

HP 700/X Family of X Window Graphics Terminals

Technical Data

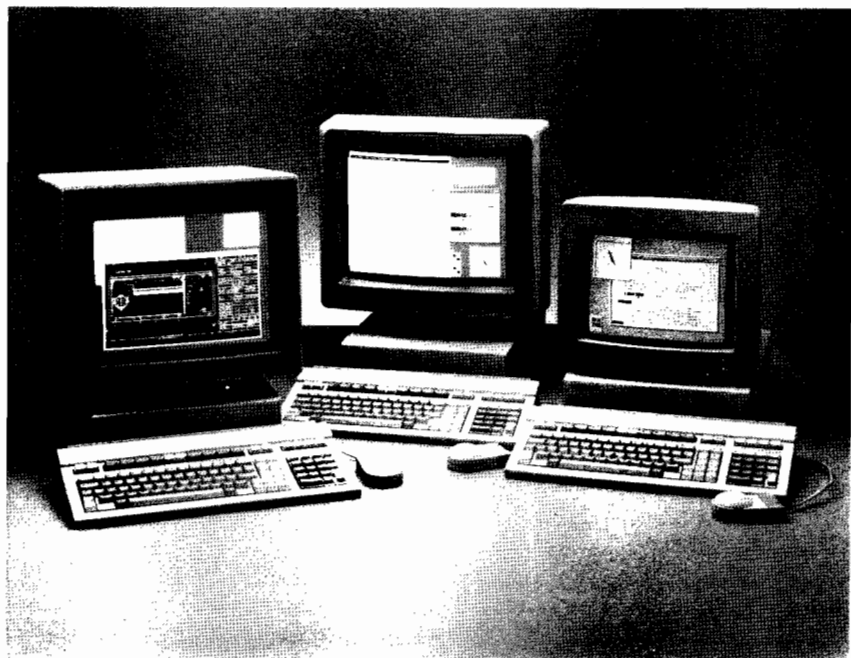
Description

The HP 700/X family of X Window Graphics Terminals are high-quality network display stations based on the industry-standard X Window System Version 11, Release 3.

The HP 700/X terminals connect directly to a local area network and operate in multivendor environments. The terminals provide the user with interactive access and simultaneous display of multiple applications.

The HP 700/X terminals are available in a variety of low-cost color and monochrome bundled configurations. The terminals provide a cost-effective means of adding more user seats on the network. When included as components of an engineering, manufacturing, or business solution, the HP 700/X terminals can substantially reduce the overall hardware, administration and maintenance costs.

The HP 700/X terminals are a complementary low-end offering to the HP/Apollo family of workstations. They reinforce our commitment to industry standards and are a key component in HP's Cooperative Computing Environment strategy.



Key Features

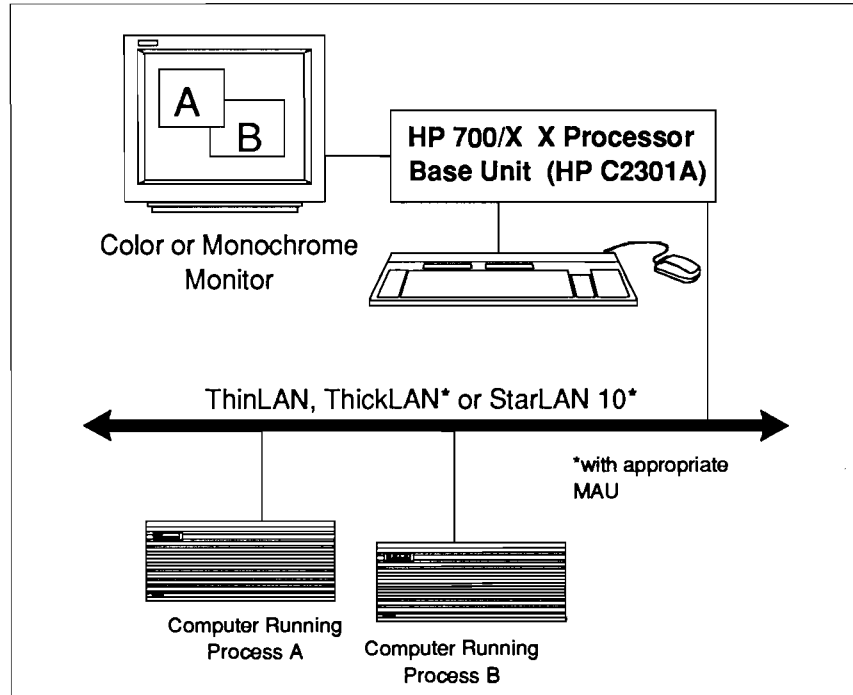
- Support backing-store and save-under features of the X Window System
- Operate on IEEE 802.3/Ethernet ThinLAN, ThickLAN, or StarLAN 10 networks using standard TCP/IP protocol
- Include 1 Mbyte of DRAM expandable up to 4 Mbytes
- Support display of 16 colors from a palette of 4096 or up to 16 levels of gray scale
- Deliver X11 server performance comparable to entry-level workstations
- Support standard TFTP, BOOTP, TELNET, and XDM utilities
- Include built-in, mouse-operated configuration screens with password security mode
- Provide common processor base unit that supports interchanging graphics monitors

