ULTRAWARP™

For Apple II+, IIe

v1.91
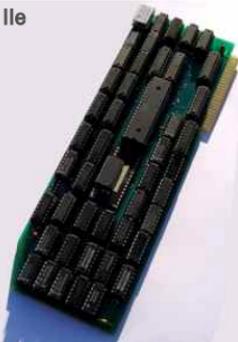
ROM execution speed

System firmware (Applesoft Basic, Monitor, diagnostic test), running in ROM, runs at normal Apple speed (1 MHz).

Access to I/O space

The UltraWarp automatically slows down to 1 MHz for one cycle whenever an address in the range C000-CFFF is accessed.

Power consumption

Approx. 260 mA at 13 MHz while running XPS DIAGNOSTIC //e main memory test.

Installation

Step 1

Leave your computer plugged in, but switch the computer power switch to the OFF position. Remove the top lid of the computer and set it aside. Verify that the red power-on indicator light inside the computer is OFF. (The indicator light is on the main logic board, near the back, just next to the power supply.)

Step 2

CMOS parts are highly sensitive to static electricity, and for this reason the UltraWarp should be handled with some care.
Discharge any static electricity that may be on your body or clothing by gently touching the metal power supply case.

Step 3

Carefully remove the UltraWarp card from the anti-static bag. Put the bag flat on a table and set the UltraWarp card on the bag.

Step 4

Locate the 4-position dip switch block at the top of the UltraWarp card. Set switch 3 to the ON position for slot 5 with an interface card that requires the 1 MHz timing signal (switch 4 is used for slot 7). A switch in the OFF position selects full UltraWarp mode for the expansion slot. There is an automatic slowdown for slot 6, the normal slot for floppy disc controller cards.

Step 5

Now plug the UltraWarp into Slot 0 on your Apple II or II+, or into any available slot on your Apple //e.

Step 6

Replace the top lid of the computer. Installation is complete.

Method of Operating

The UltraWarp accelerates the Apple II+ and //e by replacing the on-board microprocessor with a much faster one. Because the memory on the II+ and //e can only run at a 1 MHz speed maximum, faster memory must be provided to increase performance. To do this, the UltraWarp contains 128K of fast memory and a fast 65C816 CPU that runs 13 times faster than standard speed.

DIP switch

The switches on the UltraWarp have been added because not all peripherals are able to run faster. When you use a disk drive or modem, the UltraWarp must slow down to match the speed of the external device. Switch 3 controls delay on slot 5 and switch 4 delays slot 7.

Joystick Delay

DIP switch 2 controls paddle softswitch access. When set ON, accesses to $C070 cause a 2,5 millisecond delay. This allows the software to read the paddles correctly at high speed.

DMA Cards

UltraWarp is a DMA card. You can only have one DMA card running at a time. Therefore, you will need to turn off any other DMA cards to run at UltraWarp speed and you´ll need to turn off the UltraWarp to run any other DMA card. High speed CP/M cards that run on their own on-board memory can run concurrently with UltraWarp.

Software Control

Programmers can also control UltraWarp from within their programs by writing to certain memory locations. These locations, expressed in hexadecimal notation, are $C05B, $C05C and $C05D.

Location	Action	Function
$C05D	W	Low speed (1 MHz)
$C05C	W	High speed (set on power-up)
$C05B	W	Disable

The following example in Applesoft BASIC will disable the UltraWarp.

10 POKE 49243,0

(press CONTROL/RESET after the POKE to continue)