

## Fibre Optics – Glass Systems

### Evaluation Kits



**Agilent Technologies**  
Innovating the HP Way

The screw coupling SMA kit contains HFBR1402 transmitter, HFBR2402 5MbD receiver, 2 metres 1000µm plastic core fibre optic cable fitted with SMA connectors, and data.

The bayonet coupling ST kit contains HFBR1412 transmitter, HFBR2412 5MbD receiver, 3 metres 62.5/125µm fibre optic cable fitted with ST connectors, and data.

OPT525

|                    | Mftrs. List No. | Order Code      | Price Each |
|--------------------|-----------------|-----------------|------------|
| SMA evaluation kit | HFBR0400        | <b>327-980.</b> |            |
| ST evaluation kit  | HFBR0410        | <b>327-992.</b> |            |

### High Speed ST® Modules



**Agilent Technologies**  
Innovating the HP Way

ST Port Bottom View

Body: H = 10.2, W = 12.7, D = 12.7  
Pin/row spacing = 2.5  
Port colour coding:  
Transmitter Light Grey  
Receiver Dark Grey

Connections:  
HFBR1412/4: Pins 2, 6, 7 – Anode, 3 – Cathode  
HFBR2412: Pins 3, 7 – Common, 2 – Vcc, 6 Data  
HFBR2414: Pins 3, 7 – Common, 2 – Signal, 6 – Vcc  
Other pins – no connection

Miniature bayonet coupled transmitter and receiver modules for high performance links up to 4Km, and data rates up to 30 MbD. Auto-insertable and wave-solderable.

|           | Transmitter            | HFBR-1412   | HFBR-1412 | HFBR14-14 | HFBR14-14 |
|-----------|------------------------|---|-----------|-----------|-----------|
| HFBR-1412 | Standard Transmitter   | Optimised for larger cable, e.g. 100/140µm & 200 PCS    |           |           |           |
| HFBR-1414 | High Power Transmitter | Optimised for smaller cable, e.g. 50/125µm & 62.5/125µm |           |           |           |
| HFBR-2412 | 5MbD Receiver          | TTL/CMOS compatible receiver with -25.4 dBm sensitivity |           |           |           |
| HFBR-2414 | 25MHz Receiver         | PIN pre-amp receiver for data rates up to 35MbD         |           |           |           |

| Receiver |          | Sensitivity (dBm) | Transmitter |             |             |            |
|----------|----------|-------------------|-------------|-------------|-------------|------------|
|          |          |                   | HFBR-1412   | HFBR-1412   | HFBR14-14   | HFBR14-14  |
| HFBR2412 | Logic IC | -24.5             | 5MbD/3.5Km  | 5MbD/4.1Km  | 5MbD/4.7Km  | 5MbD/3.2Km |
| HFBR2412 | PIN      | -36               | 5MbD/5.6Km  | 5MbD/7.3Km  | 5MbD/8.6Km  | 5MbD/7.0Km |
| HFBR2414 | PIN      | -33               | 30MbD/600m  | 30MbD/3.0Km | 30MbD/4.0Km | 5MbD/4.0Km |

OPT527

|                         | Mftrs. List No. | Order Code     | Price Each |
|-------------------------|-----------------|----------------|------------|
| Standard transmitter    | HFBR1412        | <b>481-890</b> |            |
| High power transmitter  | HFBR1414        | <b>546-800</b> |            |
| 5MbD TTL receiver       | HFBR2412        | <b>546-811</b> |            |
| 25MHz analogue receiver | HFBR2414        | <b>546-823</b> |            |

### High Speed SMA Modules — Glass Fibre



**Agilent Technologies**  
Innovating the HP Way



Thread: 1/4"-36 UNS, L = 9.5  
Body: H = 9.5, W = 12.7, D = 12.7  
Pin/row spacing = 2.5

Connections:  
HFBR1402/4: Pins 2, 6 and 7 – Anode, 3 – Cathode.  
HFBR2402/4: Pin 2 – Data, 3, 7 – Common, 6 – Vcc (5V)  
Other pins – no connection.

Port Colour Coding: Transmitters – Light Grey. Receivers – Dark Grey.

Miniature transmitter and receiver modules in a dual-in-line package of high strength heat resistant plastic. Auto insertable.

The modules have SMA port and interface directly with SMA connectors.

Suitable cables: 100/140µm, 50/125µm, 62.5/125µm, 85/125µm glass fibre, 200µm PCS.  
Peak optical power:  
HFBR1402: 11.5dBm typ from 1m 100/140µm cable.  
HFBR1404: 17.5dBm typ from 1m 50/125µm cable.

Data rate: HFBR2402: DC to 5 MbD (TTL CMOS compatible output).  
HFBR2404: 40MbD max, 25MHz analogue output.

