Turbocharge your Apple II ! 3.6MHz + 256KB with

TransWarp – *Applied Engineering*

- **Platform:** Apple II, Apple II Plus, Apple IIe
- **Form Factor:** 50-pin slot card
- **Speed:** 3.6 MHz
- **Cache:** 256 KB on board RAM
- **DMA compatible:** No

Applied Engineering was the last company to offer a slot based Apple II accelerator card, the **TransWarp**. This new card offered complete slot configurability via DIP switches and speed control via both DIP switches and software. A user could hold down the ESC key upon boot up to disable the card for speed sensitive applications. In an Apple II Plus, the TransWarp emulated the 16k language card. The TransWarp ran at the same 3.58, 1.7 and 1 MHz speeds as other accelerators of its time; however, it included a whopping 256 KB of on-board RAM. According to the March 1986 Apple Assembly Line (volume 6, number 6) this is how the TransWarp utilized the RAM:

TransWarp's 256K RAM is effectively divided into four 64K banks. When you power-up your Apple with TransWarp installed, all of the ROM from $D000 through $FFFF is copied into one of the high-speed RAM banks. The rest of this bank is not used. A second bank is used in place of the motherboard RAM. The third and fourth banks are used in place of the first and second banks of AUXMEM, if you have a RAM card such as RAMWORKS installed in the AUX slot. If you have a large RAMWORKS in the auxiliary slot of a //e, any additional banks beyond two will still be usable but at "only" 1 MHz.[1]

The same issue of the publication determined that the TransWarp was faster than either the McT SpeedDemon or Titan Accelerator //e when running the same applications, even though all three cards ran at the same 3.58 MHz native speed. The TransWarp was released during the early-mid 1980s with an original retail price of $279.

The above truly excellent description was taken from a similar listing; used with kind permission. (Thanks J!)

This is the much sought-after TransWarp board from Applied Engineering. Tested and working from a smoke-free home. Has v1.3 (?) of the ROM installed. ROM v1.4 is also supplied but I did not test with it in it.

This is the v1.4 ROM for AE's TransWarp accelerator card. If you don't have the latest version on your card then you'll want this ROM!

Just remove your old ROM and install the new one. It's that simple!

The ROM file is also available >HERE< for free if you wish to burn your own.

Tip: In an Apple II Plus, the TransWarp will emulate the 16k Language Card.

Pressing the <Esc> key a few times during the first two seconds on turning on the Computer will disable TransWarp completely until the next power Off/On cycle. A better way is to boot with the TransWarp enabled then write an '01' to location $C074. This will slow the TransWarp down to 1 MHz without disabling it completely. Writing an '00' to location $C074 will restore the TransWarp to it's 'fast' speed. If you write an '03' to location $C074, TransWarp will be shut down completely; the Motherboard Processor will take over when you hit CTRL-RESET. In order to turn the TransWarp back on, you have to turn the Computer off and back on again with the power switch. To write to location $C074 in BASIC type 'POKE -16268,x' or 'POKE 49268,x'. 'x' is a 0, 1 or 3.

AE's TransWarp IIe v1.4 ROM

AE's TransWarp IIe v1.4 ROM

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Self Test
The self-test is initiated by pressing the "0" or "9" keys a few times during the first two seconds on turning on the Computer. The test checks for the type of Processor installed (65C02 or 65802), measures the speed, tests bank switching, and tests RAM. If the TransWarp is installed in a //e, you can hold down the Open-Apple key to keep it looping through the speed test. The TransWarp measures its own speed by counting how many cycles it takes for the Vertical Blanking Signal to pass by. This signal is not available on the II or II Plus, so no speed tests are performed on those machines.

Settings
Bank #1 (left side): SW 1-7 - Switch number corresponds to Slot number. Change to OPEN if there is a memory card that uses the "Language Card bank switching technique". Normally all switches are CLOSED. Switch 8 is Speed setting and is listed below.

Bank #2 (right side): SW 1-7 - Switch number corresponds to Slot number. Change to OPEN if the plug in card must be accessed at 1 MHz. Normally all switches are CLOSED. It's recommended that Floppy Diskette Controllers be set to OPEN. Switch 8 is Speed setting and is listed below.

Switch 8 on both Banks: Sets the power up speed of the TransWarp

Bank1 Bank2
3.6 MHz OPEN OPEN <<Normal>>
1.7 MHz CLOSED OPEN
1 MHz OPEN CLOSED
1 MHz CLOSED CLOSED

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If you have any additional tips or info for this product that should be added to this listing please email >Support<. We of ReactiveMicro.com and the Apple II Community thank you!