

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.

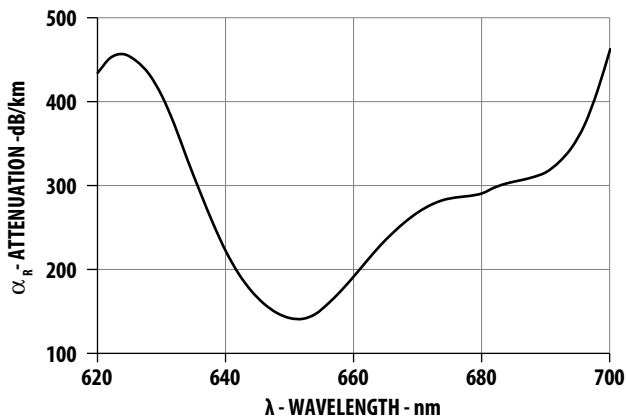


Figure 1. Typical POF attenuation vs. wavelength

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 _S | -55 | +85 | °C | |
| Recommended Operating Temperature | T _O | -40 | +85 | °C | |
| Recommended Installation Temperature | T _i | -20 | +70 | °C | 1 |
| Short Term Tensile Force (simplex) | F _T | | 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 _T | | 1 | N | 6, 3 |
| Flexing (r=20mm) | | | 1000 | Cycles | 7, 8 |

UL VW-1 Flame Retardant

Mechanical Characteristics, T_A = -40°C to +85°C unless otherwise specified

| Parameter | Symbol | Min. | Typ. ^[12] | 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 | Core Cladding | | 1.492 | | | |
| | | | 1.412 | | | |
| Mass per Unit Length/Channel | | | 5.2 | | g/m | 10 |
| Cable Leakage Current | IL | | <5x10 ⁻⁵ | | nA | 1KV, l=0.11meters |

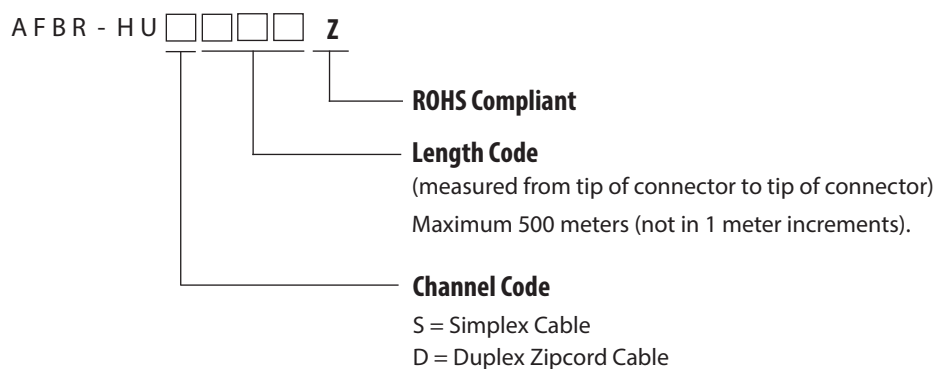
Optical Characteristics, T_A = -40°C to +85°C unless otherwise specified

| Parameter | Symbol | Min. | Typ. ^[12] | Max. | Unit | Note |
|--------------------------------------------------------------|----------------|------|----------------------|------|------|------|
| Cable Attenuation Source: 660nm LED, 0.5 NA (HFBR-15xxZ) | α _O | 0.15 | 0.19 | 0.23 | dB/m | |
| Reference attenuation Source: 650nm monochromatic, 0.15NA | α _R | | 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 (3×10^8 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

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