HEWLETT® PACKARD

X.25/PAD–Multiplexer

Technical Data

Product Number
HP 2335A

The HP 2335A-X.25/84 Multiplexer is a high-performance and high-reliability stand-alone device which offers connection via an X.25 link between one or more central computers and up to 16 terminals, PCs in terminal emulation mode, or printers.

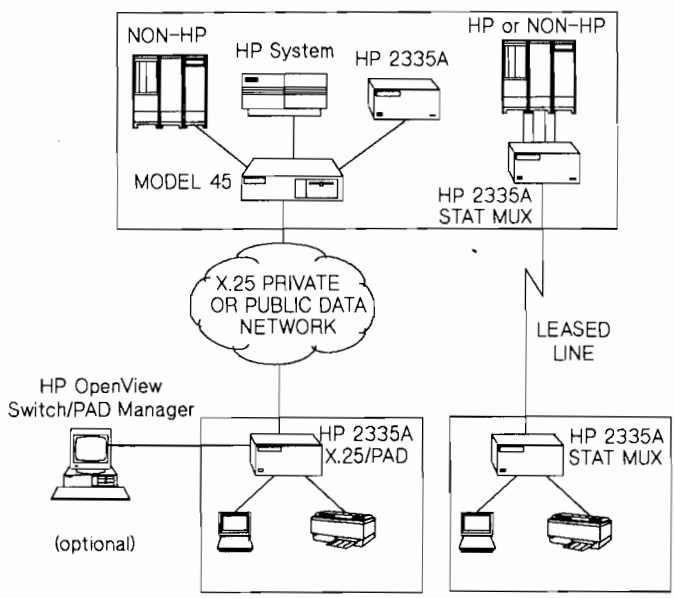
The HP 2335A operates as an X.25 Packet Assembler/ Disassembler (X.25 PAD) for asynchronous device connection to a public or private X.25 network, or it can be used in statistical multiplexer configuration over a leased line. It provides full X.25/84 functionality.

The HP 2335A can work with the HP Model 45 multiprotocol switch. You can manage both devices from an HP OpenView PC.

The HP 2335A can also be used and managed as part of the HP Private Packet Network (HP PPN).

The HP 2335A has a high-speed link supporting up to 64 Kb/s on the RS-232-C link.

The HP 2335A handles 41 packets per second (128 bytes each) and minimum 100 packets per second (1 byte each) for character mode applications. The HP 2335A X.25/84 can be connected to Digital VAX™ computers and to HP 3000, HP 9000, and HP 1000 computers.



Features and Benefits

- High performance
  - Up to 41 packets per second (128 bytes each)
  - Over 100 packets per second (1 byte each)
  - Data compression
  - Special printer term type on HP 3000 for high throughput
  - Line speed up to 64 Kbp/s
- High reliability
  - 4th generation of X.25 PAD
  - Theoretical hardware MTBF: 219,000 hours
  - Proven firmware in over 15,000 installed units
- Low-cost solution
  - Expandable from 4 to 16 terminals in groups of 4
  - Can be used as X.25 PAD or statistical multiplexer
  - Host port contention
- Ease-of-use
  - Menu-driven configuration
  - Step-by-step User's Guide
  - Default configuration for statistical multiplexer
  - Test port configuration and diagnostics (password protected) accessible from any terminal
  - Symbolic host computer addressing up to 16 names
  - User-defined welcome message (up to 20 characters)
  - User-defined PAD message header (10 characters)
  - Up to three groups of pool ports can be defined
- Security
  - Automatic connection to preconfigured computer port
  - Single port reset command and full HP 2335A reset command
  - Local User Group (LUG) definition
- Multivendor
  - Support for DEC VAX computers
- Worldwide support
  - Certified on over 25 international public networks
- Reduced network operation costs
  - Manageable together with HP Model 45 from an HP OpenView PC

Functional Specifications

Synchronous Port Specifications

The synchronous interface is supported at all speeds from 1200 bps to 64,000 bps with external clocking.

The HP 2335A has one RS-232-C, CCITT V24/V28 synchronous full-duplex composite interface to connect it to a remote site via:

- Analog leased line
- Digital leased line
- Dial-up line
- X.25 Packet Switching Network (public or private)

A hardwired connection for the synchronous composite link is not supported: synchronous, full-duplex, short-haul modems, or a modem eliminator should be used.

Speeds of 4800, 9600, or 19,200 bps can be selected with internal clocking (modems supported and recommended are described later in this data sheet).

Asynchronous Port Specifications

The HP 2335A has a 4-port interface that supports full-duplex, asynchronous RS-232-C, CCITT V.24/V.28 point-to-point connections. Up to four interfaces can be installed in each HP 2335A, allowing up to 16 connections. These connections can be made to devices or hosts that are local or remote.

