ALTO HARDWARE CATALOG
December, 1977

This catalog lists and briefly describes Alto hardware extensions and peripheral devices that may be attached to an Alto, along with their required interfaces. Devices included in this catalog have at least one prototype considered to work properly and to be reproducable from existing documentation. The standard Alto peripherals, display, mouse, keyboard, keyset, and Diablo model 31 disk have not been included. Each device has an entry of the following format:

> ITEM NAME: DESCRIPTION
> INTERFACE:
> SOFTWARE:
> DOCUMENTATION:
> AVAILABILITY/SOURCE:

The entries are organized by hardware type: Alto extensions and chassis mounted interfaces, Alien Processors, Disks, Fabrication Equipment, Printers, Scanners, and Workstations.

This catalog is maintained and distributed by the Whole Alto World coordinator. If you have questions or know of a device which you feel should be included, please provide the above information to the coordinator for inclusion at the next revision.

ALTO EXTENSIONS AND CHASSIS MOUNTED SUPPORTING INTERFACES

EXTENDED MEMORY: an Alto II option permitting memory to be increased from 64K to 256K in 64K chuncks. Though the 16-bit addressing of the Alto prevents transparent use above 64K, data such as the display bit map may be placed there and code may be executed out of any 64K bank.
INTERFACE: modifications to AIM, DIM, MEAT, CTL, and Memory boards are required for pre-seventh build Altos.
SOFTWARE: Microcode AltoIICode3 or later required.
DOCUMENTATION: Alto Hardware Manual (under revision).
AVAILABILITY/SOURCE: SPG will perform modifications.

EIA/RS-232C: a serial communications module supporting up to eight lines in either syncronous or asyncronous mode at 14 selectable transmission rates from 50 to 9600 baud.
INTERFACE: no modifications required.
SOFTWARE: STREAMS type package.
DOCUMENTATION: EIA Board Specification, memo from Shingo Arase, Aug. 31, 1977; Engineering drawings; "EIA Streams Package", memo from Rick Tiberi, Dec. 9, 1977.
AVAILABILITY/SOURCE: 24 were built to order.

EIA/RS-232C, 300 Baud: a simple serial communications module.
INTERFACE: None.
SOFTWARE: An assembly language driver and supporting microcode.
DOCUMENTATION: "ALTO II 300 Baud Serial EIA Interface", memo from Gerald Justice, Feb. 17, 1977.
SOURCE/AVAILABILITY: Developed for special project.

ORBIT: designed to help the Alto convert character code/position information to a format suitable for a scanning laser printer.
INTERFACE: Alto with ORBIT backplane.
DOCUMENTATION: "ORBIT General Description", Severo Ornstein, April 22, 1977; "Programmer's Guide to ORBIT, the ROS adapter, and the Dover Printer", Bob Sproull, June 15, 1977.
AVAILABILITY/SOURCE: Contact SPG.

ORBIT BACKPLANE: An Alto backplane which has been modified to accept and operate the ORBIT interface.
INTERFACE: None.
DOCUMENTATION: Engineering drawings.
AVAILABILITY/SOURCE: Contact SPG.

TRIDENT DISK INTERFACE (TriCon): a disk controller for the Trident T80 and T300 model disks.
INTERFACE: None.
DOCUMENTATION: "Trident Disk for the Alto" filed on [MAXC]<AltoDocs>Trident.ears.
AVAILABILITY/SOURCE: Contact SPG.

TRICON MULTIPLEXER: used when 2 to 8 Trident disks are attached to the same Alto.
INTERFACE: Trident Disk Interface.
DOCUMENTATION: Engineering Drawings.
AVAILABILITY/SOURCE: Contact SPG.

WIRE-WRAP BOARDS, GENERAL PURPOSE: four quadrants, each of which accepts eighteen 14/16 pin dip packages, seperated by a longitudinal row of 92 pads and two horizontal rows of 27 pads which accept .300, .400, or .600 center dip packages (SSI, MSI, LSI).
INTERFACE: None.
DOCUMENTATION: PWB, GENERAL PURPOSE WIRE WRAP, Dwg. 596P61506.
AVAILABILITY/SOURCE: 40 were fabricated by XEOS Publishing Programs Department and are currently available.

2K CONTROL MODULE: replaces the standard Alto 1K Control Module for applications requiring additional microcode such as Trident based file systems. It is standard on 6th and 7th build machines.
INTERFACE: None.
DOCUMENTATION: Alto Hardware Manual (under revision).
AVAILABILITY/SOURCE: Contact SPG.

ALIEN PROCESSORS/INTERFACES

XEROX SIGMA 3/7/9 INTERFACE: this line of processors has been interfaced to the ethernet.
SOFTWARE: Alto and Sigma 3 programs to facilitate data transfer.
DOCUMENTATION: WRC Report X7703234, Mar. 77.
AVAILABILITY/SOURCE. Built for special project.

DACONICS VT-2 INTERFACE: the VT-2 (and soon VT-3) has been attached to the ethernet via the standard transceiver and modified to support the EFTP protocol.
SOFTWARE: specially written for VT-2 and Alto to support a Trident based filing system (but not TFS).
DOCUMENTATION: Drawings of hardware interface.
AVAILABILITY/SOURCE: Developed for special project.

XEROX 800 ETS, COMMUNICATING: a typewritter/cassette based word processing system.
INTERFACE: 300 baud EIA board.
SOFTWARE: None.
DOCUMENTATION:
AVAILABILITY/SOURCE: Xerox.