System Configuration

The system configuration required to operate HP 700/X terminals is based on the client/server model of the X Window System. This is illustrated in the diagram opposite.

In this model, the display server (an HP 700/X terminal) makes or receives requests from the client (remote host system that contains the applications). Since the X Window System is vendor-independent and network-transparent, the server (the HP 700/X terminal) can make or receive requests from any client host system on the network that supports the X Window System Version 11.

The HP 700/X terminals also include TELNET capability (an ANSI-standard terminal emulator) which is used for user login or troubleshooting.



HP 700/X - X Window Terminal System Configuration

Applications

Applications for the HP 700/X terminals range from ME and EE design automation to solutions for office automation, industrial automation, software development, and medicine. Example applications include:

- ME-CAD view station
- EE-CAD design capture
- Desktop publishing
- Software development
- Financial trader workstation
- Database inquiry station
- Healthcare information station
- Geographic mapping station
- Industrial process view station

Performance

The HP 700/X terminal delivers high-speed 2D graphics performance comparable to entry-level (2-3 MIP-rated) workstations, when the latter is configured as an X Window display server.

The terminals come standard with a high-performance 50 Mhz TMS 34010 graphics processor for executing X Window server instructions and a co-processor for efficient handling of network communications, keyboard entry, and mouse movement.

To reduce host system compute resources, the HP 700/X ter-

minals support backing-store and save-under, performance-enhancing features of the X Window System. These features are used to store and quickly retrieve complex overlaid graphic windows from local memory.

Performance of the HP 700/X terminal depends on the specific application(s), intensity of user keyboard entry/mouse tracking, and volume of LAN traffic. Performance may also be affected by frequent and demanding use of compute resources and memory on the host system(s).

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Host System Requirements

The HP 700/X terminals provide interactive access to multivendor host systems on the network. The terminals use remote host system CPU and RAM resources to run client applications and to handle network communications.

The C2310A X Window server software must be installed on one disk-based host system on the network. The system must support the X Window System Version 11, Release 2 or Release 3 and a UNIX System V or BSD compatible operating system (e.g. HP-UX, Apollo Domain, DEC ULTRIX, SunOS).

The server software tape (approximately 5 Mbytes) includes the downloadable server code as well as the following fonts and host system utilities:

Fonts:

- X11 R2
- X11 R3 (ISO 8859)
- HP ROMAN8
- Font compiler to convert fonts in source format (.BDF) to HP 700/X format (.SNF).

TFTP*:

The Trivial File Transfer Protocol (TFTP) program is used to download the server code from the host system to an HP 700/X terminal.

BOOTP*:

This is an optional utility used to remotely download configuration information to an HP 700/X terminal (e.g. IP address). The BOOTP utility can significantly reduce the system administration effort when configuring large installations of HP 700/X terminals.

XDM:

The X Display Manager (XDM) is an optional utility that can be used as an alternative logon procedure to mask the user from the UNIX environment and to start application programs.

x11start.700x:

Default startup shell script for the HP 700/X terminal which can be customized for each user environment.

Note:

Since the HP 700/X serve code is resident as a file on the host system, upgrading to the latest X11 standard is as easy as replacing a file on the host system.

Network Considerations

The HP 700/X terminals operate on standard IEEE 802.3/Ethernet local area networks over ThinLAN, ThickLAN, or StarLAN 10 using TCP/IP protocol.

