

**ENGINEERING RELEASED**

ATARI 1450XL  
HOME COMPUTER

**CONFIDENTIAL**

PRODUCT SPECIFICATION

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NOTICE  
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C061908 - Rev 1A - June 6, 1983

*JR Hankins*

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1.0.0.0 INTRODUCTION

This document details the engineering design and the performance specifications for the ATARI 1450XL Home Computer. It is the major information transfer document, intended for the transfer of product information from the Hardware and Software Development groups to the Manufacturing, Design Assurance, and Applications Software organizations. As such, it covers all aspects of the ATARI 1450XL Home Computer directly, or indirectly by reference to applicable documents.

This product has also been called A1201, the ATARI 1200XLD, the ATARI 1200XLT, and the ATARI 1250 Home Computer.

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**2.0.0.0 REFERENCE DOCUMENTS**

**2.1.0.0 Uncontrolled Documents**

Serial Input/Output Interface User's Handbook, Part 1  
and 2.  
De Re ATARI  
The 6502 Microprocessor Manual  
MC68B21 Data Sheets  
MTBF Calculations for A800/400, Steve Zyski - HCD QA  
Document  
ATARI 800 Warranty Return Reports, Jim North - HCD QA  
Document

**2.2.0.0 Controlled Documents**

ATARI 800 Hardware Manual - C016555  
6502 Modified Electrical Specifications - C014806  
Environmental Engineering Manual - C061616  
General Qualification Specification for Keyboards -  
C099909  
ATARI 1450XL Product Assembly - CA061812-xx  
ATARI 1450XL Keyboard - <p/n>  
ATARI 1450XL Console Assembly - <p/n>  
ATARI 1450XL Top Cover Assembly - <p/n>  
ATARI 1450XL Bottom Cover Assembly - <p/n>  
ATARI 1450XL Schematics - <p/n>  
ATARI 1450XL Assembly Tree - <p/n>  
ATARI 1450XL Power Transformer Specification - C062032  
PIA Specifications - C014795  
POKEY Specifications - C012294  
GTIA Specifications - C014805  
ANTIC Specifications - C012296  
ANTIC 'E' Specifications - C061620  
FREDDIE Specifications - C061922  
Parallel Bus Interface (PBI) Specifications - C061902  
Speech Synthesizer Interface Specifications - C062061  
Direct Connect Integral Modem Peripheral Interface  
Specifications - C062062  
Disk Drive Peripheral Specifications - C062063

**3.0.0.0 DESIGN GOALS**

The ATARI 1450XL Home Computer is designed for use in a domestic environment. As an enhanced version of the ATARI 600XL Home Computer, it provides the following to the end user:

- Entertainment
- Education
- Information Services
- Transaction Services
- Personal Development

To meet these requirements, the ATARI 1450XL Home Computer supports high resolution graphics and has sound generation capabilities. It has been designed to support a wide variety of peripheral devices, including communication devices for accessing remote data bases and for conducting transactions with remote intelligent devices.

The ATARI 1450XL Home Computer is an 8-bit CPU. It is designed to be hardware and software compatible with all existing ATARI Home Computers and peripheral devices.

**3.1.0.0 Comparison with Existing Product**

Except for the integral disk drive, there is no difference between the ATARI 1450XL Home Computer and the ATARI 1400XL Home Computer. The ATARI 1450XL Home Computer is larger in order to house the disk drive.

**3.2.0.0 Architecture**

The architecture of the ATARI 1450XL Home Computer is identical to the ATARI 600XL/800XL Home Computers. See the ATARI 600XL Home Computer Product Specification, C061611, for details of the Operating System.

(NOTE: ANTIC 'E' is an enhanced version of ANTIC. The ATARI 600XL Home Computer requires ANTIC 'E'. Currently, either ANTIC or ANTIC 'E' can be used in ATARI Home Computers manufactured later than the ATARI 600XL Home Computer. Where reference is made to ANTIC, the same information is true for ANTIC 'E'.)