DISKS

DIABLO 44: similar to the model 31 except having an additional fixed disk, shorter seek times, and higher transfer rate.
INTERFACE: Requires different clock crystal on disk controller board and new cable.
SOFTWARE: None. Executive treats it as a dual model 31 Alto (fixed disk is drive 1).
DOCUMENTATION: Alto Hardware Manual.
AVAILABILITY/SOURCE: May be ordered from Diablo.

TRIDENT T-80/T-300: removable media drives with 80 megabyte and 300 megabyte capacities respectively and a 9.7 megabit transfer rate. They support the Trident and IVY file systems.
INTERFACE: Trident Disk Interface (TriCon) and 2K Control Module.
SOFTWARE: IVY File System, TFU utility subsystem, TRIEX maintainence subsystem, and TFS support package.
DOCUMENTATION: "Trident Disk for the Alto", filed on <AltoDocs>Trident.ears.
AVAILABILITY/SOURCE: Century Data Systems, a division of CalComp.

FABRICATION EQUIPMENT

PRO-LOG 92 PROM BLOWER: a multi-personality PROM blower.
INTERFACE: HyType port and special PROMs for Pro-Log.
SOFTWARE: Under development.
DOCUMENTATION: Under Development.
AVAILABILITY/SOURCE: Pro-Log Corp. (Buyer must fabricate cable).

PRINTERS

COLOR GRAPHICS: a 6500-based scanning laser, three color printer with a resoultion of 200 bits/inch horizontal, 100 bits/inch vertical. Image width is limited to 6.4 inches, length to that of paper. Developed for use with color CRTs to provide hardcopy output.
INTERFACE: SLOT/3100 interface board.
SOFTWARE: Basic software to process AIS files.
DOCUMENTATION: Not yet available.
AVAILABILITY/SOURCE: Xerox, 1978.

DOVER: a 7000-based variable rate scanning laser, high volume printer. A set of fonts are being developed to run at 384 scanlines/inch.
INTERFACE: ORBIT and an Alto with an ORBIT backplane.
SOFTWARE: Spruce (server subsystem), Empress and others (user subsystems).
DOCUMENTATION: "Overview of the DOVER", John Ellenby, February 24, 1977.
AVAILABILITY/SOURCE: Contact SPG.

FUJI XEROX 1660: a 660-based low cost, 200 bits/inch optical fiber printer.
INTERFACE: Connects to HyType port.
SOFTWARE: Project specific software and microcode exist to convert text files to bands-type bitmaps and to transfer the bitmaps to the printer.
DOCUMENTATION: Engineering drawings.
AVAILABILITY/SOURCE: Fuji Xerox markets the printer in Japan.

PIMLICO: a 6500-based variable rate scanning laser, three color printer.
INTERFACE: ORBIT and an Alto with an ORBIT backplane.
SOFTWARE: Spruce (server subsystem), Empress, Color-Draw, Bravo 7.1X, and others (user subsystems).
DOCUMENTATION: Engineering drawings.
AVAILABILITY/SOURCE: Contact SPG.

SEQUOIA: a 3100-based variable rate scanning laser, high quality, limited volume printer.
INTERFACE: ORBIT and an Alto with an ORBIT backplane.
SOFTWARE: Spruce (server subsystem), Empress, and others (user subsystems).
DOCUMENTATION: Engineering drawings.
AVAILABILITY/SOURCE: Unknown at this time.

SLOT/3100: a 3100-based scanning laser, limited volume printer.
INTERFACE: SLOT/3100 interface board.
SOFTWARE: Press.
DOCUMENTATION: Engineering drawings.
AVAILABILITY/SOURCE: A limited number were built.

TC-200: see TC-200 entry under SCANNERS.

VERSATEC D900A: an electrostatic printer.
INTERFACE: Standard Alto HyType connector.
SOFTWARE: Vprint (.tty and Bravo/Gypsy files), Press (press files).
DOCUMENTATION: Alto Hardware Manual.
AVAILABILITY/SOURCE: Versatec (XEOS Publishing Programs Department has a few extra).

SCANNERS

JOYCE-LOEBL Scan-Dig 3: a selectable rate scanner (25/50/75/100 micron) for color or greytone material up to 10 by 10 inches.
INTERFACE: Specially built for Alto II.
SOFTWARE: Controls scanner and converts output to AIS format files for Alto and Trident file systems.
DOCUMENTATION: NSIL drawings of the interface.
AVAILABILITY/SOURCE: Built for special project.

TC-200: a variable rate scanner (94-240 points/inch) and Alto screen resolution printer. The supporting software creates/prints PRESS format files.
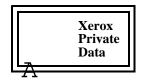INTERFACE: Extensive modifications to the TC-200 and an Interface Box that attaches to the Alto via the HyType connector.
SOFTWARE: Press for printing on an Alto I, modified Press and microcode for printing on an Alto II. New subsytem for scanning (unnamed).
DOCUMENTATION: None currently.
AVAILABILITY/SOURCE: Uncertain at this time.

WORKSTATIONS

REMOTE WORKSTATION: permits placing an Alto workstation (minus keyset) and HyType printer up to 1000 feet from the Alto.
INTERFACE: None.
SOFTWARE: None.
DOCUMENTATION: Engineering drawings.
AVAILABILITY/SOURCE: Built for special project.

VIDEO BUFFER BOX: supports the connection of 5 displays to a single Alto.
INTERFACE: None
SOFTWARE: None.
DOCUMENTATION: Engineering drawings.
AVAILABILITY/SOURCE: 15 were built by Cybernex.

WORKSTATION MULTIPLEXER: a 4 by 4 switch that permits manual selection of any unused Alto from any workstation.
INTERFACE: None.
SOFTWARE: None.
DOCUMENTATION: Engineering drawings.
AVAILABILITY/SOUCE: May be ordered from Cybernex.