Optimum throughput performance of HP 700/X terminals on the LAN is best achieved when the network load is less than 15% to 20%. This differs from a file-transfer environment, which will operate satisfactorily under a 40% to 45% network load.

For large network installations of HP 700/X terminals, performance can generally be improved through sub-netting to reduce the local LAN traffic.

Note:

HP 700/X terminals are not supported to boot-up through gateways.

* Binaries are supplied for HP 9000 Series 300 and HP 9000 Series 800 systems. Existing compatible utilities on other host systems may be used.

HP 700/X Product Specifications

X Window Processor Base Unit (XPU)	
Graphics Processor:	50 MHz TI TMS 34010 GSP
Graphics Planes:	4
Number of Colors:	16 colors from a palette of 4096 or 16 levels of gray-scale
Memory:	1 Mbyte DRAM (optional expansion to maximum of 4 Mbytes)
Co-Processor:	12.5 MHz Intel 80C188
Display Connector:	15-pin VGA type (adaptable to standard RGB)
Display Resolutions:	640 × 480, 800 × 600, 1024 × 768
Supported Display Types:	Color and monochrome (16-level gray-scale), 60 Hz non-interlaced (800 × 600 at 57 Hz non-interlaced)
XPU Power Requirements	
Input Voltage:	115 / 230 VAC nominal, 50-60 Hz
Power Consumption:	25 W typical (57 W maximum)
XPU Physical Dimensions	
Height:	100 mm (3.9")
Width:	324 mm (12.7")
Depth:	437 mm (17.2")
Weight:	7 kg (15.4 lbs)
XPU Network Communications	
Interface Type:	IEEE 802.3 / Ethernet
Transmission Speed:	10 Mbits / sec
Network Protocol:	TCP / IP
Communication Port:	BNC connector* for direct connection to ThinLAN networks AUI connector* for connection to ThinLAN, ThickLAN, or StarLAN 10 networks with separately orderable media-access unit (MAU)
XPU User Interface	
Interface Type:	HP Human Interface Link (HP-HIL)
Supported Devices:	HP-HIL keyboard, HP-HIL 3-button mouse, HP-HIL 3-button track-ball

* Only one connector may be used at a time.

HP 700/X Product Specifications

XPU Environmental		
Temperature:	0° C to 55° C (operating), -40° to 70° C (non-operating)	
Humidity:	15% to 95% RH @ 40° C (operating), 90% RH @ 65° C (non-operating)	
Altitude:	0 to 4600 m (operating), 0 to 15300 m (non-operating)	
Shock:	Half-sine waveform, 3.0 ms duration, 2.46 m/s velocity change	
Vibration:	0.30 Grms, 5 to 500 Hz (operational)	
Electrostatic Discharge:	0 to 10 kV (continued functionality), 0 to 25 kV (hardware survival)	
Magnetic Susceptability:	3 Gauss peak-to-peak, 47.5 Hz to 198 Hz	
Transient Susceptability:	100 kHz with 3.0 kV amplitude (per IEEE 587 specification)	
Radiated Susceptability:	3 V/m RMS, 14 kHz to 1 GHz	
Conducted Susceptability:	3 V/m RMS (30 Hz to 50 kHz), 1 V/m RMS (50 kHz to 400 MHz)	
XPU Regulatory Approvals		
Canada:	CSA 220 certified (safety), CRC c.1374 (EMI)	
United States:	UL 1950 listed (safety), FCC A (EMI)	
West Germany:	EN 60950 compliant (safety), FTZ 1046 (EMI), ZH1/618 (ergonomics)	
International:	IEC 950 compliant (safety)	
XPU Supported Peripherals		
	Part Number	Description
Graphics Monitors:	D1182A/B	14-inch color with 640 × 480 pixel resolution*
	D1188A	16-inch color with 1024 × 768 pixel resolution
	98785A	16-inch color with 1024 × 768 pixel resolution
	98786A	17-inch monochrome with 1024 × 768 pixel resolution
	98751A	19-inch color with 1024 × 768 pixel resolution
	D1187A	20-inch color with 1024 × 768 pixel resolution
User Input Devices:	46021A	HP-HIL keyboard (requires language option)
	46060B	HP-HIL three-button mouse
	M1309A	HP-HIL three-button trackball
Media Access Units:	28641A	ThinLAN MAU
	30241A	ThickLAN MAU
	28664A	StarLAN 10 MAU (twisted-pair)

* Includes graphics monitor cable

HP 700/X Ordering Information

The HP 700/X family of X Window Graphics Terminals can be ordered in one of the bundled configurations shown below.

