



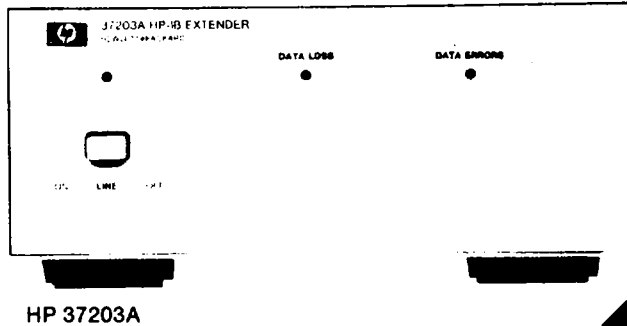
HEWLETT-PACKARD INTERFACE BUS

Versatile Interconnect System for Instruments and Controllers

Models 37203A, 37203L

- Transparent HP-IB extension up to 1000 metres
- HP-IB transfer rate up to 50 k bytes/s
- Supports all HP-IB functions including pass control and parallel poll

- Electrical isolation plus error detection and correction protect HP-IB from transmission errors
- Transmission over single low-cost coaxial cable or, with option 001, dual optical fiber



HP 37203A HP-IB Extender

The HP 37203A HP-IB Extender overcomes the range limitations imposed by the cabling rules of the Interface Bus and provides high-speed, low-cost extension up to 1000 metres.

HP 37203A's are used in pairs: each Extender serialises the normally parallel HP-IB information and transmits it to the other Extender where it is reconverted back to its original format. The transmission medium can be a single low-cost coaxial cable for both directions of transmission or, when Option 001 is fitted, dual optical fiber.

The HP 37203A is in general compliance with each of the following standards and supports their major capabilities

- IEEE Standard 488-1978
- ANSI Standard MC1.1
- IEC Standard 625-1

HP 37203L HP-IB Extender

The HP 37203L is a repackaged version of the HP 37203A on an L-series computer card specifically designed for installation in the HP 2250A Measurement and Control Processor and HP 1000 A-series Computer. It operates in conjunction with a HP 37203A or another HP 37203L at the other end of the link. The transmission media and distances are the same as for the HP 37203A. The HP 37203L is supplied as a single circuit card together with two cable assemblies. Power is supplied from the HP 2250A or Computer mainframe. Operating characteristics are identical to those of the HP 37203A.

Operating Characteristics (HP 37203A/L)

Speed/Range

The table below shows the trade-off between maximum byte transfer rate and distance for coaxial cable and optical fiber.

Table 1. Nominal HP-IB Transfer Rates and Response Times

	Max HP-IB byte transfer rate (kbytes/sec)	Max SRQ propagation delay (μ s)	Max Parallel Poll response time (μ s)
Coaxial Cable			
Short* (at normal speed)	50	14	20
250m (max range at normal speed)	40	18	25
500m (max range at 1/4 speed)	14.2	55	75
1000m (max range at 1/16 speed)	2.75	200	270
Fiber Optics (opt 001)			
Short*	50	14	20
250m	39	20	25
1000m	25	30	40

*For distances <250m, interpolate between Short and 250m.

Parallel Poll Operation

The HP 37203A supports the Parallel Poll function but because of the absolute transmission delay, a guaranteed response cannot be delivered within 200 ns, as required by IEEE 488. Instead, the response from distant devices is returned as rapidly as possible to the polling controller.

Error Detection and Correction

Data is transmitted across the link in frames. Each frame includes a cyclic redundancy check code which is rechecked when the frame is received. Any transmission errors which are detected cause the frame to be rejected. Data integrity is maintained by automatic retransmission of the rejected data frame. The presence of errors in the received data causes the DATA ERRORS indicator on the HP 37203A front panel to be illuminated. A break in the link, or loss of power at the remote Extender will cease all activity on the Bus until the link is re-established

Transmission Over Coaxial Cable

The standard serial link between Extenders is a single coaxial cable which is used for transmission in both directions. Coaxial cable was chosen for this link because it is relatively inexpensive, easy to handle, and easy to obtain. The use of Belden type 9248B cable (or equivalent) is recommended.

Transmission Over Optical Fiber

Option 001 of the HP 37203A/L provides the capability of operation over duplex optical fiber as a user-selectable alternative to coaxial cable. The use of optical fiber removes the metallic path between the Extenders and, therefore, eliminates all risk of electromagnetic pick-up on the link. Option 001 is recommended for use in severe electrical environments or where the use of electrical signaling is not acceptable. A further advantage of optical fiber is that it enables a higher byte transfer rate to be attained for transmission distances greater than 250m than is possible with coaxial cable (see Table 1).

The HP 37203A is also available from Instruments DIRECT 800-523-2121 (US only).

Accessories

HP 39200B Duplex fiber optic cable	Price \$3.20
HP 92179G Coaxial Cable	\$0.77/m
HP 92226A BNC Connector, male	\$4.00

Options (HP 37203A/L)

001: Fiber Optic Interface	+\$460
010: Power Fail Option for use with HP 3000 Computer	+\$55
301: Rack Mount Adaptor (HP 37203A only)	+\$30
302: Dual Rack Mount Adaptor (HP 37203 only)	+\$50

Ordering Information

HP 37203A HP-IB Extender	\$1285
HP 37203L HP-IB Extender	\$1020