 3 µm pink lapping film) |
| HFBR-4597Z | Plastic Fiber Crimping Tool   |

For product information and a complete list of distributors, please go to our web site: [www.avagotech.com](http://www.avagotech.com)

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AV02-4964EN - August 19, 2015

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