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SUPPLEMENTARY OPERATING AND SERVICE MANUAL

HP 37204A/B
HP-IB EXTENDER

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SUPPLEMENT TO
OPERATING AND SERVICE MANUAL
(HP Part No. 37204-90003)



HP 37204A/B
HP-IB EXTENDER

SERIAL NUMBERS

This supplement applies to serial no. 2547U09023 onwards for HP 37204A options 003, 004, 013 and 014.

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Introduction

S1-1 Introduction

This supplement to the HP 37204A/B Operating and Service Manual (HP Part No 37204-90003) covers options 003/004/013/014 which allow customers to couple fiber cables with SMA or ST connectors directly up to the HP 37204A.

The Sections in this supplement correspond to those Sections of the Operating and Service Manual which require modifications/additions to cover options 003/004/013/014. To avoid ambiguity, section numbers, etc, in this supplement are prefixed by an "S".

S1-2 New Fiber Options

Options 003/004/013/014 replace options 001/002 which are discontinued.

- Opt 003 adds fiber optic capability (SMA connectors) to port A.
- Opt 004 adds fiber optic capability (SMA connectors) to ports A and B.
- Opt 013 adds fiber optic capability (ST connectors) to port A.
- Opt 014 adds fiber optic capability (ST connectors) to ports A and B.

S1-3 Specification Changes

The new fiber options increase the maximum distance between extenders to 3000m (9800 ft) - provided the power budget is sufficient to cover cable attenuation (see Section S2 of this supplement).

Installation



S2-1 Introduction

Generally, Section 2 of the HP 37204A/B Operating and Service Manual (HP Part No 37204-90003) applies except for the following:

- Page 2-2, para 2-6. Options 003/004/013/014 allow a maximum length cable per link of 3000m (9800 ft), depending on cable characteristics and the link loss budget (see para S2-2-1 below). (Options 001 and 002 allow only 1250m.)

- Page 2-3, para 2-8-2. This para applies to options 001/002 only. For options 003/004/013/014, refer to para S2-2-1 below.

- Page 2-4, para 2-8-3. The CAUTION, which applies to HP's HFBR-4000 connectors, also applies to SMA connectors. For ST connectors, engage pin and slot before pushing home the bayonet connection.

- Page 2-4, para 2-9-2. For options 001/002 only, use loopback cable HP Part No 5061-2694. For options 003/004/013/014, use a standard patchcord with SMA or ST connectors as appropriate.

S2-2 Cable Link Between Extenders

Options 003/004 use SMA connectors; options 013 and 014 use ST connectors).

S2-2-1 Maximum Link Length

Options 003/004/013/014 will work with a range of fiber sizes from 50/125 up to 100/140 micron (dispersion effects make sizes above 100/140 micron unsuitable). Check, for the chosen cable, that the actual link length is less than or equal to the maximum link length.

$$\text{Maximum link length (km)} = \frac{\text{link loss budget (dB) - excess losses (dB)}}{\text{fiber attenuation (dB per km)}}$$

Data for the calculation:

- Fiber attenuation: see cable specification.

- Excess losses: allow for the launch connector loss of non-precision connectors and "extra" connections in the cable, eg patch cables, splices, etc.

- Link loss budget: this varies with the cable dimensions - consult the table below. The table allows for temperature and ageing effects, and the launch connector loss of high performance connectors such as OFTI NOFC (SMA) or AT&T Precision Ceramic Ferrules (ST).

Fiber Dimensions (core/cladding)	**Numerical Aperture**	**Link Loss Budget (dB)**	
50/125 um	0.20	5	
62.5/125 um	0.28	10	To get a
85/125 um	0.26	12	typical figure,
100/140 um	0.29	13.5	add 5 dB

Sample calculation:

- Fiber specification: 62.5/125 cable with attenuation of 4 dB per km.

- Link loss budget for 62.5/125 cable: 10dB.

- Excess launch connector loss: 0dB (precision ST connectors used).

Hence,

- max link length = 10/4 = 2.5 km.
- typical maximum length = (10 + 5)/4 = 3.75 km

Replaceable Parts

S6-1 Introduction

Options 003/004/013/014 comprise the A1 assembly and a fiber optic assembly. The A1 assembly is available as an exchange assembly (37204-69001) but the fiber optic assemblies are available only as non exchange assemblies.

Option	Non Exchange Assy
003	37204-60025
004	37204-60026
013	37204-60028
014	37204-60029

This Section does not list parts for the fiber optic assemblies because troubleshooting the assemblies to component level is not practicable.

For the parts list for A1 assembly and the main list of parts (covers, end panels, etc), and for ordering information, refer to Section 6 of the HP 37204A/B Operating and Service Manual (HP Part No 37204-90003).

Service

S8-1 Introduction

Generally Section 8 of the HP 37204A/B Operating and Service Manual (HP Part No 37204-90003) applies except for the following:

- Page 8-2, para 8-8. The repair kit HFBR-0100 is only for cables used with options 001/002.
- Page 8-6, para 8-10-2. Running self test for the fiber optic ports requires an external loopback connector. HP Part No 5061-2694 is suitable for options 001/002 only. For options 003/004/013/014, use a standard patch cord.
- Pages 8-13 to 8-16, General Service Sheet G-2. Substitute procedure SG-2 given below.
- Pages 8-27 to 8-33, Assembly Level Service Sheet A2. For options 003/004/013/014, repair is by board replacement only so assembly level procedures are not required.

INSTRUMENT TROUBLESHOOTING

G2-1 Determining Which Assembly Is Faulty

This procedure replaces para G2-1 of the HP 37204A/B Operating and Service Manual for options 003/004/013/014 only. Use it to determine simply whether the A1 assembly or the fiber optic assembly is faulty.

Procedure:

1. Run self test (para 8-10 of the HP 37204A/B Operating and Service Manual) and note at which stage the test fails.

2. If self test fails when testing the COAX ports, suspect the A1 assembly.

3. If self test fails when testing the fiber optic ports, suspect the fiber optic assembly.

G2-2 A1 Assembly Replacement

Apply para G2-1 of the HP 37204A/B Operating and Service Manual (pages 8-15 and 8-16).

G2-3 Repair Of Fiber Optic Assembly

For the fiber optic assembly, there is no provision for component level repair. If the assembly is found to be faulty, replace it with a non exchange assembly.

Option	Non Exchange Assy
003	37204-60025
004	37204-60026
013	37204-60028
014	37204-60029

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