AST MEMORY, GRAPHICS, ACCELERATOR AND I/O BOARDS

**** AST SIXPAK MEMORY PRODUCTS ****

SixPakPlus (Type 1) AST Part Number 201177-001

The SixPakPlus is a multi-function Memory Expansion board designed for the IBM PC and XT and 100% compatibles running at 4.77 MHz. In it's standard configuration, it comes with anywhere between 64K and 384K of RAM using industry standard 64K dynamic RAM chips, a Clock/Calendar a Serial Port configurable as COM1: or COM2: and a Parallel Port configurable as LPT1 or LPT2. All memory installed on the SixPakPlus is designed to expand your PC to it's 640K maximum. It does not support extended or EMS/EEMS type memory. In addition to the basic configuration, it can be configured with a Game Port.

Note that the memory chip speed must be 200 nsec.

Please Refer to Tech Bulletin #0004 for more information on the Memory Chips.

SWITCH SETTINGS

STARTING ADDRESS				MEMORY INSTALLED ON 6-PAK					
	SW1	SW2	SW3		SW4	SW5	SW6	SW7	SW8
64K	OFF	OFF	OFF	0K	OFF	OFF	OFF	N/A	P
128K	OFF	OFF	ON	64K	OFF	OFF	ON	N/A	A
192K	OFF	ON	OFF	128K	OFF	ON	OFF	N/A	R
256K	OFF	ON	ON	192K	OFF	ON	ON	N/A	I
320K	ON	OFF	OFF	256K	ON	OFF	OFF	N/A	T
384K	ON	OFF	ON	320K	ON	OFF	ON	N/A	Y
448K	ON	ON	OFF	384K	ON	ON	OFF	N/A	
512K	ON	ON	ON						

SW7 - PARITY ENABLE (Recommended "ON" at all times)
SW8 - NOT USED

JUMPER SETTINGS

PORT ENABLE JUMPER BLOCK: (Reading from Left to Right)
1 - Installed to Enable Serial Port as COM1: (3F8)
2 - Installed to Enable Serial Port as COM2: (2F8)
3 - Installed to Enable Parallel Port as LPT1:
4 - Installed to Enable Parallel Port as LPT2:
5 - Installed to Enable Game Port (201)
6 - Installed to Enable Clock/Calendar (2C0)

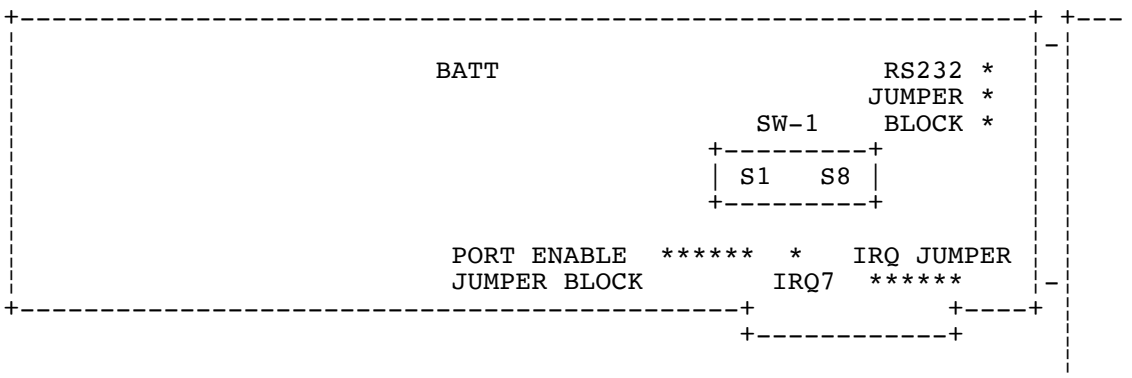
IRQ ENABLE JUMPER BLOCK:
3S - IRQ 3; Installed if COM1: is Enabled
43 - IRQ 3; Installed if COM2: is Enabled
4 - N/A; Leave open
5 - N/A; Leave open
7 - N/A; Leave open
2 - N/A; Leave open

IRQ-7 ENABLE JUMPER BLOCK:
Should be installed if the Parallel Port is LPT1

RS232 JUMPER SETTINGS

The RS232 configuration block is made up of three sets of three pins each. Their function is to minimize the need for making special I/O cables for some unique serial devices. The normal setting in nearly all cases is to install three jumpers connecting the middle and left pin in each row. In rare instances, a device may require that the CTS, DSR, or DCD signals be forced true. In these cases, move the corresponding jumper to connect the center and right pin.

JUMPER AND SWITCH LOCATION



SixPakPlus (Type 2) AST Part Number 201177-002
SixPakPlus (Type 3) AST Part Number 201177-003

The SixPakPlus is a multi-function memory expansion board designed for use with the IBM PC, XT, and 100% compatibles running at 4.77 MHz. In it's standard cofiguration, it comes with anywhere between 64K and 384K of RAM using industry standard 64K dynamic RAM chips; a Clock/Calander; a Serial Port configurable as COM1: or COM2:; and a Parallel Port configurable as LPT1: or LPT2:. All memory installed on the SixPakPlus is designed to expand a PC to it's 640K maximum. It does not support Extended or EMS/EEMS type memory. There is an option available for adding a Game Port.

SWITCH SETTINGS

STARTING ADDRESS				MEMORY INSTALLED ON 6-PAK			
	SW1	SW2	SW3		SW4	SW5	SW6
64K	OFF	OFF	OFF	0K	OFF	OFF	OFF
128K	OFF	OFF	ON	64K	OFF	OFF	ON
192K	OFF	ON	OFF	128K	OFF	ON	OFF
256K*	OFF	ON	ON	192K	OFF	ON	ON
320K	ON	OFF	OFF	256K	ON	OFF	OFF
384K	ON	OFF	ON	320K	ON	OFF	ON
448K	ON	ON	OFF	384K*	ON	ON	OFF
512K	ON	ON	ON				

* = FACTORY DEFAULT

SW7 - NOT APPLICABLE
SW8 - PARITY ENABLE (Recommened ON at all times)

JUMPER SETTINGS

PORT ENABLE JUMPER BLOCK (Reading from Left to Right)

1) Installed to Enable Serial Port as COM1: (3F8)
2) Installed to Enable Serial Port as COM2: (2F8)

3) Installed to Enable Parallel Port as LPT1:
4) Installed to Enable Parallel Port as LPT2:
5) Installed to Enable Game Port (201)
6) Installed to Enable Clock/Calendar (2C0)

IRQ JUMPER BLOCK

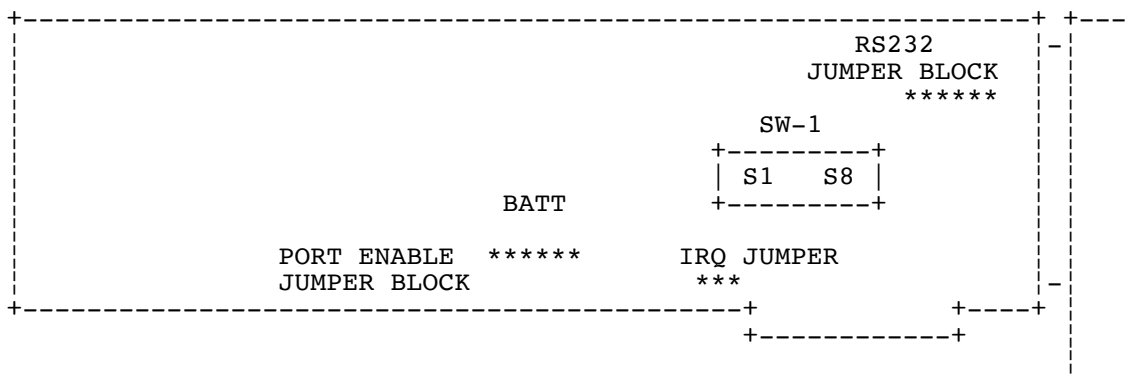
The IRQ block consists of three pairs of pins, labeled 3,4,7. Install a jumper at "3" if the Serial Port is configured as COM2, or at "4" if it is configured as COM1. Install a jumper at "7" if the Parallel Port is configured as LPT1.

RS-232 JUMPER BLOCK

RS-232 configuration block is made up of six pairs of jumpers labeled 1-6. Their function is to minimize the need for making special I/O cables for some unique serial devices. The normal setting in nearly all cases is to install three jumpers on the even numbered options (2,4,&6). In rare instances, a device may require that the CTS, DSR, or DCD signals be forced true. In these cases, move the corresponding jumpers as follows:

Move "2" to "1" to force True CTS
Move "4" to "3" to force True DSR
Move "6" to "5" to force True DCD

SWITCH AND JUMPER LOCATIONS



SixPakPlus (Type 4) AST Part Number 201177-004

The SixPakPlus is a multi-function memory expansion board designed for use with the IBM PC, XT, and 100% compatibles running at 4.77 MHz. In it's standard configuration, it comes with anywhere between 64K and 384K of RAM using industry standard 64K and/or 256K dynamic RAM chips; a Clock/Calander; a Serial Port configurable as COM1: or COM2:; and a Parallel Port configurable as LPT1: or LPT2:. All memory installed on the SixPakPlus is designed to expand a PC to it's 640K maximum. It does not support Extended or EMS/EEMS type memory. There is an option available for adding a Game Port.

SWITCH SETTINGS

STARTING ADDRESS (Memory in system before 6PAK installed)

	S1	S2	S3
64K	OFF	OFF	OFF
128K	OFF	OFF	ON
192K	OFF	ON	OFF
256K*	OFF	ON	ON
320K	ON	OFF	OFF
384K	ON	OFF	ON
448K	ON	ON	OFF

512K ON ON ON

* = factory default

MEMORY INSTALLED ON 6-PAK

	S4	S5	S6	BANK 0	BANK 1	BANK 2
0K	OFF	OFF	OFF	-	-	-
64K	OFF	OFF	ON	64K	-	-
128K	OFF	ON	OFF	64K	64K	-
256K	OFF	ON	ON	256K	-	-
320K	ON	OFF	OFF	64K	256K	-
384K*	ON	OFF	ON	64K	64K	256K
512K	ON	ON	OFF	256K	256K	-
576K	ON	ON	ON	64K	256K	256K

S7 - Not Applicable
S8 - Parity Enable (Recommend On at all Times)

JUMPER SETTINGS

PORT ENABLE JUMPER BLOCK (Reading from Left to Right)

1) Installed to Enable Serial as COM1: * (3F8)
2) Installed to Enable Serial as COM2: (2F8)
3) Installed to Enable Parallel as LPT1: *
4) Installed to Enable Parallel as LPT2:
5) Installed to Enable Game Port (201)
6) Installed to Enable Clock/Calendar * (2C0)

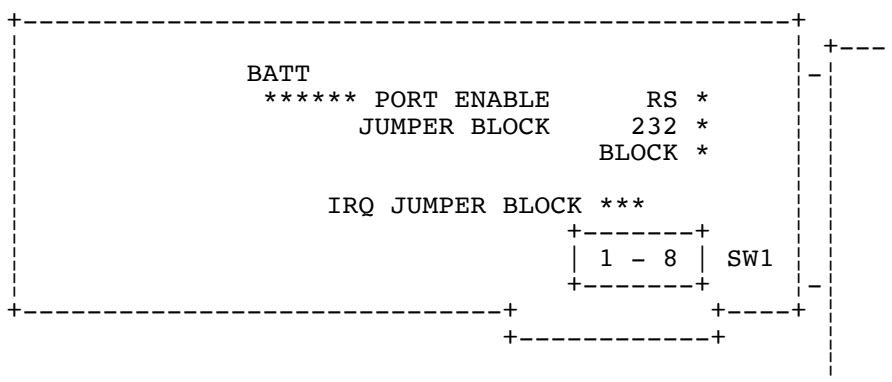
IRQ ENABLE JUMPER BLOCK

IRQ 3 - Installed if COM2: is Enabled
IRQ 4 - Installed if COM1: is Enabled
IRQ 7 - Should be installed if Parallel Port is LPT1: *

RS-232C JUMPER BLOCK

RS-232 configuration block is made up of six pairs of jumpers. Their function is to minimize the need for making special I/O cables for some unique serial devices. The normal setting is to install three jumpers on the "two" positions, allowing normal RS-232 operation. In rare instances, a device may require that the CTS, DSR, or DCD signals be forced true. In these cases, move the corresponding jumpers to the "one" position.

SWITCH AND JUMPER LOCATIONS



SixPakPremium AST Part Number 202094-001

The SixPakPremium is a multifunction memory expansion adapter for the IBM PC, PC/XT, and 100% compatibles running at 4.77MHz. This board can be configured with from 256K to 1024K of memory using industry standard 256K DRAMS of 150NS speed or faster. The memory can be further expanded to 2048K by using the Premium-Pak memory daughter-board.