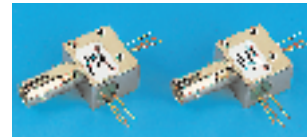
| Receiver supply voltage                         | +5V            | Operating temperature | -40°C to +85°C |
|---|----------------|-----------------------|----------------|
| Link performance of transmitter/receiver pairs: |                |                       |                |
| HFBR1402/2402,                                  | 1300m @ 5MbD   | HFBR1404/2402,        | 1500m @ 5MbD   |
| HFBR1402/2404,                                  | 1500m @ 40MbD, | HFBR1404/2404,        | 2000m @ 40MbD, |
|   | 2100m @ 10MbD  |                       | 3400m @ 10MbD  |

OPT526

|                         | Mftrs. List No. | Order Code      | Price Each  |
|-------------------------|-----------------|-----------------|-------------|
| Standard transmitter    | HFBR1402        | <b>328-005.</b> | 1+ 10+ 100+ |
| High power transmitter  | HFBR1404        | <b>328-017.</b> |             |
| 5MbD TTL receiver       | HFBR2402        | <b>328-029.</b> |             |
| 25MHz analogue receiver | HFBR2404        | <b>328-030.</b> |             |

### Single Fibre Duplex Modules

### Honeywell



- Full Duplex communication over a single multimode fibre
- Doubles the number of comm. channels over an installed fibre-optic infrastructure
- Standard ST optical port and PCB connector height
- Supplied in pairs with an emitter and detector in each ST package configured as below:

HOD4013-132/BBA - 850nm LED with 1300nm PIN diode,  
HOD3021-212/BBA - 1300nm LED with 850nm PIN diode

- Optical cross-talk immunity: <-40dBm
- Wide operating temperature range: -40°C to +85°C
- Commercial variation of proven military design
- Link lengths in excess of 5km using standard glass fibres

OPT601

| Order Code     | 1+             | 3+ | 6+ | 9+ | 15+ |
|----------------|----------------|----|----|----|-----|
| Fibre Duplexer | <b>250-491</b> |    |    |    |     |

### High Speed, High Power ST Emitters, 850nm

### Honeywell



**HFE-4070-313-BBA** Pin 1 = Anode (case),  
Pin 2 = Cathode, Pin 3 = N/C  
**HFE-4074-323-BBA** Pin 1 = Anode,  
Pin 2 = Cathode, Pin 3 = Anode, Pin 4 = Anode

Body overall, H = 20.1, W = 12.7, D = 9.5, 2 holes drilled and tapped 2.56 UNC,  
Fixing centres = 9.5, Lead length 12.7

Fast, high radiance AlGaAs 850nm LED mounted in an ST housing optimised for coupling light into a range of standard optical fibres. Data rates from DC to 85MHz (HFE4070-313-BBA) and DC to above 100MHz (HFE4074-323-BBA). A 0.25mm glass microlens over the 'Caprock' junction collimates the light, increasing intensity.

OPT397

|                 | Mftrs. List No. | Order Code     | Price Each        |
|-----------------|-----------------|----------------|-------------------|
|                 |                 |                | 1+ 5+ 10+ 25+ 50+ |
| HFE4070-313-BBA |                 | <b>624-366</b> |                   |
| HFE4074-323-BBA |                 | <b>624-378</b> |                   |

### Next Generation, ST Receiver Modules

### Honeywell

#### Ethernet and Token Ring



**HFM1202-331,** Pin 1 = GND, Pin 2 = V<sub>CC</sub>, Pin 3 = OUT+, Pin 4 = OUT-, Pin 5 = HI GND,  
Pin 6 = PRT, Pin 7 = SQ LED, Pin 8 = SQ, Pin 9 = ADJ

**HFM1222-331,** Pin 1 = GND ground, Pin 2 = Vcc, Pin 3 = OUT+, Pin 4 = OUT-,  
Pin 5 = 0 GND, Pin 6 = Squelch, Pin 7 = N/C, Pin 8 = ADJ, Pin 9 = SQ

Body overall, H = 10.1, W = 12.7, D = 23.36  
PCB mounting support pins = 9.5 centres. Leads = 2.54 0.25sq. Lead spacing = 1.27

The HFM1202-331 and HFM1222-331 integrated receivers are designed for use in computer LAN's for either Token Ring and Ethernet applications. The receiver modules provide application specific functions not available with separate LED's and receivers such as signal quality output signals and signal squelch capabilities. Both modules are mounted in a metal ST housing to provide maximum shielding and connection to a range of standard fibres.

**HFM1202-331** is a 9 pin next generation module designed to meet the IEEE 802.3 10 BASE FB/FL and FOIRL 10Mb/s Ethernet signal standards. Sensitivity range from -35dBm to -12dBm.

**HFM1222-331** is a 9 pin next generation module designed to meet the IEEE 802.5J 16Mb/s Token Ring signal standards. Sensitivity range from -31dBm to -11dBm.

OPT396

|             | Mftrs. List No. | Order Code     | Price Each        |
|-------------|-----------------|----------------|-------------------|
|             |                 |                | 1+ 5+ 10+ 25+ 50+ |
| HFM1202-331 |                 | <b>624-421</b> |                   |
| HFM1222-331 |                 | <b>624-433</b> |                   |

continued