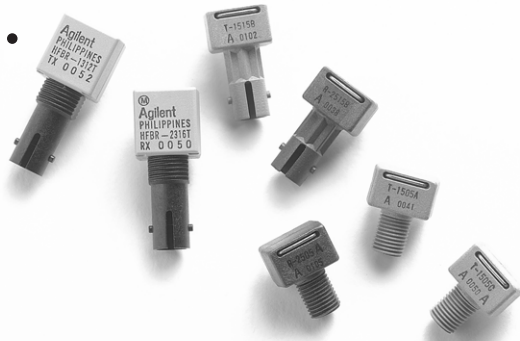
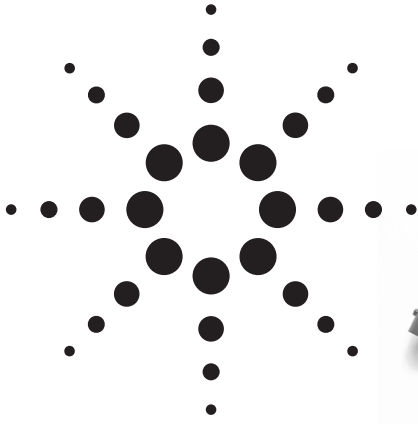


Low Cost Fiber Solutions

Product Selection



This selection guide includes fiber-optic links for signal rates from dc up to 160 MBd and distances up to 5 km. The information in this selection guide will help you select data transmission links for your applications.

The Versatile Link Package (HFBR-0500 Series)

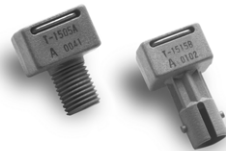
Versatile Link is the most cost-effective family of fiber-optic products from Agilent Technologies. It consists of discrete transmitters and receivers based on 650 nm technology in stackable, rugged plastic housings with snap-in or latching connectors. Versatile Link is characterised for 1 mm plastic optical fiber and 200 μ m HCS[®] fiber.

These links are indeed low cost for the following reasons. First, the connecting cost for plastic optical fiber and HCS[®] fiber is quite low. Second, the Versatile Link package with its snap-in connector port is specifically designed for optimal operation and ease of manufacturing.



The Low-Cost SMA/ST[®] Package (HFBR-0505 Series)

The Low-Cost SMA/ST[®] package is the most cost-effective family with SMA and ST[®] connector types. The transmitters and receivers are housed in a small footprint 1x4 simplex SMA or ST[®] port package that is made of high strength, heat resistant, chemically resistant and UL V-0 flame retardant plastic. The package is designed for autoinsertion and wave soldering so it is ideal for high volume production applications.



The Miniature Link Package (HFBR-0300/0400/0600 Series)

The Miniature Link family is available with 650 nm, 820 nm and 1300 nm technology. This family consists of separate transmitters and receiver ports with standard connectors, such as ST[®], SMA, SC, FC.



Agilent Technologies

Components for Plastic Optical Fiber

Plastic optical fiber, 1 mm in diameter, is ideal for short link lengths and moderate data rates. The key advantage of plastic fiber is its low material and connecting cost. As the diameter of the fiber core is large, there is less variability of the optical signal due to misalignment. The HFBR-453x series of crimpless connectors improves this even more. The innovative design uses a simple snap-in technique which eliminates the need for crimping. This connector not only saves the user labor and tool cost, but reduces the yield loss due to installation errors.

Typical applications where plastic optical fiber is implemented are: frequency conversion; GTO and IGBT control; field-buses, such as Sercos, Profibus and InterBus-S; RS-485 interfaces