The SixPakPremium comes standard with a serial port configurable as COM1: or COM2:, a parallel port configurable as LPT1: or LPT2:, and a real time clock/calendar. Options that can be added to this board would include a second serial port and a game port.

The memory on the SixPakPremium can be used to increase base conventional to its maximum of 640K. Any additional memory installed would be available as EMS expanded memory. Expanded memory standards supported by this board include LIM 3.2, EEMS, and LIM 4.0.

SWITCH SETTINGS

Conventional Memory Starting Address

	SW1-1	SW1-2	SW1-3	SW1-4
0K	OFF	OFF	OFF	OFF
64K	ON	OFF	OFF	OFF
128K	OFF	ON	OFF	OFF
192K	ON	ON	OFF	OFF
256K	OFF	OFF	ON	OFF
320K	ON	OFF	ON	OFF
384K	OFF	ON	ON	OFF
448K	ON	ON	ON	OFF
512K	OFF	OFF	OFF	ON
576K	ON	OFF	OFF	ON
640K	OFF	ON	OFF	ON

NOTE: If all memory on the SixPakPremium is to be used as expanded memory, set starting address at 640K.

SW1-5 - N/A

SW1-6 - N/A

SW1-7 - On to enable dual page mode

SW1-8 - On to enable parity checking

Base I/O Address

	SW2-1	SW2-2	SW2-3	SW2-4	
208h	ON	ON	ON	ON	
218h	ON	ON	ON	OFF	(default)
258h	ON	OFF	ON	OFF	
268h	ON	OFF	OFF	ON	
2A8h	OFF	ON	OFF	ON	
2B8h	OFF	ON	OFF	OFF	
2E8h	OFF	OFF	OFF	ON	

SW2-5 - N/A
SW2-6 - N/A

SixPakPremium Memory used for Base 640K

	SW2-7	SW2-8
0K	ON	ON
Up to 256K	OFF	ON
Up to 512K	ON	OFF
Up to 768K*	OFF	OFF

NOTE: Since the maximum amount of memory that DOS will recognize is 640K, any excess memory (over 640K total) will be available as expanded memory.

JUMPER SETTINGS

E3 - Connect to enable serial port as COM1:
E4 - Connect to enable serial port as COM2:
E5 - Connect to enable second serial option as COM2:
E6 - Connect to enable parallel port as LPT1:
E7 - Connect to enable parallel port as LPT2:
E8 - Connect to enable game port option
E9 - Connect to enable clock/calendar

E17 - Connect for IRQ7 (with LPT1:)

E18 - Connect for IRQ3 (with second serial option)
E19 - Connect for IRQ3 (with COM2: - first port)
E20 - Connect for IRQ4 (with COM1: - first port)

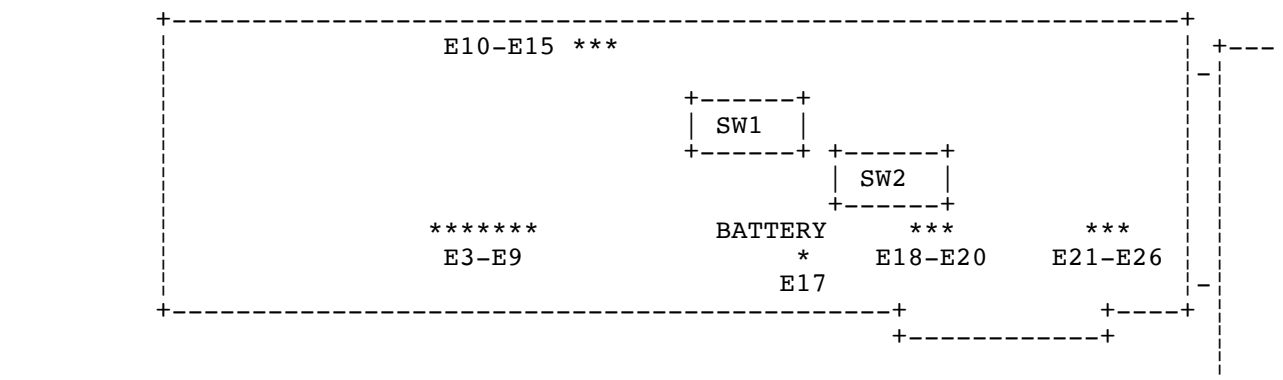
RS-232 Configuration - first port

E21 - Connect for CTS forced true
E22 - Connect for CTS normal (default)
E23 - Connect for DSR forced true
E24 - Connect for DSR normal (default)
E25 - Connect for DCD forced true
E26 - Connect for DCD normal (default)

RS-232 Configuration - second port option

E10 - Connect for CTS forced true
E11 - Connect for CTS normal (default)
E12 - Connect for DSR forced true
E13 - Connect for DSR normal (default)
E14 - Connect for DCD forced true
E15 - Connect for DCD normal (default)

SWITCH BLOCK AND JUMPER LOCATIONS



SixPak 286 AST Part Number 202344-001

The AST SixPak 286 board offers flexible and powerful memory enhancement for the AST Bravo/286, AST Premium/286, AST Premium Workstation, IBM PC/AT and compatible computers. It offers complete software compatibility with Expanded Memory Specification (EMS) 4.0 software.

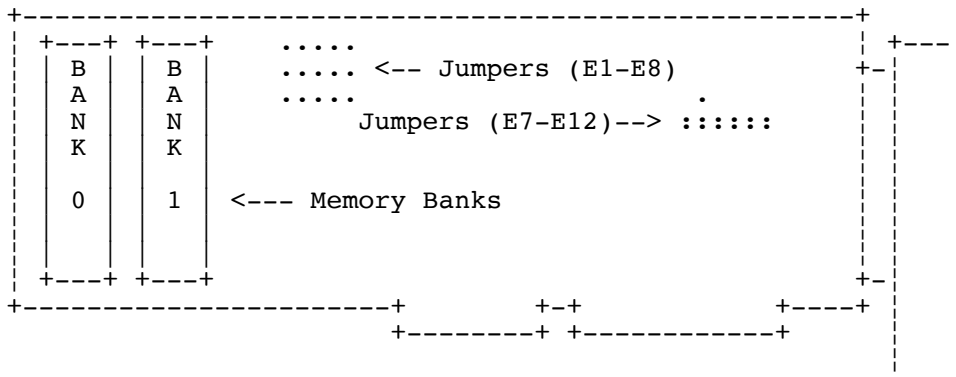
The SixPak 286 SmartSwitch configuration software eliminates the need to set board switches. The software can make the optimal settings for your computer automatically, or you can select your configuration from easy to use menus. The SixPak 286 board retains your selected configuration even when your computer is turned off.

You can upgrade your SixPak 286 board's memory to a maximum of four megabytes (MB) with single inline memory modules (SIMMs) that snap in and out of your board socket's. Optional I/O Pak 286 (AST P/N 500560-002) piggyback boards add one serial port and one parallel port to your SixPak 286 board.

JUMPER SETTINGS

To set the board Identification jumper (E9 through E12): If this is the first SixPak 286 board in your computer, place the jumper on E9. For the second board use E10, the third board, E11 and the fourth board, E12. In addition, to use automatic mode after adding or removing memory, you must set the default configuration jumper (E8) to the alternate position. This clears the old configuration. For example, if the jumper is on pins 2 and 3, move it to pins 1 and 2. Also,the jumper on (E7) should remain installed to enable parity error reporting. Jumpers (E1 thru E5) tell the SixPak 286 the amount of memory on the board, for 512K and 1MB the jumpers should be in the 1-2 position, for 2MB and 4MB the jumpers should be in the 2-3 position.

JUMPER LOCATIONS



**** AST ADVANTAGE AND RAMVANTAGE MEMORY PRODUCTS ****

Advantage! AST Part Number 202051-001

The Advantage is a multi-function memory expansion adapter for the IBM PC/AT and 100% compatibles running at a speed of 8MHz. The Advantage can be configured from 128K to 3072K of memory using industry standard 64K or 256K dynamic RAM chips with a speed rating of at least 120NS. Standard I/O features would include a DB9 serial port configurable as COM1: or COM2:, and a parallel port configurable as LPT1: or LPT2:. Options available are a second serial port, a game port, and a memory expansion daughterboard (for higher than 1536K installed on the Advantage).

The memory on the Advantage can be used to bring conventional memory to it's 640K maximum, and to add extended linear memory to your AT or compatible. The Advantage does not support LIM, EMS, or EEMS expanded memory.

SWITCH SETTINGS

SW1 - MEMORY INSTALLED ON ADVANTAGE

NUMBER OF ROWS INSTALLED ON ADVANTAGE	ROW1	ROW2	ROW3	ROW4	ROW5	ROW6	SW1	SW2	SW3	SW4	SW5
1 (128K)	128K						OFF	OFF	OFF	OFF	ON
1 (512K)	512K						OFF	OFF	ON	ON	ON
2 (256K)	128K	128K					OFF	OFF	OFF	ON	OFF
2 (640K)	128K	512K					ON	OFF	OFF	OFF	OFF
2 (1024K)	512K	512K					OFF	ON	OFF	OFF	OFF
3 (384K)	128K	128K	128K				OFF	OFF	OFF	ON	ON
3 (768K)	128K	128K	512K				ON	OFF	ON	OFF	ON
3 (1152K)	128K	512K	512K				ON	OFF	OFF	OFF	ON
3 (1536K)	512K	512K	512K				OFF	ON	OFF	OFF	ON
4 (512K)	128K	128K	128K	128K			OFF	OFF	ON	OFF	OFF
4 (896K)	128K	128K	128K	512K			ON	ON	OFF	OFF	ON
4 (1280)	128K	128K	512K	512K			ON	OFF	ON	ON	OFF
4 (1664)	128K	512K	512K	512K			ON	OFF	OFF	ON	OFF
4 (2048)	512K	512K	512K	512K			OFF	ON	OFF	ON	OFF
5 (640)	128K	128K	128K	128K	128K		OFF	OFF	ON	OFF	ON
5 (1024)	128K	128K	128K	128K	512K		ON	ON	ON	OFF	OFF
5 (1408)	128K	128K	128K	512K	512K		ON	ON	OFF	ON	OFF
5 (1792)	128K	128K	512K	512K	512K		ON	OFF	ON	ON	ON
5 (2176)	128K	512K	512K	512K	512K		ON	OFF	OFF	ON	ON
5 (2560)	512K	512K	512K	512K	512K		OFF	ON	OFF	ON	ON
6 (768)	128K	128K	128K	128K	128K	128K	OFF	OFF	ON	ON	OFF
6 (1152)	128K	128K	128K	128K	128K	512K	ON	ON	ON	ON	OFF
6 (1536)	128K	128K	128K	128K	512K	512K	ON	ON	ON	OFF	ON
6 (1920)	128K	128K	128K	512K	512K	512K	ON	ON	OFF	ON	ON
6 (2304)	128K	128K	512K	512K	512K	512K	ON	ON	OFF	OFF	OFF
6 (2688)	128K	512K	512K	512K	512K	512K	ON	OFF	ON	OFF	OFF
6 (3072)	512K	512K	512K	512K	512K	512K	OFF	ON	ON	OFF	OFF

NOTE: Row one would consist of the eighteen RAM chips on the top edge of the board, with row two in the middle and row three on the bottom. Rows four thru six are on the Advantage-Pak optional piggyback memory board. Each row can accomodate 64K or 256K DRAM chips. If 64K chips (128K banks) are used, they must occupy the lower numbered banks, as in the above switch summary.