**3.2.1.0 Speech Synthesizer Interface**

The Speech Synthesizer is a VOTRAX SC01 speech chip and resides on the ATARI 1450XL Home Computer mother board. See Atari p/n C062061 for electronic and functional specifications.

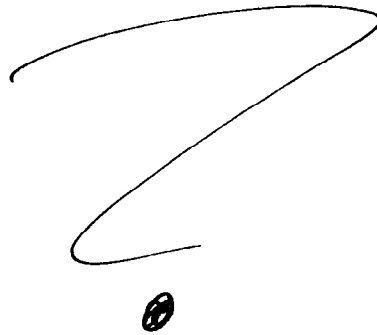
**3.2.2.0 Modem Interface**

The ATARI 1450XL Home Computer contains a Direct Connect Integral Modem (DCIM). The DCIM is resident on the mother board. See Atari p/n C062062 for electronic and functional specifications.

**3.2.3.0 Disk Drive Peripheral Interface**

The ATARI 1450XL Home Computer contains a double side double density disk drive peripheral device. The disk drive peripheral interface is resident on the mother board. See Atari p/n C062063 for electronic and functional specifications.

FIGURE 3.01 -- ATARI 1450XL Home Computer Functional Block Diagram





**4.0.0.0 PERFORMANCE**

The projected performance requirements for the ATARI 1450XL Home Computer are identical to the ATARI 600XL Home Computer. See the ATARI 600XL Home Computer Product Specification (C061611) for details.

**5.0.0.0 HARDWARE DESIGN**

**5.1.0.0 Packaging and Appearance**

**5.1.1.0 Dimensions and Weight**

Height : 5-inches  
Width : 15-inches  
Depth : 14-1/2 inches  
Weight : 10-lbs.

**5.1.2.0 Package Description**

**5.1.2.1 Position of Connectors**

See Figures 5.02 and 5.03 for position of the connectors.

**5.1.2.2 Keyboard**

See Figure 5.01 for layout of the ATARI 1450XL Home Computer keyboard.

**5.1.3.0 Package Colors**

The keyboard and top housing are dark brown (Borg Warner Cycolac #T84816). The bottom housing and the keycap nomenclature are buff white (Borg Warner Cycolac #T81450XL6).

**5.1.4.0 Package Materials**

The keyboard and the top and bottom housing are made of ABS plastic. The housing is textured with Rawal #RE 6625 or equivalent.

**5.1.5.0 Package Subassemblies**

The ATARI 1450XL Home Computer has these major package subassemblies:

Console - <p/n>  
Top cover - <p/n>  
Bottom cover - <p/n>  
Keyboard - <p/n>  
Keyboard mask - <p/n>

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TV switch box - CA014746  
RF cable - CA061177  
Pwer Transformer - CA062032

**5.1.6.0 Product Safety**

The polymeric enclosure material must be UL recognized with a flammability rating of 94HB or higher. The PCB must be UL recognized (under the category of "Wiring-Printed", ZPMV-2) with a flammability rating of 94V-1 or higher.

The enclosure material and other components must not contain cadmium as part of their formulation or as a plating. Surface coatings shall not contain lead, cadmium, or other added ingredients which are based on compounds of antimony, arsenic, mercury, selenium, or water soluble barium.

Sharp edges, points, or other cut or puncture points must be avoided.

All small parts or projections that may be grasped by the thumb and forefinger or the teeth, and any captivated parts that protect the user against an increase of the risk of fire, shock, or casualty hazard must withstand a direct pull force of 15-lbs for one minute, applied in the most unfavorable direction, without separation or damage to the captivating means.

The product must meet all requirements of this section, and all applicable government standards. In the event of conflict between this specification and any other document, vendor/manufacturer is responsible to notify Atari Engineering and Corporate Product Safety of the conflict for written disposition from Atari, Inc.

