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# HP-PB Asynchronous 8-Channel Multiplexer

## Technical Data

**Product Number  
40299A**

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The HP 40299A Multiplexer provides eight asynchronous RS-232-C compatible ports with full duplex modem control capability. It connects up to eight devices having RS-232-C interfaces to HP 9000 Hewlett-Packard Precision Bus (HP-PB) Series 800 Computers. A wide range of configurable transmission modes and formats permits hardwired and remote connection of various CRT terminals, printers, plotters, and other asynchronous devices.

### Features

- Eight full-duplex asynchronous serial I/O ports with 11-wire modem control capability (8 modem signal, 1 transmit, 1 receive, 1 ground). Some European license requirements still pending. Consult field representative for status.
- EIA RS-232-C and V.24/V.28 compatibility
- Full duplex modem support (8 signals per channel)
- Programmable data-rate for each channel
- Programmable character size: 7 or 8 data bits
- Programmable parity: odd, even, or none
- Programmable number of stop bits: 1 or 2

- Parity, overrun, framing error check detects transmission faults
- Firmware based self-test helps assure interface integrity
- Automatic and Programmable device XON/XOFF handshaking to pace MUX input and output data transmission
- On-board buffering to send/receive data to/from host for multiple ports

### Functional Description

The HP 40299A Asynchronous 8-Channel Multiplexer is used for interfacing up to eight EIA RS-232-C compatible devices to the HP-PB backplane. As a 68000 microprocessor-based interface, the HP 40299A MUX accesses a 64 Kbyte EPROM which contains a power-up self-test. Moreover, it monitors the download process into the 512 Kbyte RAM and verifies the integrity of the code. Download operation and card diagnostics are performed through special supervisor on-card buffer. The HP 40299A does not support the system console.

### Functional Specifications

#### Capacity

**Channels:** Eight channels — full-duplex, connected through a standalone Active Distribution Panel (ADP)

**Buffering:** On-card buffering to send/receive data for multiple ports to increase throughput and reduce host CPU load.

**Transmit Buffer Size:** 255 bytes per port

**Receive Buffer Size:** 511 bytes per port

**Software:** HP 9000 Series 800 HP-UX revision 7.0 or later. Supported on HP-PB based HP 9000 Series 800 Computers.

#### Communications

**Interface Level:** RS-232-C; CCITT V.24/V.28

**Data Rates:** Baud rate defaults to 9600 and is software programmable to any of the following rates: 75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200.

Modem Support includes:

- originate mode
- auto answer mode
- modem connection timer
- lost receiver-ready timer
- no-activity timer
- host control of every interface output modem line

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RS-232-C	V.24	Common Abbreviation	Description	Input/Output	Connector Pin Nos.
AB	102	SG	Signal Ground	N/A	7
BA	103	SD	Transmit Data	O	3
BB	104	RD	Receive Data	I	2
CA	105	RS	Request to Send	O	8
CB	106	CS	Clear to Send	I	22
CC	107	DM	Data Set Ready	I	20
CD	108	TR	Data Terminal Ready	O	6
CF	109	RR	Data Carrier Detect	I	4
CH	111	SR	Signal Rate Selector	O	23
CE	125	IC	Ring Indicator	O	9
—	—	GPO	General Purpose Output	O	5

**Throughput:** Although the 40299A 8-channel MUX hardware and firmware is able to support a data throughput of 19.2K baud simultaneously on each channel, the global performance of the MUX is dependent on the HP 9000 HP-PB Series 800 Computer performance.

**Communication Mode:** Asynchronous, bit serial.

**Break Detection and Transmission:** Break condition is recognized by the interface and message is sent to the host. Break condition can also be generated by the MUX at the request of the host.

### Optional Device

**Handshakes:** The MUX is capable of pacing both inbound and outbound data via an "XON/XOFF" type of protocol. The "XON/XOFF" characters are programmable. The host may program the MUX card to automatically manage "XON/XOFF" flow control, thus avoiding any character loss. The "XON/XOFF" may also be under application control, but no data loss is only guaranteed if the MUX is responsible for flow-control.

### Edit Functions

Edit functions such as backspace, character delete, and line delete are passed to the host and managed by the host operating system.

## Environmental Specifications

RFI: HP 40299A complies with FTZ 1046/48 and FCC Class A Regulations.