SW1-6 - N/A

SW1-7 - N/A

SW1-8 - Parity check (Recommend "ON" at all times)

SWITCH BLOCK TWO - I/O PORT ENABLE

SW2-1 - On to enable first serial port as COM1:

SW2-2 - On to enable first serial port as COM2:

SW2-3 - On to enable second serial option as COM2:

SW2-4 - On to enable parallel port as LPT1:

SW2-5 - On to enable parallel port as LPT2:

SW2-6 - On to enable game port option

SW2-7 - N/A

SW2-8 - N/A

SWITCH BLOCK THREE - MEMORY STARTING ADDRESS

START ADDRESS	SW1	SW2	SW3	SW4	SW5	SW6	SW7
256K	ON	ON	ON	ON	ON	OFF	ON
512K	ON	ON	ON	ON	OFF	ON	ON
1024K	ON	ON	ON	OFF	ON	ON	ON
1152K	ON	ON	ON	OFF	ON	ON	OFF
1280K	ON	ON	ON	OFF	ON	OFF	ON
1408K	ON	ON	ON	OFF	ON	OFF	OFF
1536K	ON	ON	ON	OFF	OFF	ON	ON
1664K	ON	ON	ON	OFF	OFF	ON	OFF
1792K	ON	ON	ON	OFF	OFF	OFF	ON
1920K	ON	ON	ON	OFF	OFF	OFF	OFF
2048K	ON	ON	OFF	ON	ON	ON	ON
2176K	ON	ON	OFF	ON	ON	ON	OFF
2304K	ON	ON	OFF	ON	ON	OFF	ON
2432K	ON	ON	OFF	ON	ON	OFF	OFF
2560K	ON	ON	OFF	ON	OFF	ON	ON
2688K	ON	ON	OFF	ON	OFF	ON	OFF
2816K	ON	ON	OFF	ON	OFF	OFF	ON
2944K	ON	ON	OFF	ON	OFF	OFF	OFF
3072K	ON	ON	OFF	ON	ON	ON	ON
4096K (4MB)	ON	OFF	ON	ON	ON	ON	ON
5120K (5MB)	ON	OFF	ON	OFF	ON	ON	ON
6144K (6MB)	ON	OFF	OFF	ON	ON	ON	ON
7168K (7MB)	ON	OFF	OFF	OFF	ON	ON	ON
8192K (8MB)	OFF	ON	ON	ON	ON	ON	ON
9216K (9MB)	OFF	ON	ON	OFF	ON	ON	ON
10240K (10MB)	OFF	ON	OFF	ON	ON	ON	ON
11264K (11MB)	OFF	ON	OFF	OFF	ON	ON	ON
12288K (12MB)	OFF	OFF	ON	ON	ON	ON	ON
13312K (13MB)	OFF	OFF	ON	OFF	ON	ON	ON
14336K (14MB)	OFF	OFF	OFF	ON	ON	ON	ON
15360K (15MB)	OFF	OFF	OFF	OFF	ON	ON	ON

The above list of addresses is not complete. After the 3072K address, we have listed the settings for every megabyte only. Switches 5,6 & 7 determine the addresses between. If you are unable to interpolate the correct starting address from the above information, contact AST to order the complete documentation.

NOTE: The "STARTING ADDRESS" is not the same as "MEMORY INSTALLED IN SYSTEM". Because of the reserved rom area residing between A0000h and 100000h, extended memory has a linear starting address of 1024K.

In simple terms, if your system has more than 512K, the actual starting address is equal to total system memory plus 384.

Some examples:

SYSTEM MEMORY	STARTING ADDRESS	
256K	256K	
512K	512K	
640K	1024K	(640 + 384)
1024K	1408K	(1024 + 384)
3328K	3712K	(3328 + 384)

JUMPER SETTINGS

J6 LOCATION

7 - IRQ 7; Attach for use with LPT1:
5 - IRQ 5; Attach for use with LPT2:

4 - IRQ 4; Attach for use with COM1: (first port)
3 - IRQ 3; Attach for use with COM2: (first port)
3 - IRQ 3; Attach for use with COM2: (second port)

The above jumper settings are to be used in combination with the settings on Switch Block Two. For example, if the first serial port is to configured as COM2:, SW2-2 should be in the "ON" position, and J6 location "3" (next to the "4") should be attached.

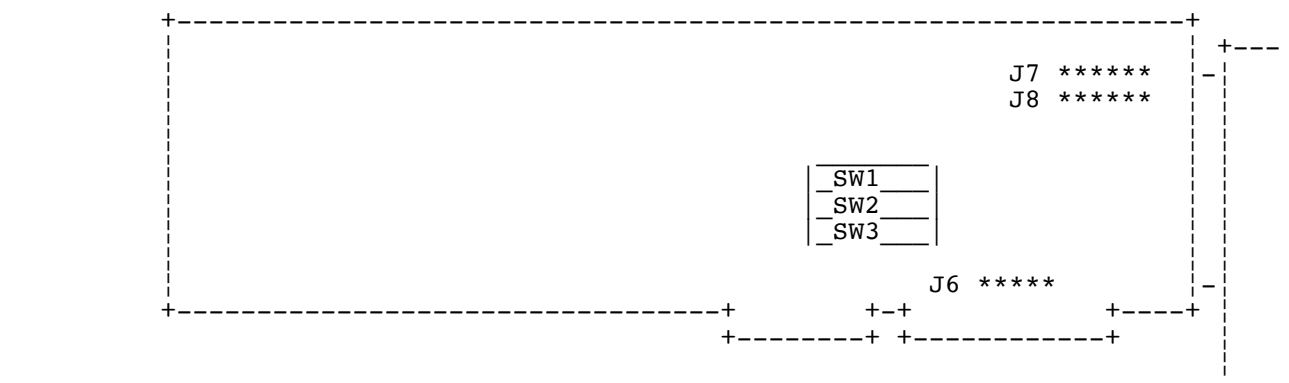
J7 LOCATION (TOP-RIGHT PORTION OF BOARD)

1 - CTS FORCED TRUE (first serial port)
2 - CTS NORMAL (first serial port)
3 - DSR FORCED TRUE (first serial port)
4 - DSR NORMAL (first serial port)
5 - DCD FORCED TRUE (first serial port)
6 - DCD NORMAL (first serial port)

J8 LOCATION (TOP-RIGHT PORTION OF BOARD)

1 - CTS FORCED TRUE (second serial port)
2 - CTS NORMAL (second serial port)
3 - DSR FORCED TRUE (second serial port)
4 - DSR NORMAL (second serial port)
5 - DCD FORCED TRUE (second serial port)
6 - DCD NORMAL (second serial port)

SWITCH BLOCK AND JUMPER LOCATIONS



Advantage Premium AST Part Number 202106-001

The Advantage Premium is a multi-function memory expansion adapter for the IBM PC/AT and 100% compatibles running at 8MHz. Memory can be expanded on this board from 512K to 1024K, and up to 2048K with an optional daughter board, using industry standard 256K dynamic RAM chips with a minimum speed requirement of 120NS. Memory standards supported by the Advantage Premium include conventional (base 640K), linear extended, LIM 3.2, LIM 4.0, and EEMS. The Advantage Premium comes standard with a serial port configurable as COM1: or COM2: and a parallel port configurable as LPT1: or LPT2:. A second serial port and a game port can be optionally be added.

SWITCH SETTINGS

SWITCH BLOCK 1 - (TEN POSITIONS; ON = TOWARD NUMBERS)

ADVANTAGE MEMORY DEDICATED TO LINEAR / NON-EXPANDED MEMORY

LINEAR MEMORY	SW1-1	SW1-2	SW1-3	SW1-4	
*128K	ON	ON	ON	ON	(Default Setting)
256K	ON	ON	ON	OFF	
384K	ON	ON	OFF	ON	
512K	ON	ON	OFF	OFF	
640K	ON	OFF	ON	ON	
768K	ON	OFF	ON	OFF	
896K	ON	OFF	OFF	ON	
1024K	ON	OFF	OFF	OFF	
1152K	OFF	ON	ON	ON	
1280K	OFF	ON	ON	OFF	
1408K	OFF	ON	OFF	ON	
1536K	OFF	ON	OFF	OFF	
1664K	OFF	OFF	ON	ON	
1792K	OFF	OFF	ON	OFF	
1920K	OFF	OFF	OFF	ON	
2048K	OFF	OFF	OFF	OFF	

NOTE: The above settings define how much of the memory on the Advantage will be used as conventional (base 640K) and/or extended linear memory. Any memory not used by these settings will be available as EMS expanded memory.

If the Advantage is to be used exclusively as EMS expanded memory, set the switches on Bank 2 (below) accordingly, and the above settings will be ignored.

BASE I/O ADDRESS

ADDRESS	SW1-5	SW1-6	SW1-7	SW1-8	
0208h	ON	ON	ON	ON	
*0218h	ON	ON	ON	OFF	(Default Setting)
0258h	ON	OFF	ON	OFF	

0268h	ON	OFF	OFF	ON
02A8h	OFF	ON	OFF	ON
02B8h	OFF	ON	OFF	OFF
02E8h	OFF	OFF	OFF	ON

DUAL PAGE MODE

SW1-9 ON=ENABLED OFF=DISABLED

NOTE: Dual page mode allows expanded memory to maintain two sets of mapping registers, which ensures proper multitasking operation. Generally, dual page mode is enabled. (SW1-9 ON)

SW1-10 (See SW3 Below)

SWITCH BLOCK 2 - (EIGHT POSITIONS - ON = TOWARD NUMERS)

STARTING ADDRESS (LINEAR MEMORY INSTALLED PREVIOUS TO ADVANTAGE)

START ADDRESS	SW1	SW2	SW3	SW4	SW5	SW6	SW7	
0K	ON	ON	ON	ON	ON	ON	ON	
128K	ON	ON	ON	ON	ON	ON	OFF	
256K	ON	ON	ON	ON	ON	OFF	ON	
384K	ON	ON	ON	ON	ON	OFF	OFF	
*512K	ON	ON	ON	ON	OFF	ON	ON	(Default Setting)
640K	ON	ON	ON	ON	OFF	ON	OFF	
768K	ON	ON	ON	ON	OFF	OFF	ON	
896K	ON	ON	ON	ON	OFF	OFF	OFF	
1024K	ON	ON	ON	OFF	ON	ON	ON	
1152K	ON	ON	ON	OFF	ON	ON	OFF	
1280K	ON	ON	ON	OFF	ON	OFF	ON	
1408K	ON	ON	ON	OFF	ON	OFF	OFF	
1536K	ON	ON	ON	OFF	OFF	ON	ON	
1664K	ON	ON	ON	OFF	OFF	ON	OFF	
1792K	ON	ON	ON	OFF	OFF	OFF	ON	
1920K	ON	ON	ON	OFF	OFF	OFF	OFF	
2048K	ON	ON	OFF	ON	ON	ON	ON	
2176K	ON	ON	OFF	ON	ON	ON	OFF	
2304K	ON	ON	OFF	ON	ON	OFF	ON	
2432K	ON	ON	OFF	ON	ON	OFF	OFF	
2560K	ON	ON	OFF	ON	OFF	ON	ON	
2688K	ON	ON	OFF	ON	OFF	ON	OFF	
2816K	ON	ON	OFF	ON	OFF	OFF	ON	
2944K	ON	ON	OFF	ON	OFF	OFF	OFF	
3072K	ON	ON	OFF	ON	ON	ON	ON	
4096K (4MB)	ON	OFF	ON	ON	ON	ON	ON	
5120K (5MB)	ON	OFF	ON	OFF	ON	ON	ON	
6144K (6MB)	ON	OFF	OFF	ON	ON	ON	ON	
7168K (7MB)	ON	OFF	OFF	OFF	ON	ON	ON	
8192K (8MB)	OFF	ON	ON	ON	ON	ON	ON	
9216K (9MB)	OFF	ON	ON	OFF	ON	ON	ON	
10240K (10MB)	OFF	ON	OFF	ON	ON	ON	ON	
11264K (11MB)	OFF	ON	OFF	OFF	ON	ON	ON	
12288K (12MB)	OFF	OFF	ON	ON	ON	ON	ON	
13312K (13MB)	OFF	OFF	ON	OFF	ON	ON	ON	
14336K (14MB)	OFF	OFF	OFF	ON	ON	ON	ON	
15360K (15MB)	OFF	OFF	OFF	OFF	ON	ON	ON	
ALL ADVANTAGE MEMORY PAGED (EMS)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	

SW2-8 - Memory Parity Checking

The above list of addresses is not complete. After the 3072K address, we have listed the settings for every megabyte only. Switches 5,6 & 7 determine the addresses between. If you are unable to interpolate the correct starting address from the above information, contact AST to order the complete documentation.

NOTE: Linear memory installed previous to the Rampge would consist of Base memory (maximum 640K) plus extended memory (non-EMS)

installed in the system before the Advantage is installed. If the starting address is set below 640K, the Advantage will automatically "backfill" base memory up to 640K, with the remainder of linear memory going to extended memory.

You will have to adjust your machines CMOS with your set-up program only if you add conventional or extended linear memory with the Advantage. Do not change the set-up to reflect expanded EMS memory.