- Transfer data rates: 75, 110, 150, 300, 1200, 2400, 4800, 9600, or 19,200 bps
- Auto-parity (odd, even) and auto-speed (up to 19,200 bps)
- Binary transfer with no flow control can be done in blocks of maximum 128 bytes
- Xon/Xoff or ENQ/ACK flow control and HP block mode handshake methods are available

X.3, X.28, X.29 Specifications

The HP 2335A follows the CCITT X.3/X.28/X.29 1984 recommendations which allow it to act as a private Packet Assembler/Disassembler (PAD). The standard 22 X.3 parameters are supported, and 15 additional HP-defined local parameters are available for enhanced functionality with HP devices. These local HP parameters are:

- Parity
- Local block mode control
- Compatibility with ATP/ADCC (cluster only)
- Block mode terminator (forward packet)
- Data compaction
- Error message to host
- Break at application level
- Information message

- Control asynchronous modem signals
- Auto-speed and auto-parity
- Block mode buffer size
- Asynchronous modem signal timer
- HP hand-check support
- HP 2335A byte count
- Choice of remote profile

X.25 Specifications
The HP 2335A has an X.25 interface which is fully compatible with the 1984 version of the CCITT X.25 recommendation:

Level 1: Physical Layer
- X.21 bis, RS-232-C, CCITT V24/V28 (up to 64 Kbps)

Level 2: Data Link Layer
- LAP-B protocol operates as DCE or DTE
- Module 8 sequence number
- Window size (1-7)

Level 3: Network Level
- Switched Virtual Circuit (SVC) or Permanent Virtual Circuit (PVC)
- Up to 17 simultaneous virtual circuits
- Window size (1-7)
- Packet size (128 bytes)
- Supports D, M, and Q bits

Other Supported Facilities:
- Window size negotiation
- Incoming and Outgoing calls barred
- One way outgoing and incoming SVC
- Closed User Group (CUG)
- Bilateral closed user group
- Bilateral closed outgoing
- Reverse charging request and acceptance
- Packet size negotiation
- Flow control parameter negotiation
- Throughput class negotiation
- Call redirection
- Hunt group
- Network User Identifier (NUI)
- Extended calling address
- Extended called address

Network Management
In stand-alone environments the HP 2335A can be managed locally via an attached terminal. An HP OpenView network management software running on an HP OpenView PC is also available to manage networks based on HP2334A/2335As and Model 45s. It provides easy-to-use monitoring and control functions using a standard HP OpenView graphical interface.

In addition, a complete integration with HP OpenView DTC Manager release 6.0 is provided, allowing system and network management to be performed from a single PC.

For more information, please refer to the "HP OpenView Switch/PAD Manager" and "HP OpenView DTC Manager" data sheets.

Supported and Recommended Products

Terminals

HP 2392A	HP 2393A	HP 2394A
HP 2397A	HP 2622A	HP 2623A
HP 2624B	HP 2626A	HP 2627A
HP 2628A	HP 3081A	HP 700/22
HP 700/41	HP 700/43	HP 700/44
HP 700/92	HP 700/94	
VT 100	VT 220	
VT 241	VT 320	
HP Vectra CS/ES/RS/QS		

Printers

HP 2235B	HP 2563B	HP 2564B
HP 2566B	HP 2567B	HP 2684A
HP 2686A	HP 2932A	HP 2934A
LA 210	LA 75	LN 03
LN 03 Plus		

Computer Interfaces	STAT MUX (Async)	X.25 PAD (Sync)
HP 3000	ATP	INP & HP 24405A
	HP 2345A/DTC	HP 2345A #3xx, 2346D/E/F/G
	HP 2340A/DTC	HP 2340A 340, 2343D
HP 9000	HP 40299A	HP 36941A
	HP 27128A	HP 36960A
	HP 27160A	
	HP 98626A	
	HP 98228A	
	HP 98644A	
	TS8 (HP 2342A)	
	HP 98638A	
	HP 98196A	
	HP 98190A	
HP 1000	MUX	HP 91751A/R &
	HP 12075A	
	HP 12250A	
VAX 7xx	DMF 32	KMS 11
	DHU 11	DMF 32
	DMZ 32 (CK-DM 732)	
MICROVAX– II	DZV 11	KMV 1A
	DZQ 11	DPV 11
	DHV 11	
	DHQ 11	
	CXY 08	
MICROVAX 3xxx	CX408	KMV 1A
	DPV 11	
MICROVAX 2000	RS-232-C Line	DST 32
	DEC 423 Lines	DHT 32 Lines
MICROVAX 3100	RS-232-C Line	DSH 32
	DEC 423 Lines	
	DSH 32 Lines	
VAX 6xxx	DMB 32	KMS 1P
VAX 8xxx	DHB 32 (EIA 232)	

Applications Supported

- PCs
  AdvanceLink (2392)
  AdvanceMail (HP Vectra)