Data Rate up to ...	Distance (@25°C)	Distance (0-70°)	Transmitter	Receiver	Fiber Type	Connector Styles	Application Note	Evaluation Kit
DC - 40 kBd	150 m	110 m	HFBR-1523 HFBR-1533	HFBR-2523 HFBR-2533	Plastic	Versatile Link	AN 1035	
DC - 1 MBd Standard	45 m	10 m	HFBR-1524	HFBR-2524	Plastic	Versatile Link	AN 1035	
DC - 1 MBd High Performance	75 m	45 m	HFBR-1522 HFBR-1532	HFBR-2522 HFBR-2532	Plastic	Versatile Link	AN 1035	HFBR-0501
DC - 2 MBd	80 m	50 m	HFBR-1505C*	HFBR-2505C*	Plastic	SMA	–	HFBR-0538
DC - 4 MBd	60 m	40 m	HFBR-1604	HFBR-2602	Plastic	SMA		
DC - 5 MBd	50 m	20 m	HFBR-1521 HFBR-1531	HFBR-2521 HFBR-2531	Plastic	Versatile Link	AN 1035	
DC - 10 MBd	50 m	40 m	HFBR-1505A* HFBR-1515B* HFBR-1528*	HFBR-2505A* HFBR-2515B* HFBR-2528*	Plastic	SMA ST ® Versatile Link	AN 1080	HFBR-0540 HFBR-0539 HFBR-0528
DC - 16 MBd	50 m	40 m	HFBR-1506AM	HFBR-2506AM	Plastic	SMA		
DC - 32 MBd	–	40 m	HFBR-1527* HFBR-1537*	HFBR-2526* HFBR-2536*	Plastic	Versatile Link	AN 1121	HFBR-0537
32 MBd	100 m	75 m	HFBR-1527* HFBR-1537*	HFBR-2526* HFBR-2536*	Plastic		AN 1066	HFBR-0527P
55 MBd	80 m	60 m	HFBR-1527* HFBR-1537*	HFBR-2526* HFBR-2536*	Plastic	Versatile Link	AN 1066	HFBR-0527P
125 MBd	30 m	25 m	HFBR-1527* HFBR-1537*	HFBR-2526* HFBR-2536*	Plastic	Versatile Link	AN 1066	HFBR-0527P
160 MBd		50 m	HFBR-1527* HFBR-1537*	HFBR-2526* HFBR-2536*	Plastic 0.35 N.A	Versatile Link	AN 1123	HFBR-0527P

*These components can also be used with HCS ® fiber without or with minor design changes in order to increase the maximum capable distance.

Components for Hard Cladded Silica (HCS ®) Fiber

HCS ® fiber, 200 µm in diameter, combines the advantages of glass fiber but at a cost close to plastic optical fiber. Its diameter is still relatively large, which keeps connecting costs low. Another advantage is that the HCS ® fiber cable is fire resistant and so, is rated for risers (UL 1666). If the cable burns due to contact with other materials, it does not emit toxic fumes and so is usable in plenums (UL 910).

Data Rate up to ...	Distance (@25°C)	Distance (0-70°)	Transmitter	Receiver	Fiber Type	Connector Styles	Application Note	Evaluation Kit
DC - 2 MBd		400 m	HFBR-1505C*	HFBR-2505C*	HCS ®	SMA		HFBR-0538
DC - 10 MBd	500 m	300 m	HFBR-1528* HFBR-1505A* HFBR-1515B*	HFBR-2528* HFBR-2505A* HFBR-2515B*	HCS ®	Versatile Link SMA ST	AN 1080 – –	HFBR-0528 HFBR-0540 HFBR-0539
20 MBd	1000 m	700 m	HFBR-1527*	HFBR-2526*	HCS ®	Versatile Link	AN1066	HFBR-0527H
32 MBd	700 m	400 m	HFBR-1527*	HFBR-2526*	HCS ®	Versatile Link	AN1066	HFBR-0527H
55 MBd	400 m	240 m	HFBR-1527*	HFBR-2526*	HCS ®	Versatile Link	AN 1066	HFBR-0527H
125 MBd		100 m	HFBR-1527*	HFBR-2526*	HCS ®	Versatile Link	AN 1066	HFBR-0527H

* These components can also be used with plastic optical fiber without or with minor design changes for shorter distances.

Components for Glass Fiber

The glass fiber mentioned in this selection guide are multimode fiber (62.5/125 μm).

Glass fiber with 62.5 μm core is the most common fiber used in local area network (LAN) applications, and is ideal for higher data rate over longer distances.