SWITCH BLOCK 3 - (EIGHT POSITIONS - ON = TOWARD NUMERS)

SW3-1 - On to enable serial port as COM1:
SW3-2 - On to enable serial port as COM2:
SW3-3 - On to enable second serial option as COM2:
SW3-4 - On to enable parallel port as LPT1:
SW3-5 - On to enable parallel port as LPT2:
SW3-6 - On to enable game port option
SW3-7 - On to enable IRQ 4 (In combination with SW3-1)
SW3-8 - On to enable IRQ 3 (In combination with SW3-2)

* SW1-10 On to enable IRQ 3 (In combination with SW3-3)

JUMPER SETTINGS Advantage Premium (p/n 202106-001)

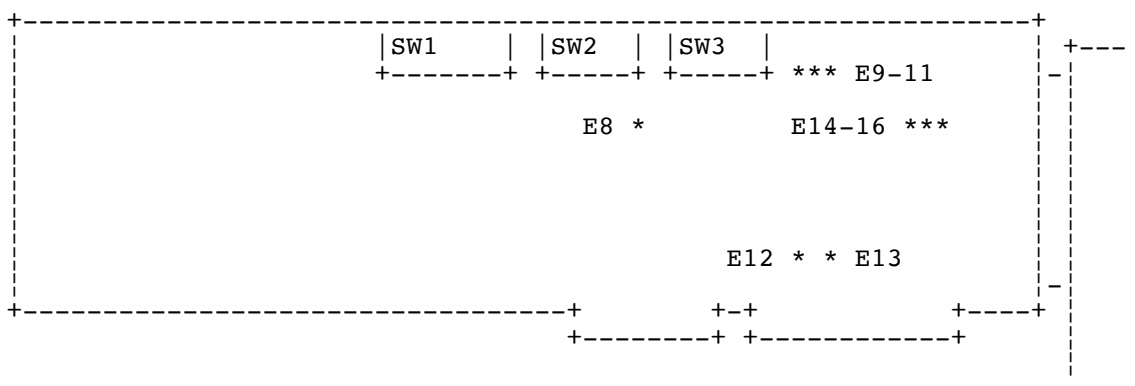
E8 - Attach to enable serial port(s)
E12 - Attach to enable IRQ7 (for use with LPT1:)
E13 - Attach to enable IRQ5 (for use with LPT2:)

E14 - Attach for normal DCD (first serial port)
E15 - Attach for normal DSR (first serial port)
E16 - Attach for normal CTS (first serial port)

E9 - Attach for normal DCD (second serial option)
E10 - Attach for normal DSR (second serial option)
E11 - Attach for normal CTS (second serial option)

NOTE: In normal RS232 operations, the Data Carrier Detect (DCD), Data Set Ready (DSR), and Clear To Send (CTS) are driven by the external serial device. In rare cases, one or more of these signals must be "forced true". To force a signal true, remove the appropriate jumper above.

SWITCH BLOCK AND JUMPER LOCATIONS



Ramvantage! AST Part Number 202058-001

The Ramvantage is a memory expansion adapter for the IBM PC/AT and 100% compatibles running at a speed of 8MHz. The Ramvantage can be configured from 128K to 3072K of memory using industry standard 64K or 256K dynamic RAM chips with a speed rating of at least 120NS. The memory on the Ramvantage can be used to bring conventional memory to it's 640K maximum, and to add extended linear memory to your AT or compatible. The Ramvantage does not support LIM, EMS, or EEMS expanded memory.

SWITCH SETTINGS - SWITCH BLOCK 1

MEMORY INSTALLED ON RAMVANTAGE

NUMBER OF BANKS INSTALLED ON RAMVANTAGE	BNK1	BNK2	BNK3	BNK4	BNK5	BNK6	SW1	SW2	SW3	SW4	SW5
1 (128K)	128K						OFF	OFF	OFF	OFF	ON
1 (512K)	512K						OFF	OFF	ON	OFF	ON
2 (256K)	128K	128K					OFF	OFF	OFF	ON	OFF
2 (640K)	128K	512K					ON	OFF	OFF	OFF	OFF
2 (1024K)	512K	512K					OFF	ON	OFF	OFF	OFF
3 (384K)	128K	128K	128K				OFF	OFF	OFF	ON	ON
3 (768K)	128K	128K	512K				ON	OFF	ON	OFF	ON
3 (1152K)	128K	512K	512K				ON	OFF	OFF	OFF	ON
3 (1536K)	512K	512K	512K				OFF	ON	OFF	OFF	ON
4 (512K)	128K	128K	128K	128K			OFF	OFF	ON	OFF	OFF
4 (896K)	128K	128K	128K	512K			ON	ON	OFF	OFF	ON
4 (1280)	128K	128K	512K	512K			ON	OFF	ON	ON	OFF
4 (1664)	128K	512K	512K	512K			ON	OFF	OFF	ON	OFF
4 (2048)	512K	512K	512K	512K			OFF	ON	OFF	ON	OFF
5 (640)	128K	128K	128K	128K	128K		OFF	OFF	ON	OFF	ON
5 (1024)	128K	128K	128K	128K	512K		ON	ON	ON	OFF	OFF
5 (1408)	128K	128K	128K	512K	512K		ON	ON	OFF	ON	OFF
5 (1792)	128K	128K	512K	512K	512K		ON	OFF	ON	ON	ON
5 (2176)	128K	512K	512K	512K	512K		ON	OFF	OFF	ON	ON
5 (2560)	512K	512K	512K	512K	512K		OFF	ON	OFF	ON	ON
6 (768)	128K	128K	128K	128K	128K	128K	OFF	OFF	ON	ON	OFF
6 (1152)	128K	128K	128K	128K	128K	512K	ON	ON	ON	ON	OFF
6 (1536)	128K	128K	128K	128K	512K	512K	ON	ON	ON	OFF	ON
6 (1920)	128K	128K	128K	512K	512K	512K	ON	ON	OFF	ON	ON
6 (2304)	128K	128K	512K	512K	512K	512K	ON	ON	OFF	OFF	OFF
6 (2688)	128K	512K	512K	512K	512K	512K	ON	OFF	ON	OFF	OFF
6 (3072)	512K	512K	512K	512K	512K	512K	OFF	ON	ON	OFF	OFF

NOTE: Each bank can accomodate eighteen 64K or 256K DRAM chips. If 64K chips (128K banks) are used, they must occupy the lower numbered banks, as in the above switch summary.

SW1-6 - N/A
SW1-7 - N/A
SW1-8 - Parity check (Recommend "ON" at all times)

SWITCH BLOCK 2

MEMORY STARTING ADDRESS

START ADDRESS	SW1	SW2	SW3	SW4	SW5	SW6	SW7
256K	ON	ON	ON	ON	ON	OFF	ON
512K	ON	ON	ON	ON	OFF	ON	ON
1024K	ON	ON	ON	OFF	ON	ON	ON
1152K	ON	ON	ON	OFF	ON	ON	OFF
1280K	ON	ON	ON	OFF	ON	OFF	ON
1408K	ON	ON	ON	OFF	ON	OFF	OFF
1536K	ON	ON	ON	OFF	OFF	ON	ON
1664K	ON	ON	ON	OFF	OFF	ON	OFF
1792K	ON	ON	ON	OFF	OFF	OFF	ON
1920K	ON	ON	ON	OFF	OFF	OFF	OFF
2048K	ON	ON	OFF	ON	ON	ON	ON
2176K	ON	ON	OFF	ON	ON	ON	OFF
2304K	ON	ON	OFF	ON	ON	OFF	ON
2432K	ON	ON	OFF	ON	ON	OFF	OFF
2560K	ON	ON	OFF	ON	OFF	ON	ON
2688K	ON	ON	OFF	ON	OFF	ON	OFF
2816K	ON	ON	OFF	ON	OFF	OFF	ON

2944K		ON	ON	OFF	ON	OFF	OFF	OFF
3072K		ON	ON	OFF	OFF	ON	ON	ON
4096K	(4MB)	ON	OFF	ON	ON	ON	ON	ON
5120K	(5MB)	ON	OFF	ON	OFF	ON	ON	ON
6144K	(6MB)	ON	OFF	OFF	ON	ON	ON	ON
7168K	(7MB)	ON	OFF	OFF	OFF	ON	ON	ON
8192K	(8MB)	OFF	ON	ON	ON	ON	ON	ON
9216K	(9MB)	OFF	ON	ON	OFF	ON	ON	ON
10240K	(10MB)	OFF	ON	OFF	ON	ON	ON	ON
11264K	(11MB)	OFF	ON	OFF	OFF	ON	ON	ON
12288K	(12MB)	OFF	OFF	ON	ON	ON	ON	ON
13312K	(13MB)	OFF	OFF	ON	OFF	ON	ON	ON
14336K	(14MB)	OFF	OFF	OFF	ON	ON	ON	ON
15360K	(15MB)	OFF	OFF	OFF	OFF	ON	ON	ON

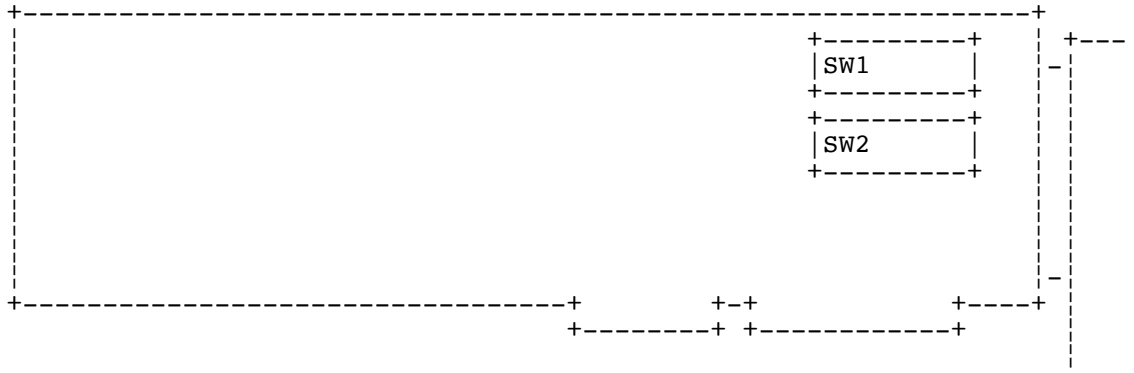
The above list of addresses is not complete. After the 3072K address, we have listed the settings for every megabyte only. Switches 5,6 & 7 determine the addresses between. If you are unable to extrapolate the correct starting address from the above information, leave a question on the BBS.

NOTE: The "STARTING ADDRESS" is not the same as "MEMORY INSTALLED IN SYSTEM". Because of the reserved rom area residing between A0000h and 100000h, extended memory has a linear starting address of 1024K.

In simple terms, if your system has more than 512K, the actual starting address is equal to total system memory plus 384. Some examples:

SYSTEM MEMORY	STARTING ADDRESS	
256K	256K	
512K	512K	
640K	1024K	(640 + 384)
1024K	1408K	(1024 + 384)
3328K	3712K	(3328 + 384)

SWITCH BLOCK LOCATIONS



**** AST I/O BOARD PRODUCTS ****

I/O MINI II AT AST Part Number 202123-002

The I/O Mini II AT is a multifunction board for the IBM PC/AT and 100% compatibles, this board comes standard with , a serial port configurable as COM1: or COM2:, and a parallel port configurable as LPT1: or LPT2:. Optional upgrades include a second serial port and a game port.

JUMPER SETTINGS

Jumper positions E1 through E7 are three pin jumpers. E1-E6 control the signals sent to the serial ports, and for the most part should remain in the default position (on pins 1 & 2 to the left). In rare cases, you may want to force certain signals true, in which case the appropriate jumper would move to the right pair of pins (2 & 3).

E1 - Move to 2 & 3 to force CTS true (Port One)
E2 - Move to 2 & 3 to force DSR true (Port One)
E3 - Move to 2 & 3 to force DCD true (Port One)

E4 - Move to 2 & 3 to force CTS true (Second Port Option)
E5 - Move to 2 & 3 to force DSR true (Second Port Option)
E6 - Move to 2 & 3 to force DCD true (Second Port Option)

Slot eight (closest to the power supply) in the IBM PC/AT is a non-standard slot. If the I/O Mini II is installed in this slot, you must move the jumper at E7 to right pair of pins (2 & 3).

E7 - Move to 2 & 3 if installed in PC/AT slot 8
*E8 - Attach for serial COM1: (Primary Port)
E9 - Attach for serial COM2: (Primary or Second Option)

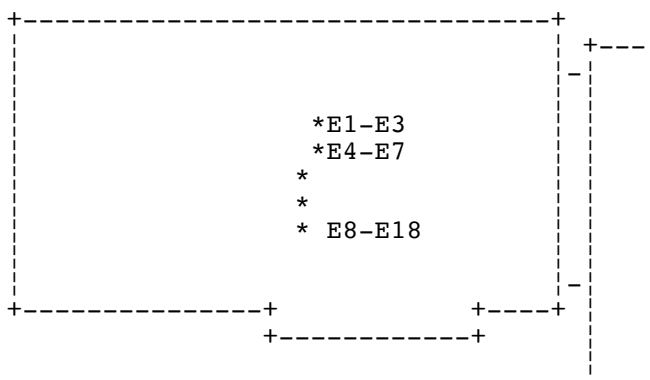
*E10 - Attach for parallel LPT1:
E11 - Attach for parallel LPT2:

E12 - Attach for game port option

E14 - Attach for IRQ3 with COM2: (Second Port Option)
E15 - Attach for IRQ3 with COM2: (Primary Port)
*E16 - Attach for IRQ4 with COM1: (Primary Port)
*E17 - Attach for IRQ7 with LPT1:
E18 - Attach for IRQ5 with LPT2:

* = Factory Default

JUMPER LOCATIONS



I/O PLUS II AST Part Number 03-01164-01

The I/O Plus II is a multifunction board for the IBM PC, PC/XT, and 100% compatibles running at 4.77MHz. This board comes standard with a real-time clock/calander and a serial port configurable as COM1: or COM2:. Optional upgrades include a second serial port, a parallel port, and a game port.