- Computers (STAT MUX)
  Character node
  VPlus block node (HP 3000)
  Binary
- Computers (X.25/PAD)
  Character node
  VPlus block node (HP 3000)

Recommended Modems

- Async Modems
  HP 37212A
  HP 35141A
- Sync Modems
  Racal Milgo Alpha 96
  Bell 2096A
- Async/Sync Modems
  HP 92203A (Codex V.32 2264)
  Codex 2620, 2640 (HP 32066A), 2680
  Codex 3380A, 3380B
  Codex 3500 DSU/CSU

HP Private Packet Network

- Model 45 X.25 Switch and Multiprotocol PAD
- Model 75 Multiprotocol X.25 Switching Node

Certified X.25 Packet Switching Networks
Please contact your local HP Representative for up-to-date information.

- North America
  Canada (Datapac)
  US (Telenet, Tymnet)
- Europe
  Austria (Datex-P)*
  Belgium (DCS)
  Denmark (Datapak)
  France (Transpac)
  Germany F.R. (Datex-P)
  Ireland (Eirpac)
  Italy (Itapac)*
  Luxemburg (Luxpac)
  Netherlands (Datanet1)
  Norway (Datapak)
  Spain (Iberpac)
  Sweden (Datapak)
  UK (PSS)
- Other Countries
  Australia (Austpac)
  Brazil (Renpac)*
  Hong Kong (Datapak, Intelpak)
  Israel (Isranet)
  Japan (Venus-P)
  Malaysia (Maypac)
  Mexico (Telepac)*
  Singapore (Telepac0
  South Africa (Saponet-p)
  South Korea (Datacom-net)
  Taiwan (Pacnet)

* Certification is still in progress.

Customer Installation and Configuration

The customer is responsible for the installation of the HP 2335A. The HP 2335A User's Guide is needed to install and configure the HP 2335A.

The initial configuration may be set up by a Hewlett-Packard Customer Engineer by ordering the HP NetStartup product.

The add-on HP 40262A, HP 40262B 4-port interface, or any upgrade kit may be installed by a Hewlett-Packard Customer Engineer on a time-and-materials basis.

Environmental Characteristics

Temperature Free Space Characteristics
Operating: 0° to +55°C
Non-operating: -40° to +70°C

Relative Humidity (non-condensing)
Operating: 5% to 95% at 40°C during 24 hours
Non-operating: 90% at 65°C to 95% at 40°C

Altitude
Operating: 4,600 meters (14,700 ft)
Non-operating: 15,300 meters (50,000 ft)

Vibration
0.0001 g2/Hz, 5-500 Hz, 3 axis for 10 minutes
Dwell at resonance: 10 minutes

Physical Characteristics
Size: 153 mm H x 325 mm W x 260 mm L (6.03 in H x 12.81 in W x 10.24 in L)
Net weight: 6 kg (13 lbs)
Shipping weight: 9 kg (20 lbs)
Input voltage: 90 to 132 volts
With option 015: 198 to 264 volts
Input frequency: 47 to 63 Hz
Power consumption: 30 watts typical

Approvals
RFI (Radio Frequency Interference): FTZ1046/84 and FCC class A, VCCI and SABS. Configurations including peripherals with high RFI levels may not be supported or may require on-site verification in some countries.

Safety: UL 478 for EDP and office equipment, CSA C22.2 number 220-m1987. Compliance with international standard IEC380, IEC435.

Datacom certification approval: Australia, Belgium, UK, Germany, Japan, and Scandinavia.

Ordering Information

HP 2335A HP 2335A-X.25 Multiplexer

Options

123	4 modem connect ports
G23	*4 modem connect ports in Germany
263	19-inch rack mount kit

Note: You must order at least one Option 123.

HP 40262A Additional 4 modem connect ports for HP 2335A
HP 40262B* Additional 4 modem connect ports for HP 2335A in Germany
HP 40263A 19-inch rack mount kit for HP 2335A
HP 40235A Upgrade kit between HP 2335A and new version HP 2335A X.25/84
Option 001 New version HP 2335A/84 documentation

Ordering Cables

For detailed information on cables, please refer to Appendix F of the HP 2335A User's Guide. The cable on the synchronous link is included in the HP 2335A.

HP 40220A Cable between HP 2335A and ATP/DTC printer ports

HP 40221A** Cable between HP 2335A and ATP/DTC terminal ports
HP 40230A 25-pin cable for HP 3-pin interface (ATP, DTC)

* Terminal/printer attached to HP 2335A via modem, for Germany only.

**Cable between HP 2335A and ATP/DTC printer ports using Term Type 18 HP 40220A.

Documentation

02335-90021 HP 2335A Reference Manual
02335-90022 HP 2335A User's Guide
02335-90017 HP 2335A Quick Reference Guide
5958-3602 X.25, the PSN Connection