## Installation and Support

**Installation:** The HP 40299A is not customer installable when purchased as an add-on product. Otherwise the product is bundled with the system. Installation cost is billed back to manufacturing division.

**Diagnostic:** A self-test is performed at power-on by the system. Additional online diagnostics and reset capabilities are provided through the system diagnostic environment.

**Support Services:** Hardware support services available for this product are included in the System Support series.

**Training:** The training on the HP 40299A is provided with a self-paced training course numbered 40299A+49A-90101.

## Ordering Information

**The 40299A includes:**

**40299-60001** 8-channel multiplexer printed circuit assembly

**40299-60002** Active distribution panel

**40299-60003** Cable assembly

**40299-60004** Packaging kit

**40299-60005** Loopback connector

**40299-60006** Fix-plate assembly

**40299-80003** Packaging

**40299-90002** Installation manual

**40299A options:**

**0B0:** Deletes manual and loopback

## Physical Specifications

	Height	Width	Depth	Weight
MUX card (Part #40299-60001)	29.5 mm (1.15 in.)	100 mm (3.90 in.)	220 mm (8.58 in.)	0.25 kg
ADP box (Part #40299-60002)	255 mm (9.95 in.)	110 mm (4.29 in.)	32 mm (1.25 in.)	0.4 kg

## Electrical Specifications

### Direct Current Requirements:

Voltage	Typical Current	MAX Current
+ 5	1.00 A	1.20 A
+12	0.10 A	0.13 A
-12	0.10 A	0.13 A

## Recommended Peripheral Cables

For direct connection to RS-232-C terminals, printers, plotters, etc., minimum wiring requires pins 1, 2, 3, 7 to be wired end-to-end.

**13242M** 5 metre 25-pin M to 25-pin M connector: pins 1-8, 12, 15, 17, 20, 22, 24 wired end-to-end.

**13242N** 5 metre 25-pin M to 25-pin M connector: pins 1-8, 12, 15, 17, 20, 22, 23, 24 wired end-to-end. (11 and 19 are switched.)

**13242Y** 5 metre 25-pin M to 25-pin M connector: pins 1-3, 7 wired end-to-end.

**92219G** 3.8 metre 25-pin M to 25-pin M connector: pins 1-8, 11, 12, 19, 20, 22, 23, 25 wired end-to-end.

### Connection to RS-232-C Modems

**92219Q** 5 metre 25-pin M to 25-pin M connector.

Computer End Pin Number	Data Set End Pin Number
1	1
2	3
3	2
4	8
6	20
7	7
8	4
9	22
20	6
22	5
23	23

For UUCP direct connect applications from 40299A to 40299A, the following cables could be used:

- 92219Q
- 30062B

The cables listed above are available from the Direct Marketing Division (DMK).

## Supported Devices

Devices	Direct Connect RS-232-C	Modem Connect RS-232-C
<b>Terminals</b>		
2392A/2393A/2394A/2397A	Yes	Yes
2394A Graphic Athena	Yes	Yes
3081A Data Capture	Yes	No
C1001A Settler I low cost 2392/94	Yes	No
C1003A Pioneer low cost ASCII term	Yes	No
<b>Personal Computers</b>		
HP 110+ with 2392A Reflector I*	Yes	Yes
HP 150 I/II with HP 2623 emulator	Yes	Yes
Vectra with HP 2392/93/94 emulator	Yes	Yes
Integral PC with 2622 emulator†	Yes	???
9836A/9837A	Yes	???
HP 9000 S200/300 2392A emulator*	Yes	???
<b>Printers</b>		
2225D ThinkJet	Yes	No
2227A QuietJet	Yes	No
2563B	Yes	No
2565A	Yes	???
2566A	Yes	???
2932A/Bearfoot	Yes	Yes
2934A	Yes	Yes
2686A LaserJet	Yes	No
<b>Plotters</b>		
7440A/B Joey 8 pen B size	Yes	No
7470A opt. 001	Yes	No
7475A opt. 001	Yes	No
7550A	Yes	No
7580A/B	Yes	No
7585A/B	Yes	No
7586A/B	Yes	No
<b>Multiplexers</b>		
None		

\*Block mode support will be determined after testing  
 †No block mode support