JUMPER SETTINGS

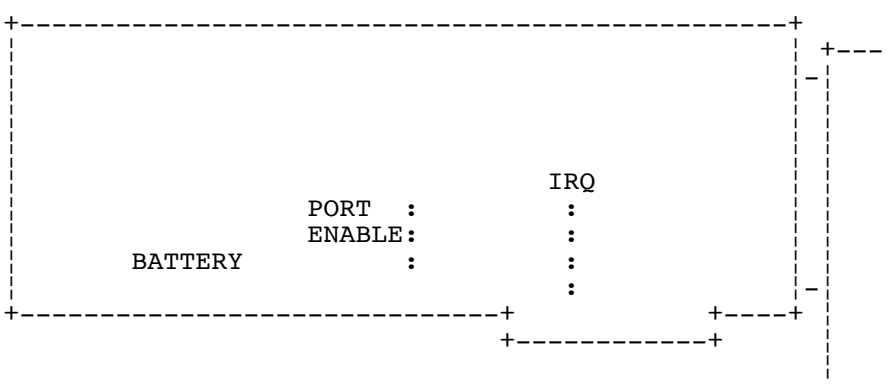
PORT ENABLE BLOCK

C1 - Attach to enable serial as COM1:
C2 - Attach to enable serial as COM2:
S2 - Attach to enable second serial option as COM2:
P1 - Attach to enable parallel option as LPT1:
P2 - Attach to enable parallel option as LPT2:
G - Attach to enable game port option.

IRQ BLOCK

7 - N/A - Leave open
5C - N/A - Leave open
5S - N/A - Leave open
4 - IRQ 4 - Attach for use with COM1:
3 - IRQ 3 - Attach for use with COM2: (primary port)
3S - IRQ 3 - Attach for use with COM2: (second port option)
2C - N/A - Leave open
2S - N/A - Leave open

JUMPER LOCATIONS



I/O MINI AST Part Number 202039-001

The I/O Mini is a multifunction board for the IBM PC, PC/XT, and 100% compatibles running at 4.77MHz. This board comes standard with a real-time clock/calander and a serial port configurable as COM1: or COM2:. Optional upgrades include a second serial port and a parallel port.

JUMPER SETTINGS

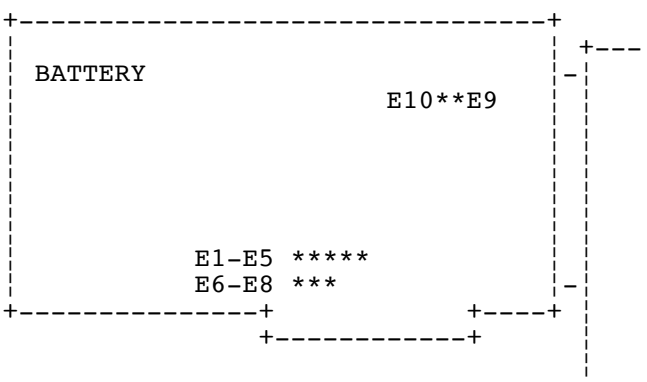
*E1 - Attach to enable clock/calander
*E2 - Attach to enable parallel option as LPT1:
 E3 - Attach to enable parallel option as LPT2:
 E4 - Attach to enable IRQ3 (use with COM2:, primary port)
*E5 - Attach to enable IRQ4 (use with COM1:, primary port)

*E6 - Attach to enable primary serial port as COM1:
 E7 - Attach to enable primary serial port as COM2:
 E8 - Attach to enable second serial option as COM2:

 E9 - Attach to enable IRQ3 (use with second serial option)
*E10- Attach to enable IRQ7 (use with LPT1:)

NOTE: * = Default Settings

JUMPER LOCATIONS



I/O MINI II AST Part Number 202123-001

The I/O Mini II is a multifunction board for the IBM PC, PC/XT, and 100% compatibles running at 4.77MHz. This board comes standard with a real-time clock/calander, a serial port configurable as COM1: or COM2:, and a parallel port configurable as LPT1: or LPT2:. Optional upgrades include a second serial port and a game port.

JUMPER SETTINGS

Jumper positions E1 through E7 are three pin jumpers. E1-E6 control the signals sent to the serial ports, and for the most part should remain in the default position (on pins 1 & 2 to the left). In rare cases, you may want to force certain signals true, in which case the appropriate jumper would move to the right pair of pins (2 & 3).

E1 - Move to 2 & 3 to force CTS true (Port One)
E2 - Move to 2 & 3 to force DSR true (Port One)
E3 - Move to 2 & 3 to force DCD true (Port One)

E4 - Move to 2 & 3 to force CTS true (Second Port Option)
E5 - Move to 2 & 3 to force DSR true (Second Port Option)
E6 - Move to 2 & 3 to force DCD true (Second Port Option)

Slot eight (closest to the power supply) in the IBM PC/XT is a non-standard slot. If the I/O Mini II is installed in this slot, you must move the jumper at E7 to right pair of pins (2 & 3).

E7 - Move to 2 & 3 if installed in PC/XT slot 8

*E8 - Attach for serial COM1: (Primary Port)
 E9 - Attach for serial COM2: (Primary or Second Option)

*E10 - Attach for parallel LPT1:
 E11 - Attach for parallel LPT2:

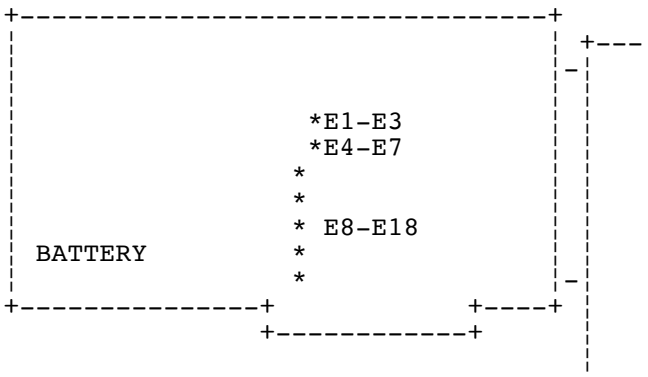
E12 - Attach for game port option
*E13 - Attach for clock/calander

E14 - Attach for IRQ3 with COM2: (Second Port Option)
E15 - Attach for IRQ3 with COM2: (Primary Port)
*E16 - Attach for IRQ4 with COM1: (Primary Port)
*E17 - Attach for IRQ7 with LPT1:

E18 - Reserved - Leave Open

* = Factory Default

JUMPER LOCATIONS



I/O MINI II AT AST Part Number 202123-002

The I/O Mini II AT is a multifunction board for the IBM PC/AT and 100% compatibles, this board comes standard with , a serial port configurable as COM1: or COM2:, and a parallel port configurable as LPT1: or LPT2:. Optional upgrades include a second serial port and a game port.

JUMPER SETTINGS

Jumper positions E1 through E7 are three pin jumpers. E1-E6 control the signals sent to the serial ports, and for the most part should remain in the default position (on pins 1 & 2 to the left). In rare cases, you may want to force certain signals true, in which case the appropriate jumper would move to the right pair of pins (2 & 3).

E1 - Move to 2 & 3 to force CTS true (Port One)
E2 - Move to 2 & 3 to force DSR true (Port One)
E3 - Move to 2 & 3 to force DCD true (Port One)

E4 - Move to 2 & 3 to force CTS true (Second Port Option)
E5 - Move to 2 & 3 to force DSR true (Second Port Option)
E6 - Move to 2 & 3 to force DCD true (Second Port Option)

Slot eight (closest to the power supply) in the IBM PC/AT is a non-standard slot. If the I/O Mini II is installed in this slot, you must move the jumper at E7 to right pair of pins (2 & 3).

E7 - Move to 2 & 3 if installed in PC/AT slot 8
*E8 - Attach for serial COM1: (Primary Port)
E9 - Attach for serial COM2: (Primary or Second Option)

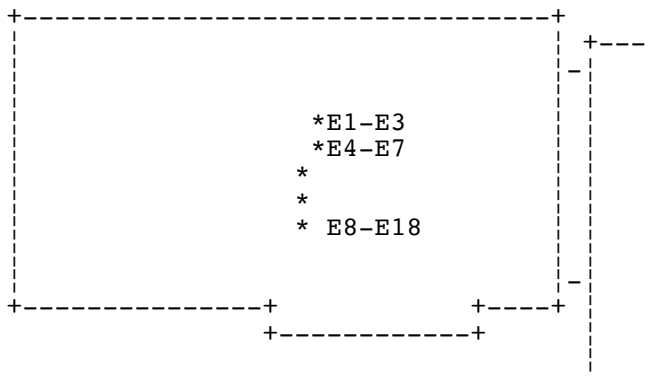
*E10 - Attach for parallel LPT1:
E11 - Attach for parallel LPT2:

E12 - Attach for game port option

E14 - Attach for IRQ3 with COM2: (Second Port Option)
E15 - Attach for IRQ3 with COM2: (Primary Port)
*E16 - Attach for IRQ4 with COM1: (Primary Port)
*E17 - Attach for IRQ7 with LPT1:
E18 - Attach for IRQ5 with LPT2:

* = Factory Default

JUMPER LOCATIONS



**** AST RAMPAGE ****

Rampage! AST Part Number 202073-001

The Rampage is a memory enhancement board designed for use with the IBM PC, XT, and 100% compatibles running at a speed of 4.77MHz. The Rampage can be populated from 256K to 2048K using industry standard 256K DRAM chips of at least 150ns speed. The memory standards supported by the Rampage include conventional (640K base), LIM 3.2, EEMS, and LIM 4.0. Extended memory can be emulated by using the REX.SYS device driver. In order to access any non-coventional memory, the REMM.SYS device driver must be used.

SWITCH SETTINGS

BASE I/O ADDRESS

	208	218	258	268	2A8	2B8	2E8
SW1	ON	ON	ON	ON	OFF	OFF	OFF
SW2	ON	ON	OFF	OFF	ON	ON	OFF
SW3	ON	ON	ON	OFF	OFF	OFF	OFF
SW4	ON	OFF	OFF	ON	ON	OFF	ON

STARTING ADDRESS

	0K	256K	512K	640K
SW5	OFF	ON	OFF	ON
SW6	OFF	OFF	ON	ON

BANKS AVAILABLE AS BASE (640K) MEMORY

BANK	0	1	2	3
	0K	UP TO 256K	UP TO 512K	UP TO 768K *
SW7	ON	OFF	ON	OFF
SW8	ON	ON	OFF	OFF

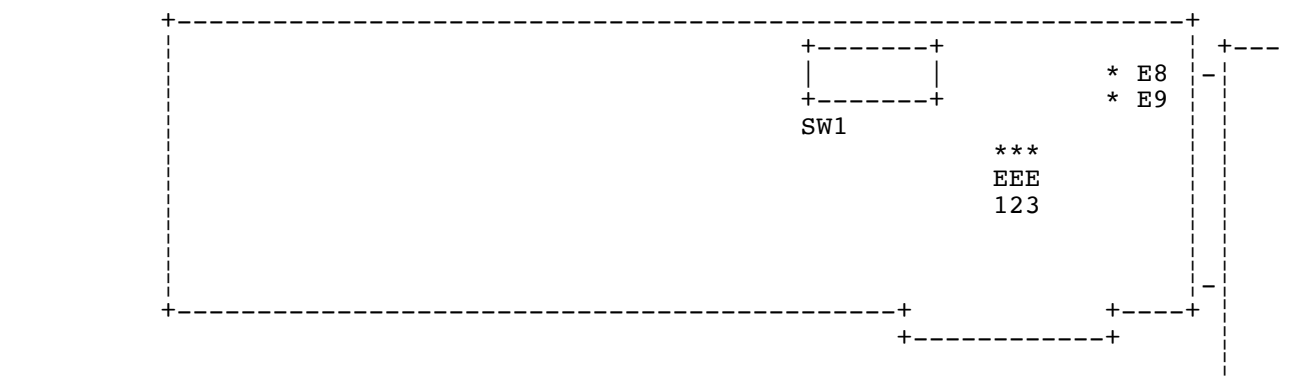
NOTE: The maximum amount of conventional memory in an IBM PC/XT is 640K. SW7 & SW8 define the amount of conventional memory available to the PC from the Rampage board. In some cases, the total of existing PC memory and Rampage conventional memory may add up to more than 640K. In this situation, conventional memory stops at 640K and the balance becomes available as expanded memory.