**5.2.0.0 Electromechanical Subassemblies**

**5.2.1.0 Mechanical Details**

**5.2.1.1 CPU Board**

The CPU houses all the intelligent chips of the system and provides connectors for interfacing external modules to the ATARI 1450XL Home Computer. All the functional blocks, except the keyboard, are resident on the CPU board.

**5.2.1.2 The Keyboard**

The keyboard is connected to the mother board by a 24-connector ribbon cable. Details of electrical parameters are contained in the General Qualification Specification for Keyboards, Atari p/n C099909 and the Keyboard Assembly, Atari <p/n>.

**5.2.1.3 Disk Drive Peripheral**

The Disk Drive Peripheral Device is described in C062063.

**5.2.2.0 Interface Specifications**

The CPU board provides these interfaces:

- SIO
- Parallel Bus Interface (PBI)
- Keyboard
- Controller Jacks
- Cartridge
- Power Input
- Television
- Speech Synthesizer
- Direct Connect Integral Modem
- Disk Drive Peripheral

Except for the Speech Synthesizer, Direct Connect Integral Modem, and the Disk Drive Peripheral Device, the above interfaces are identical to the ATARI 600XL Home Computer and are described in the ATARI 600XL Home Computer product Specification, C061611.

See the Speech Synthesizer Interface Specification (C062061), the Direct Connect Integral Modem Interface Specification (C062062), and the Disk Drive Peripheral Device Interface Specification (C062063) for details for those interfaces.

**5.2.3.0 Digital Hardware**

The digital hardware consists of the 6502 CPU, the ANTIC display processor, GTIA, POKEY, the PIA, memory (RAM and ROM), and miscellaneous logic. When the FREDDIE chip becomes available, it will be incorporated into the circuitry.

Except for ANTIC (as opposed to ANTIC 'E'), these parts are identical to the ATARI 600XL Home Computer and are covered in detail in that Product Specification, C061611.

**5.2.4.0 Analog Circuitry**

The Analog Circuitry on the CPU Board consists primarily of the Video Summation Circuitry, the Audio Circuitry, and the RF Modulator.

These parts are identical to the ATARI 600XL Home Computer and are covered in detail in that product specification, C061611.

**5.2.5.0 The Keyboard**

The layout of the keyboard is shown in Atari drawing C060046. The electrical and mechanical details are specified in the General Qualification Specification for Keyboards, C099909.

**5.2.6.0 The Parallel Bus Interface**

See the Parallel Bus Specification, C061902, for electromechanical details.

**5.2.7.0 Speech Synthesizer Interface**

See the Speech Synthesizer Interface Specification, C062061, for electromechanical details.

**5.2.8.0 Direct Connect Integral Modem Interface**

See the Direct Connect Integral Modem Interface Specification, C062062, for electromechanical details.

**5.2.9.0 Disk Drive Peripheral Interface**

See the Disk Drive Peripheral Interface Specification, C062063, for electromechanical details.

5.3.0.0 EMI and Heat Management

EMI shielding <TBD>.

The plastic cover of the ATARI 1450XL Home Computer has louvres cut horizontally on the bottom cover and vertically on the top cover. These louvres allow for convection cooling.

FIGURE 5.01 -- ATARI 1450XL Home Computer Keyboard

NOT  
AVAILABLE

IS THE 1450  
DIFFERENT  
FROM THE  
1400?

(OR THE 1200?)

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FIGURE 5.02 -- ATARI 1450XL Home Computer - 3/4 view

NOT  
AVAILABLE

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FIGURE 5.03 -- ATARI 1450XL Home Computer - back view

NOT  
AVAILABLE



ATARI 1450XL Product Spec - C061908, Rev 1A -June 6, 1983

FIGURE 5.04 -- ATARI 1450XL Home Computer - left view

NOT  
AVAILABLE

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FIGURE 5.05 -- ATARI 1450XL Home Computer - Hardware Block Diagram

NOT  
AVAILABLE

**FIGURE 5.06 -- CPU Memory Map**

Figure 5.06a shows the memory map for the ATARI 1450XL Home Computer. Figure 5.06b gives details of the I/O mapped devices. For a description of the Cartridge interface RD4 and RD5, see Section 5.2.2.5 of the ATARI 600XL Home Computer Product Specification, C061611.