Data Rate up to ...	Distance (0-70°)	Transmitter	Receiver	Fiber Type	Connector Styles	Application Note	Evaluation Kit
DC - 5 MBd	2000 m	HFBR-14x4	HFBR-24x2	62.5/125 μm glass	ST®, SMA, FC		
20 MBd	2700 m	HFBR-14x4	HFBR-24x6	62.5/125 μm glass	ST®, SC, SMA	AN 1038	HFBR-0414
20 MBd	5000 m	HFBR-1312T	HFBR-2316T	62.5/125 μm glass	ST®	AN 1038	HFBR-0310
32 MBd	2200 m	HFBR-14x4	HFBR-24x6	62.5/125 μm glass	ST®, SC, SMA	AN 1065	HFBR-0414
32 MBd	3200 m	HFBR-1312T	HFBR-2316T	62.5/125 μm glass	ST®	AN 1065	HFBR-0310
55 MBd	1400 km	HFBR-14x4	HFBR-24x6	62.5/125 μm glass	ST®, SC, SMA	AB 78	HFBR-0414
55 MBd	3200 m	HFBR-1312T	HFBR-2316T	62.5/125 μm glass	ST®	AB 78	HFBR-0310
125 MBd	700 m	HFBR-14x4	HFBR-24x6	62.5/125 μm glass	ST®, SC, SMA	AB 78	HFBR-0416
125 MBd	2800 m	HFBR-1312T	HFBR-2316T	62.5/125 μm glass	ST®	AB 78	HFBR-0310
155 MBd	600 m	HFBR-14x4	HFBR-24x6	62.5/125 μm glass	ST®, SC, SMA	AB 78	HFBR-0416
155 MBd	2700 m	HFBR-1312T	HFBR-2316T	62.5/125 μm glass	ST®	AB 78	HFBR-0310
160 MBd	500 m	HFBR-14x4	HFBR-24x6	62.5/125 μm glass	ST®, SC, SMA	AN 1123	HFBR-0416
160 MBd	2000 m	HFBR-1312T	HFBR-2316T	62.5/125 μm glass	ST®	AN 1123	HFBR-0310

For duplex applications above 20 MBd we recommend our transceiver family HFBR-5xxx.

Fiber and Connectors

Part No.	Description
HFBR-4531	Crimpleless connector for use with plastic optical fiber and versatile link transmitters and receivers (non-latching style)
HFBR-4532	Crimpleless connector for use with plastic optical fiber and versatile link transmitters and receivers (latching style)
HFBR-Rxyyyy	Plastic optical fiber cables of a single step-index fiber (standard attenuation)
HFBR-Exxyyy	Plastic optical fiber cables of a single step-index fiber (extra low-loss)

The following are typical parameters for the types of fiber:

	Plastic Optical Fiber	Hard Clad Silica
Fiber diameter	1 mm	200 μm
Bending Radius: Short-term	25 mm	9 mm
Long-term	35 mm	15 mm
Flexing	1000 cycles	50000 cycles
Fiber Attenuation	0.19 dB/m	7 dB/km

HCS is a registered trademark of SpecTran Corporation. ST is a registered trademark of AT&T

www.agilent.com
www.agilent.com/semiconductors

www.agilent.com/semiconductors

For product information and a complete list of distributors, please go to our web site.

For technical assistance call:

Americas/Canada: +1 (800) 235-0312 or
(408) 654-8675

Europe: +49 (0) 6441 92460

China: 10800 650 0017

Hong Kong: (+65) 6271 2451

India, Australia, New Zealand: (+65) 6271 2394

Japan: (+81 3) 3335-8152(Domestic/International), or
0120-61-1280 (Domestic Only)

Korea: (+65) 6271 2194

Malaysia, Singapore: (+65) 6271 2054

Taiwan: (+65) 6271 2654

Data subject to change.

Copyright © 2002 Agilent Technologies, Inc.

Obsoletes 5988-5418EN

November 7, 2002

5988-8174EN



Agilent Technologies