JUMPER SETTINGS

The only user-configurable jumpers on the Rampage are the three pin jumper labeled "E1-E2-E3" and the two pin jumper at "E8-E9". By attaching E1-E2, Dual Page Mode is disabled, allowing only one set of mapping registers for expanded memory. Attaching E2-E3 enables Dual Page Mode, allowing two mapping registers. AST recommends two mapping registers, as they are useful for multitasking purposes.

Attaching E8-E9 enables parity checking. It is strongly recommended that parity checking is always enabled.

SWITCH BANK AND JUMPER LOCATIONS



Rampage! AST Part Number 202073-002

The Rampage is a memory enhancement board designed for use with the IBM PC, XT, and 100% compatibles running at a speed of 4.77MHz. The Rampage can be populated from 256K to 2048K using industry standard 256K DRAM chips of at least 150ns speed. The memory standards supported by the Rampage include conventional (640K base), LIM 3.2, EEMS, and LIM 4.0. Extended memory can be emulated by using the REX.SYS device driver. In order to access any non-coventional memory, the REMM.SYS device driver must be used.

SWITCH SETTINGS

(SW1 has eight switches; SW2 has four switches)

BASE I/O ADDRESS

	208	218	258	268	2A8	2B8	2E8
SW1-1	ON	ON	ON	ON	OFF	OFF	OFF
SW1-2	ON	ON	OFF	OFF	ON	ON	OFF
SW1-3	ON	ON	ON	OFF	OFF	OFF	OFF
SW1-4	ON	OFF	OFF	ON	ON	OFF	ON

BANKS AVAILABLE AS BASE (640K) MEMORY

BANK	0	1	2	3
	0K	UP TO 256K	UP TO 512K	UP TO 768K *
SW1-5	ON	OFF	ON	OFF
SW1-6	ON	ON	OFF	OFF

NOTE: The maximum amount of conventional memory in an IBM PC/XT is 640K. SW1-5 & SW1-6 define the amount of conventional memory available to the PC from the Rampage board. In some cases, the total of existing PC memory and Rampage conventional memory may add up to more than 640K. In this situation, conventional memory stops at 640K and the balance becomes available as expanded memory.

SW1-7 Dual page mode enable - Recommend "on" at all times

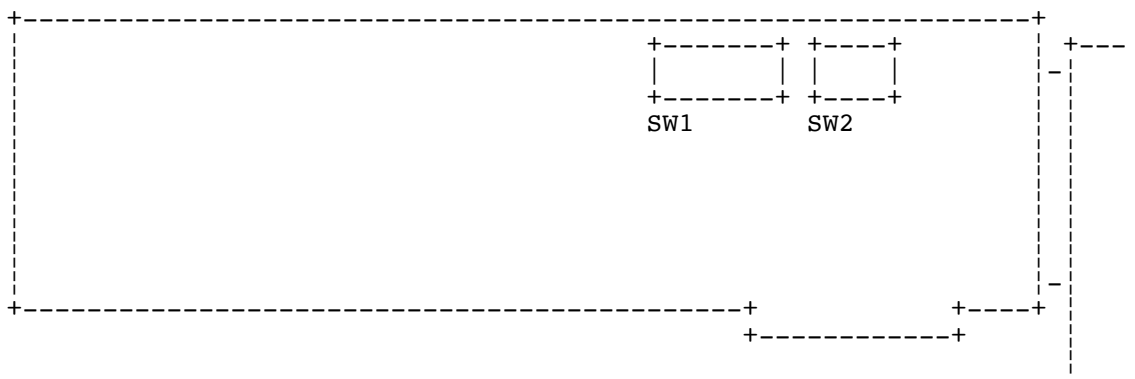
SW1-8 Parity check enable - Recommend "on" at all times

STARTING ADDRESS

	SW2-1	SW2-2	SW2-2	SW2-4
0K	OFF	OFF	OFF	OFF
64K	ON	OFF	OFF	OFF
128K	OFF	ON	OFF	OFF
192K	ON	ON	OFF	OFF

256K	OFF	OFF	ON	OFF
320K	ON	OFF	ON	OFF
384K	OFF	ON	ON	OFF
448K	ON	ON	ON	OFF
512K	OFF	OFF	OFF	ON
576K	ON	OFF	OFF	ON
640K	OFF	ON	OFF	ON

SWITCH BANK LOCATIONS



Rampage! AST Part Number 202141-001

The Rampage is a memory enhancement board designed for use with the IBM PC, XT, and 100% compatibles running at a speed of 4.77MHz. The Rampage can be populated from 256K to 2048K using industry standard 256K DRAM chips of at least 150ns speed. The memory standards supported by the Rampage include conventional (640K base), LIM 3.2, EEMS, and LIM 4.0. Extended memory can be emulated by using the REX.SYS device driver. In order to access any non-coventional memory, the REMM.SYS device driver must be used.

SWITCH SETTINGS

STARTING ADDRESS

	SW1-1	SW1-2	SW1-3	SW1-4
0K	OFF	OFF	OFF	OFF
64K	ON	OFF	OFF	OFF
128K	OFF	ON	OFF	OFF
192K	ON	ON	OFF	OFF
256K	OFF	OFF	ON	OFF
320K	ON	OFF	ON	OFF
384K	OFF	ON	ON	OFF
448K	ON	ON	ON	OFF
512K	OFF	OFF	OFF	ON
576K	ON	OFF	OFF	ON
640K	OFF	ON	OFF	ON

TYPE OF RAM INSTALLED

BANK 0	BANK 1	SW1-5	SW1-6	SW1-7
64K	64K	ON	ON	OFF
64K	256K	ON	OFF	OFF
256K	256K	OFF	OFF	OFF

NOTE: The Rampage requires 256K DRAM memory chips in all of it's banks with the exception of banks zero and one. As shown above, 64K DRAMS may be used in these two banks if the switches are set correctly.

SW1-8 - PARITY CHECK (recommended ON at all times)

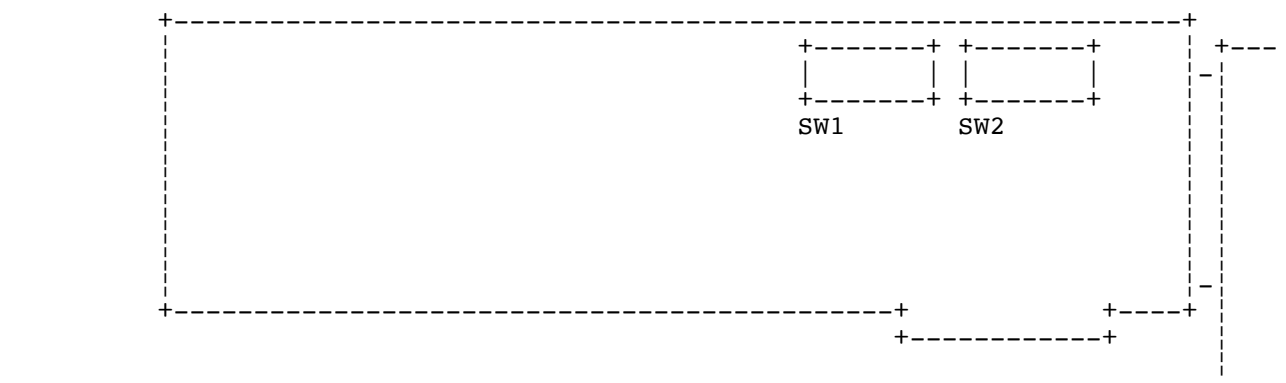
BASE I/O ADDRESS

	208	218	258	268	2A8	2B8	2E8
SW2-1	ON	OFF	OFF	ON	ON	OFF	ON
SW2-2	ON	ON	ON	OFF	OFF	OFF	OFF
SW2-3	ON	ON	OFF	OFF	ON	ON	OFF
SW2-4	ON	ON	ON	ON	OFF	OFF	OFF

RAMPAGE MEMORY AVAILABLE AS COVENTIONAL (Base 640K)

	0K	64K	128K	192K	256K	320K	384K	448K	512K	576K
SW2-5	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
SW2-6	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON
SW2-7	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON
SW2-8	OFF	ON	ON	ON	ON	ON	ON	ON	ON	OFF

SWITCH BANK LOCATIONS



Rampage AT AST Part Number 202079-001

The Rampage AT is a memory expansion adapter for the IBM PC/AT and 100% compatibles running at *6MHz. Memory can be expanded on this board from 512K to 2048K using industry standard 256K dynamic RAM chips with a minimum speed requirement of 120NS. Memory standards supported by the Rampage AT include conventional (base 640K), linear extended, LIM 3.2, LIM 4.0, and EEMS.

* Later versions of the Rampage AT are rated for 8MHz operation. The part number on the solder (non-component) side of the board determines which revision you have. If the part number is 202079-302C or 202079-302D, the Rampage is rated for 8MHz operation. Any other revision is rated for 6MHz only.

SWITCH SETTINGS

SWITCH BLOCK 1 (TEN POSITIONS; ON = TOWARD NUMBERS)

RAMPAGE MEMORY DEDICATED TO LINEAR / NON-EXPANDED MEMORY

LINEAR MEMORY	SW1-1	SW1-2	SW1-3	SW1-4	
*128K	ON	ON	ON	ON	(Default Setting)
256K	ON	ON	ON	OFF	
384K	ON	ON	OFF	ON	
512K	ON	ON	OFF	OFF	
640K	ON	OFF	ON	ON	
768K	ON	OFF	ON	OFF	
896K	ON	OFF	OFF	ON	
1024K	ON	OFF	OFF	OFF	
1152K	OFF	ON	ON	ON	
1280K	OFF	ON	ON	OFF	
1408K	OFF	ON	OFF	ON	
1536K	OFF	ON	OFF	OFF	
1664K	OFF	OFF	ON	ON	
1792K	OFF	OFF	ON	OFF	
1920K	OFF	OFF	OFF	ON	
2048K	OFF	OFF	OFF	OFF	

NOTE: The above settings define how much of the memory on the Rampage will be used as conventional (base 640K) and/or extended linear memory. Any memory not used by these settings will be available as EMS expanded memory.

If the Rampage is to be used exclusively as EMS expanded memory, set the switches on Bank 2 (below) accordingly, and the above settings will be ignored.

BASE I/O ADDRESS

ADDRESS	SW1-5	SW1-6	SW1-7	SW1-8	
0208h	ON	ON	ON	ON	
*0218h	ON	ON	ON	OFF	(Default Setting)
0258h	ON	OFF	ON	OFF	
0268h	ON	OFF	OFF	ON	
02A8h	OFF	ON	OFF	ON	
02B8h	OFF	ON	OFF	OFF	
02E8h	OFF	OFF	OFF	ON	

DUAL PAGE MODE

SW1-9 ON=ENABLED OFF=DISABLED

NOTE: Dual page mode allows expanded memory to maintain two sets of mapping registers, which ensures proper multitasking operation. Generally, dual page mode is enabled. (SW1-9 ON)

SW1-10 N/A

SWITCH BLOCK 2 - (EIGHT POSITIONS; ON = TOWARD NUMBERS)

STARTING ADDRESS (LINEAR MEMORY INSTALLED PREVIOUS TO RAMPAGE)

START ADDRESS	SW1	SW2	SW3	SW4	SW5	SW6	SW7	
0K	ON	ON	ON	ON	ON	ON	ON	
128K	ON	ON	ON	ON	ON	ON	OFF	
256K	ON	ON	ON	ON	ON	OFF	ON	
384K	ON	ON	ON	ON	ON	OFF	OFF	
*512K	ON	ON	ON	ON	OFF	ON	ON	(Default Setting)
640K	ON	ON	ON	ON	OFF	ON	OFF	
768K	ON	ON	ON	ON	OFF	OFF	ON	
896K	ON	ON	ON	ON	OFF	OFF	OFF	
1024K	ON	ON	ON	OFF	ON	ON	ON	
1152K	ON	ON	ON	OFF	ON	ON	OFF	
1280K	ON	ON	ON	OFF	ON	OFF	ON	
1408K	ON	ON	ON	OFF	ON	OFF	OFF	
1536K	ON	ON	ON	OFF	OFF	ON	ON	
1664K	ON	ON	ON	OFF	OFF	ON	OFF	
1792K	ON	ON	ON	OFF	OFF	OFF	ON	
1920K	ON	ON	ON	OFF	OFF	OFF	OFF	
2048K	ON	ON	OFF	ON	ON	ON	ON	
2176K	ON	ON	OFF	ON	ON	ON	OFF	
2304K	ON	ON	OFF	ON	ON	OFF	ON	
2432K	ON	ON	OFF	ON	ON	OFF	OFF	
2560K	ON	ON	OFF	ON	OFF	ON	ON	
2688K	ON	ON	OFF	ON	OFF	ON	OFF	
2816K	ON	ON	OFF	ON	OFF	OFF	ON	
2944K	ON	ON	OFF	ON	OFF	OFF	OFF	
3072K	ON	ON	OFF	ON	ON	ON	ON	
4096K (4MB)	ON	OFF	ON	ON	ON	ON	ON	
5120K (5MB)	ON	OFF	ON	OFF	ON	ON	ON	
6144K (6MB)	ON	OFF	OFF	ON	ON	ON	ON	
7168K (7MB)	ON	OFF	OFF	OFF	ON	ON	ON	
8192K (8MB)	OFF	ON	ON	ON	ON	ON	ON	
9216K (9MB)	OFF	ON	ON	OFF	ON	ON	ON	
10240K (10MB)	OFF	ON	OFF	ON	ON	ON	ON	
11264K (11MB)	OFF	ON	OFF	OFF	ON	ON	ON	
12288K (12MB)	OFF	OFF	ON	ON	ON	ON	ON	
13312K (13MB)	OFF	OFF	ON	OFF	ON	ON	ON	