When ordering C2301A, C2302A, C2303A, or C2304A, a

local language option must be specified (see opposite page for a complete list of options).

In addition to the language option, one copy of the X Window Server Software (C2310A) must

be ordered for each customer site.

When ordering C2310A be sure to specify the required option for the tape format.

Part Number	Description
C2301A	HP 700/X - X Window Terminal Base Unit Bundled configuration (no monitor) including: X Window processor base unit (XPU) with 1 Mbyte of DRAM HP 46021A HP-HIL keyboard (includes keyboard cable) HP 46060B HP-HIL three-button mouse HP D1191A video monitor cable Installation manual Power cable for base unit (as per language option)
C2302A	HP 700/X - Monochrome X Window Terminal Bundled configuration including: HP 98786A 17-inch gray-scale monochrome monitor (1024 × 768 resolution) HP C2301A X Window Terminal Base Unit (shown above)
C2303A	HP 700/X - Color X Window Terminal Bundled configuration including: HP D1182A/B 14-inch VGA color graphics monitor (640 × 480 resolution) HP C2301A X Window Terminal Base Unit (shown above)
C2304A	HP 700/X - High Resolution Color X Window Terminal Bundled configuration including: HP 98785A 16-inch color graphics monitor (1024 × 768 resolution) HP C2301A X Window Terminal Base Unit (shown above)
C2310A	X Window Server Software and Manual (one copy required per site) Option AA0: 1/4-inch cartridge tape (UNIX tar format)* Option AA1: 1/2-inch 1600 bpi 9-track tape (UNIX tar format)
C2320A	Add 1 MB of Customer Installable DRAM (maximum 3 MB for 4 MB total)

* For host systems that support HP 9144A or HP 9145A cartridge tape drives only.

HP 700/X Ordering Information

Memory Considerations

The HP 700/X bundled configurations come standard with 1 Mbyte of dynamic random access memory (DRAM). This can be optionally expanded in 1 Mbyte increments up to a total of 4 Mbytes by ordering C2320A.

Memory is used in the HP 700/X terminals for windows, fonts, widgets, bitmaps, backing-store, save-under, and application-specific requirements (e.g. some desktop publishing packages build print images in server memory).

When an HP 700/X unit with a 640 × 480 monitor (C2303A) is powered up, approximately 860 Kbytes of free memory is available. A unit ordered with a 1024 × 768 monitor (C2302A, C2304A) leaves approximately 640 Kbytes of free memory available. Any additional requirements over the available free memory is dependent on the application type and whether the application uses backing-store

For assistance in determining your memory needs, contact your local HP representative.

Language Options

Option	Language
ABA	U.S. English
ABC	Canadian French
ABD	German
ABE	European Spanish
ABF	European French
ABH	Dutch
ABL	Canadian English
ABM	Latin Spanish
ABN	Norwegian
ABP	Swiss German
ABQ	Swiss French
ABS	Swedish
ABU	U.K. English
ABW	Belgian Dutch
ABX	Finnish
ABY	Danish
ABZ	Italian
ACC	U.S. English with U.K. power cord
ACD	U.S. English with Swiss power cord
ACE	U.S. English with Danish power cord
ACF	U.S. English with Japanese power cord
ACG	U.S. English with Australian power cord

Note: Kanji language support for the HP 700/X terminals is planned to be available in 1990. Contact your local HP representative for more information.

Support

Software materials support is available for the HP 700/X terminals at a nominal cost. The terminal is also supported as part of an existing BasicLine, ResponseLine or TeamLine support agreement at no extra cost.

Warranty

The HP 700/X terminal is covered by a standard one-year warranty. Option W03 may be used to convert the standard one-year warranty to a 90-day on-site warranty.

* UNIX is a registered trademark of AT&T in the U.S.A. and other countries.

* X Window System is a trademark of the Massachusetts Institute of Technology.

* DEC and DEC ULTRIX are registered trademarks of Digital Equipment Corporation.

* SUN and SunOS are registered trademarks of Sun Microsystems.

For more information

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Rockville, MD 20850
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