The region from \$D000 to \$D7FF is the memory mapped I/O space. As shown in Figure 5.09b, the area from \$D000 to \$D0FF is used to address the GTIA internal registers, the area from \$D200 to \$D2FF is used to address the POKEY registers, the area from \$D300 to \$D3FF is used to address the PIA registers, and the area from \$D400 to \$D4FF is used to address the ANTIC internal registers. The region from \$D500 to \$D5FF is reserved for passing control information to the cartridges. When any address of the form \$D5xx is invoked, the Cartridge Control (CCNTL) line on the cartridge interface is enabled. The regions from \$D100 to \$D1FF and \$D600 to \$D7FF are reserved for the Parallel Bus Interface.

Note that when Self Test is invoked, the region from \$5000 to \$5700 is used as the logical address space for the Self Test code. The actual physical location of the Self Test code is in the Operating System ROM from location \$D000 to location \$D7FF and is shadowed by the I/O devices.

**FIGURE 5.09b -- CPU Memory Map**

FFFF E000	Operating system if ROM ENABLE asserted. RAM if ROM ENABLE not asserted.
DFFF D800	Operating system if ROM ENABLE asserted and MPD not active, else RAM. Mapped to PBI ROM if MPD asserted regardless of ROM enable.
D7FF D000	Memory mapped I/O space and PBI. Self Test Code Space (physical) shadowed by I/O devices.
CFFF C000	Operating system if ROM ENABLE asserted. RAM if ROM ENABLE not asserted.
BFFF A000	Mapped to cartridge interface if RD5 asserted. Basic enabled if BEN active and RD5 not asserted; RAM if cartridge and BASIC inactive.
9FFF 8000	Mapped to cartridge interface if RD4 not asserted. RAM if RD4 not asserted.
7FFF 5800	RAM
57FF 5000	Self Test Space ROM from D700-D7FF if SELF TEST enabled and ROM ENABLE asserted. RAM if SELF TEST disabled or ROM ENABLE not asserted.
4FFF 4000	RAM
3FFF 0000	RAM

**FIGURE 5.09b -- Memory Mapped I/O Space**

D7FF D700	Parallel Bus Interface RAM
D600	Parallel Bus Interface RAM
D500	Cartridge Control
D400	ANTIC
D300	PIA
D200	POKEY
D100	Parallel Bus Interface
D000	GTIA

Memory  
Mapped  
I/O  
Devices

**6.0.0.0 SOFTWARE EXTERNAL REFERENCE SPECIFICATION**

**6.1.0.0 The Operating System**

The Operating System of the ATARI 1450XL Home Computer is identical to the ATARI 600XL Home Computer. See Section 6 of the ATARI 600XL Home Computer Product Specification, C061611, for specific details.

**6.2.0.0 Speech Synthesizer Interface**

See Section 6 of the Speech Synthesizer Interface Specification, C062061.

**6.3.0.0 Direct Connect Integral Modem**

See Section 6 of the Direct Connect Integral Modem Interface Specification, C062062.

**6.4.0.0 Disk Drive Interface**

See Section 6 of the Disk Drive Interface Specification, C062063.

**7.0.0.0 COMPATIBILITY WITH EXISTING ATARI PRODUCTS**

The ATARI 1450XL Home Computer is designed to be as compatible as possible with all existing ATARI Home Computer hardware and software products. Any apparent or real incompatibilities are discussed in Section 7 of the ATARI 600XL Home Computer Product Specification (C061611), the Speech Synthesizer Interface Specification (C062061), the DCIM Interface Specification (C062062), and the Disk Drive Peripheral Specification (C062063).