14336K (14MB)	OFF	OFF	OFF	ON	ON	ON	ON
15360K (15MB)	OFF	OFF	OFF	OFF	ON	ON	ON
ALL RAMPAGE MEMORY PAGED (EMS)	OFF	OFF	OFF	OFF	OFF	OFF	OFF

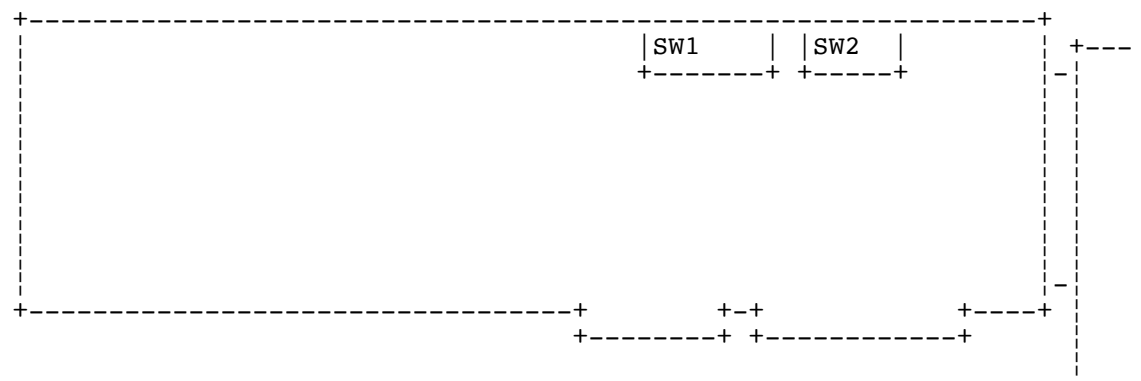
SW2-8 - Memory Parity Checking

The above list of addresses is not complete. After the 3072K address, we have listed the settings for every megabyte only. Switches 5,6 & 7 determine the addresses between. If you are unable to extrapolate the correct starting address from the above information, contact AST to order the complete documentation.

NOTE: Linear memory installed previous to the Rampge would consist of Base memory (maximum 640K) plus extended memory (non-EMS) installed in the system before the Rampage is installed. If the starting address is set below 640K, the Rampage will automatically "backfill" base memory up to 640K, with the remainder of linear memory going to extended memory.

You will have to adjust your machines CMOS with your set-up program only if you add conventional or extended linear memory with the Rampage AT. Do not change the set-up to reflect expanded EMS memory.

SWITCH BLOCK LOCATIONS



The Rampage 286 is a memory expansion adapter for the IBM PC/AT and 100% compatibles running at 6 or 8 MHz. Memory can be expanded on this board from 512K to 2048K using industry standard 256K dynamic RAM chips with a minimum speed requirement of 120NS. Memory standards supported by the Rampage 286 include conventional (base 640K), linear extended, LIM 3.2, LIM 4.0, and EEMS.

SWITCH SETTINGS

SWITCH BLOCK 1 - (TEN POSITIONS; ON = TOWARD NUMBERS)

RAMPAGE MEMORY DEDICATED TO LINEAR / NON-EXPANDED MEMORY

LINEAR MEMORY	SW1-1	SW1-2	SW1-3	SW1-4	
*128K	ON	ON	ON	ON	(Default Setting)
256K	ON	ON	ON	OFF	
384K	ON	ON	OFF	ON	
512K	ON	ON	OFF	OFF	
640K	ON	OFF	ON	ON	
768K	ON	OFF	ON	OFF	
896K	ON	OFF	OFF	ON	
1024K	ON	OFF	OFF	OFF	
1152K	OFF	ON	ON	ON	
1280K	OFF	ON	ON	OFF	
1408K	OFF	ON	OFF	ON	
1536K	OFF	ON	OFF	OFF	
1664K	OFF	OFF	ON	ON	
1792K	OFF	OFF	ON	OFF	
1920K	OFF	OFF	OFF	ON	
2048K	OFF	OFF	OFF	OFF	

NOTE: The above settings define how much of the memory on the Rampage will be used as conventional (base 640K) and/or extended linear memory. Any memory not used by these settings will be available as EMS expanded memory.

If the Rampage is to be used exclusively as EMS expanded memory, set the switches on Bank 2 (below) accordingly, and the above settings will be ignored.

BASE I/O ADDRESS

ADDRESS	SW1-5	SW1-6	SW1-7	SW1-8	
0208h	ON	ON	ON	ON	
*0218h	ON	ON	ON	OFF	(Default Setting)
0258h	ON	OFF	ON	OFF	
0268h	ON	OFF	OFF	ON	
02A8h	OFF	ON	OFF	ON	
02B8h	OFF	ON	OFF	OFF	
02E8h	OFF	OFF	OFF	ON	

DUAL PAGE MODE

SW1-9 ON=ENABLED OFF=DISABLED

NOTE: Dual page mode allows expanded memory to maintain two sets of mapping registers, which ensures proper multitasking operation. Generally, dual page mode is enabled. (SW1-9 ON)

SW1-10 N/A

SWITCH BLOCK 2 - (EIGHT POSITIONS - ON = TOWARD NUMERS)

STARTING ADDRESS (LINEAR MEMORY INSTALLED PREVIOUS TO RAMPAGE)

START ADDRESS	SW1	SW2	SW3	SW4	SW5	SW6	SW7

0K		ON	ON	ON	ON	ON	ON	ON	
128K		ON	ON	ON	ON	ON	ON	OFF	
256K		ON	ON	ON	ON	ON	OFF	ON	
384K		ON	ON	ON	ON	ON	OFF	OFF	
*512K		ON	ON	ON	ON	OFF	ON	ON	(Default Setting)
640K		ON	ON	ON	ON	OFF	ON	OFF	
768K		ON	ON	ON	ON	OFF	OFF	ON	
896K		ON	ON	ON	ON	OFF	OFF	OFF	
1024K		ON	ON	ON	OFF	ON	ON	ON	
1152K		ON	ON	ON	OFF	ON	ON	OFF	
1280K		ON	ON	ON	OFF	ON	OFF	ON	
1408K		ON	ON	ON	OFF	ON	OFF	OFF	
1536K		ON	ON	ON	OFF	OFF	ON	ON	
1664K		ON	ON	ON	OFF	OFF	ON	OFF	
1792K		ON	ON	ON	OFF	OFF	OFF	ON	
1920K		ON	ON	ON	OFF	OFF	OFF	OFF	
2048K		ON	ON	OFF	ON	ON	ON	ON	
2176K		ON	ON	OFF	ON	ON	ON	OFF	
2304K		ON	ON	OFF	ON	ON	OFF	ON	
2432K		ON	ON	OFF	ON	ON	OFF	OFF	
2560K		ON	ON	OFF	ON	OFF	ON	ON	
2688K		ON	ON	OFF	ON	OFF	ON	OFF	
2816K		ON	ON	OFF	ON	OFF	OFF	ON	
2944K		ON	ON	OFF	ON	OFF	OFF	OFF	
3072K		ON	ON	OFF	ON	ON	ON	ON	
4096K	(4MB)	ON	OFF	ON	ON	ON	ON	ON	
5120K	(5MB)	ON	OFF	ON	OFF	ON	ON	ON	
6144K	(6MB)	ON	OFF	OFF	ON	ON	ON	ON	
7168K	(7MB)	ON	OFF	OFF	OFF	ON	ON	ON	
8192K	(8MB)	OFF	ON	ON	ON	ON	ON	ON	
9216K	(9MB)	OFF	ON	ON	OFF	ON	ON	ON	
10240K	(10MB)	OFF	ON	OFF	ON	ON	ON	ON	
11264K	(11MB)	OFF	ON	OFF	OFF	ON	ON	ON	
12288K	(12MB)	OFF	OFF	ON	ON	ON	ON	ON	
13312K	(13MB)	OFF	OFF	ON	OFF	ON	ON	ON	
14336K	(14MB)	OFF	OFF	OFF	ON	ON	ON	ON	
15360K	(15MB)	OFF	OFF	OFF	OFF	ON	ON	ON	
ALL RAMPAGE MEMORY PAGED (EMS)		OFF	OFF	OFF	OFF	OFF	OFF	OFF	

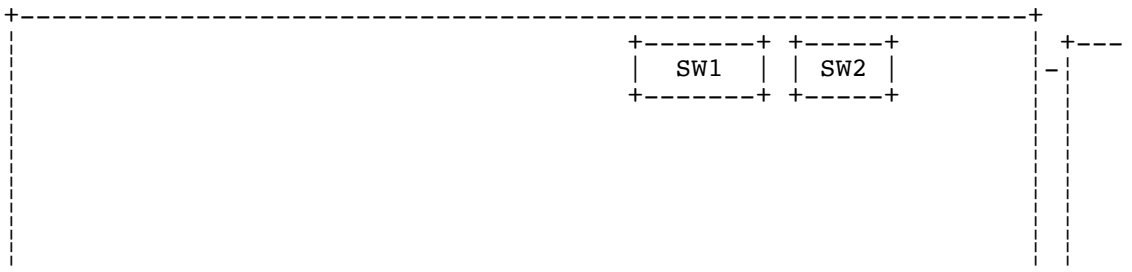
SW2-8 - Memory Parity Checking (Recommended always ON)

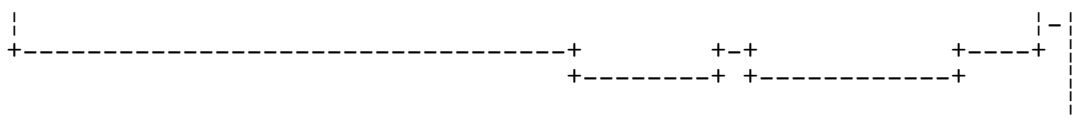
The above list of addresses is not complete. After the 3072K address, we have listed the settings for every megabyte only. Switches 5,6 & 7 determine the addresses between. If you are unable to extrapolate the correct starting address from the above information, contact AST to order the complete documentation.

NOTE: Linear memory installed previous to the Rampge would consist of Base memory (maximum 640K) plus extended memory (non-EMS) installed in the system before the Rampage is installed. If the starting address is set below 640K, the Rampage will automatically "backfill" base memory up to 640K, with the remainder of linear memory going to extended memory.

You will have to adjust your machines CMOS with your set-up program only if you add conventional or extended linear memory with the Rampage 286. Do not change the set-up to reflect expanded EMS memory.

SWITCH BLOCK LOCATIONS





RampagePlus 286 AST Part Number 202247-001

The RampagePlus 286 is a memory expansion adapter for the IBM PC/AT and 100% compatibles running at up to 10MHz. Memory can be expanded on this board from 512K to 8MBytes using industry standard 256K or 1024K Single In-Line Memory Modules (SIMMs) Memory standards supported by the RampagePlus 286 include conventional (base 640K), linear extended, LIM 3.2, LIM 4.0, and EEMS. The RampagePlus 286 can also support Parallel and Serial I/O with an optional Daughterboard (AST Part No. 500560-002).

Configuration of this board is achieved through "smart switch" technology. Software is required to set such options as starting address, linear memory installed, parity enable, etc. The program required is on the RampagePlus 286 Utilities Disk (AST Part No. 910316-001).

MEMORY CONFIGURATION

Speed requirements for the SIMM Modules will vary depending on the BUS speed of the system:

BUS SPEED	
6/8MHz	10MHz
120NS	100NS

The RampagePlus 286 will accept either 256K or 1024K SIMMs. A bank of memory would consist of two modules; installing a single module will cause errors. There are four banks available to populate, and if 256K and 1024K modules are both used, the 256K modules must be installed in the lower numbered banks. A list of valid configurations follows:

BANK1	BANK2	BANK3	BANK4	TOTAL MEMORY
512K	-	-	-	512K (0.5 MB)
512K	512K	-	-	1024K (1.0 MB)
512K	512K	512K	-	1536K (1.5 MB)
512K	512K	512K	512K	2048K (2.0 MB)
2048K	-	-	-	2048K (2.0 MB)
512K	2048K	-	-	2560K (2.5 MB)
512K	512K	2048K	-	3072K (3.0 MB)
512K	512K	512K	2048K	3584K (3.5 MB)
2048K	2048K	-	-	4096K (4.0 MB)
512K	2048K	2048K	-	4608K (4.5 MB)
512K	512K	2048K	2048K	5120K (5.0 MB)
2048K	2048K	2048K	-	6144K (6.0 MB)
512K	2048K	2048K	2048K	6656K (6.5 MB)
2048K	2048K	2048K	2048K	8192K (8.0 MB)

NOTE: 512K = TWO 256K SIMM MODULES
2048K = TWO 1024K SIMM MODULES

JUMPER SETTINGS

JP1 - Change Configuration

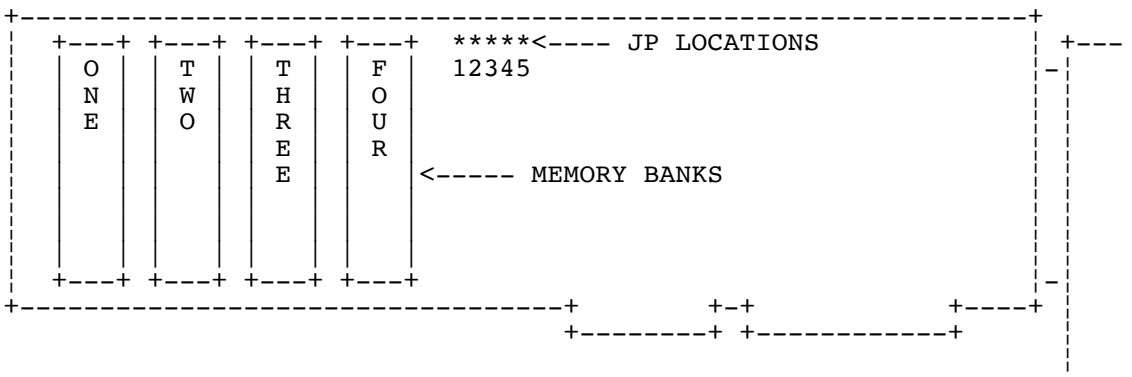
This is a three-pin jumper. Every time the SMART.COM program is run in "automatic" mode, the jumper must be reversed (ie change plug from pins 1&2 to 2&3 or vice-versa) This change is not neccesary if the board is configured in "manual" mode by SMART.

JP2 thru JP5 - Board Identification

If more than one "smart switch" adapter is installed in one system, each board must have a unique identification in order to be recognized by the configuration software. The default setting (JP2) identifies the RampagePlus 286 as the first "smart" board in the system. JP3 would be

the second board, JP4 the third, and JP5 the fourth.

JUMPER LOCATIONS



RampagePlus 286 AST Part Number 202349-001

The AST RampagePlus 286 board offers flexible and powerful memory enhancement for the AST Bravo/286, AST Premium/286, AST Premium Workstation, IBM PC/AT, IBM PS/2 Model 30 286,and compatible computers. It offers complete hardware compatibility with Expanded Memory Specification (EMS) 4.0 software.

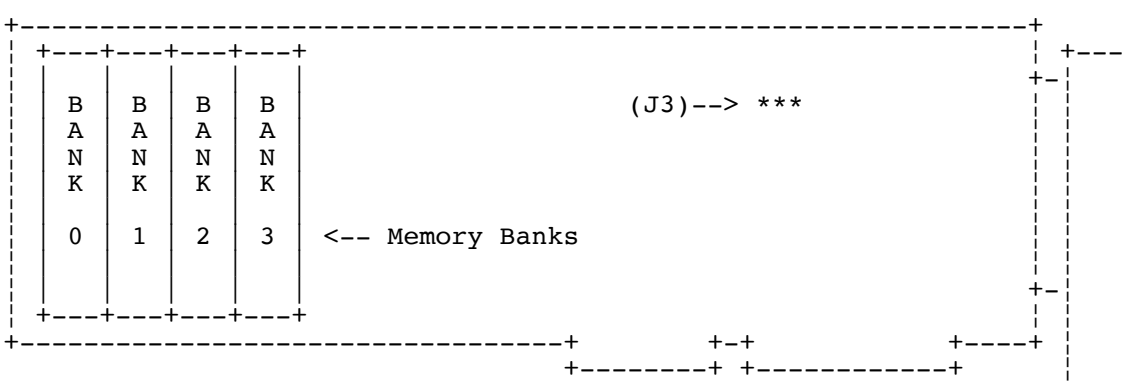
The RampagePlus 286 Smart Switch configuration software eliminates the need to set board switches. The software can make optimal settings for your computer automatically, or you can select from easy to use menus. The RampagePlus 286 board retains your selected configuration even when your system is turned off.

You can upgrade your RampagePlus 286 board's memory to a maximum of eight megabytes (MB) with single inline memory modules (SIMMS) that snap in and out of the board sockets. The optional I/O Pak 286-SP Piggyback board (AST P/N 500560-002) adds one serial port and one parallel port to your RampagePlus 286 board. The RampagePlus 286 board has four pairs of sockets called banks. Rampage Plus 286 can use 256K or 1MB SIMMs in combinations up to 8MB. DO NOT MIX SIMM SIZES AND SPEEDS WITHIN A BANK THIS WILL CAUSE ERRORS.

CHANGING THE DEFAULT JUMPER

To use automatic mode after adding or removing memory, you must set the default configuration jumper (J3) to the alternate position. This disables the memory on the board until you reconfigure it with the SmartSwitch (RAMP.COM) program. For example, if the jumper is on pins 1 and 2, move it to pins 2 and 3, if the jumper is on pins 2 and 3, move it to pins 1 and 2.

JUMPER LOCATIONS



**** AST VIDEO BOARD PRODUCTS ****

AST-3G AST Part Number 202091-001

The AST-3G is a video graphics adapter for use with the IBM PC/XT, IBM PC/AT and 100% compatible machines. The 3G is an EGA (Enhanced Graphics Adapter) board. Through hardware reconfiguration, the 3G can also act as a standard color graphics adapter or as a monochrome display adapter. The 3G does not support Hercules monochrome graphics. Standard video memory installed on the 3G is 64K, upgradable to 256K. There is an optional parallel port available for this board.

The 3G Adapter is compatible with the IBM EGA feature connector. The feature adapter allows for video input/output through the RCA video jacks at the rear of the 3G. These video jacks are not enabled unless the feature adapter is attached.

SWITCH SETTINGS

If AST-3G is the primary video adapter...

Switch SW1

Block Settings 1	2	3	4	3G Mode at Powerup	2'nd Adapter Mode	Monitor Type
OFF	ON	ON	OFF	EGA 80x25	MDA 80x25	EGA
ON	ON	ON	OFF	CGA 80x25	MDA 80x25	EGA or CGA
ON	OFF	OFF	ON	CGA 40x25	MDA 80x25	EGA or CGA
OFF	OFF	ON	OFF	MDA 80x25	CGA 80x25	MONOCHROME
ON	OFF	ON	OFF	MDA 80x25	CGA 40x25	MONOCHROME

If AST-3G is the secondary video adapter...

Switch SW1

Block Settings 1	2	3	4	3G Mode	Primary Adapter Mode	Monitor Type (on 3G)
OFF	OFF	ON	ON	EGA 80x25	MDA 80x25	EGA
ON	OFF	ON	ON	CGA 80x25	MDA 80x25	EGA or CGA
ON	ON	ON	ON	CGA 40x25	MDA 80x25	EGA or CGA
OFF	ON	OFF	ON	MDA 80x25	CGA 80x25	MONOCHROME
ON	ON	OFF	ON	MDA 80x25	CGA 40x25	MONOCHROME

JUMPER SETTINGS

E1/E2 Location - Base I/O Address
Leave E2 position connected for 3xx

E5 Location - Video Memory
Connect for 256K; Open for 64K

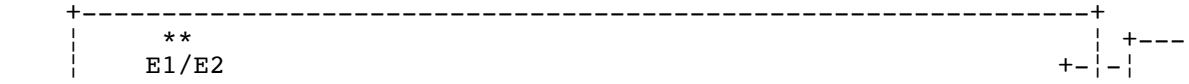
E7/E8 Location - Parallel IRQ
Connect E7 for IRQ7 (LPT1:); Connect E8 for IRQ5 (LPT2:)

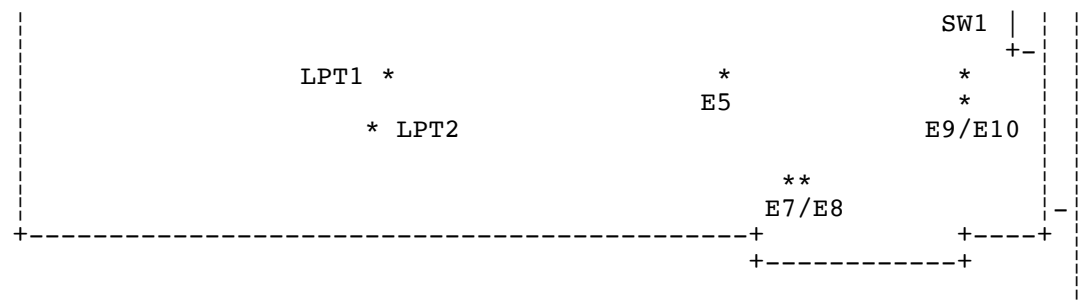
E9/E10 Location - Monitor Type
Connect E9 for CGA or Mono; Connect E10 for EGA

LPT1 Location
Connect to enable parallel option as LPT1: (378h)

LPT2 Location
Connect to enable parallel option as LPT2: (278h)

SWITCH AND JUMPER LOCATIONS





AST-3G Plus AST Part Number 202104-001

The AST-3G Plus is a video graphics adapter for use with the IBM PC/XT, IBM PC/AT and 100% compatible machines. The 3G Plus is an EGA (Enhanced Graphics Adapter) board. Through hardware reconfiguration, the 3G Plus can also act as a standard color graphics adapter or as a monochrome display adapter. The 3G Plus can also emulate Hercules monochrome graphics. Standard video memory installed on the 3G Plus is 64K, upgradable to 256K. There is an optional parallel port available for this board.

The 3G Plus Adapter is compatible with the IBM EGA feature connector. The feature adapter allows for video input/output through the RCA video jacks at the rear of the 3G Plus. These video jacks are not enabled unless the feature adapter is attached.

SWITCH SETTINGS

If AST-3G Plus is the primary video adapter

SW1 Switch Block Settings				3G Mode at Powerup	2'nd Adapter Mode	Monitor Type
1	2	3	4			
OFF	ON	ON	OFF	EGA 80x25	MDA 80x25	EGA
ON	ON	ON	OFF	CGA 80x25	MDA 80x25	EGA or CGA
ON	OFF	OFF	ON	CGA 40x25	MDA 80x25	EGA or CGA
OFF	OFF	ON	OFF	MDA 80x25	CGA 80x25	MONOCHROME
ON	OFF	ON	OFF	MDA 80x25	CGA 40x25	MONOCHROME

If AST-3G Plus is the secondary video adapter

SW1 Switch Block Settings 1	2	3	4	3G Mode	Primary Adapter Mode	Monitor Type (on 3G)
OFF	OFF	ON	ON	EGA 80x25	MDA 80x25	EGA
ON	OFF	ON	ON	CGA 80x25	MDA 80x25	EGA or CGA
ON	ON	ON	ON	CGA 40x25	MDA 80x25	EGA or CGA
OFF	ON	OFF	ON	MDA 80x25	CGA 80x25	MONOCHROME
ON	ON	OFF	ON	MDA 80x25	CGA 40x25	MONOCHROME

SW2 - Emulation Switch

By turning on the emulation option (SW2), the 3G Plus will emulate CGA graphics (when SW1 is set to EGA). This is useful for cases when your software does not support Enhanced Graphics. If SW1 is set to monochrome mode, turning SW2 on will allow the 3G Plus to emulate Hercules graphics. The emulation mode can be used with the 3G Plus in the primary or secondary position.

JUMPER SETTINGS

E1 - Video Memory
Connect for 256K; Open for 64K

E2 - Factory Test Point
Connect at all times

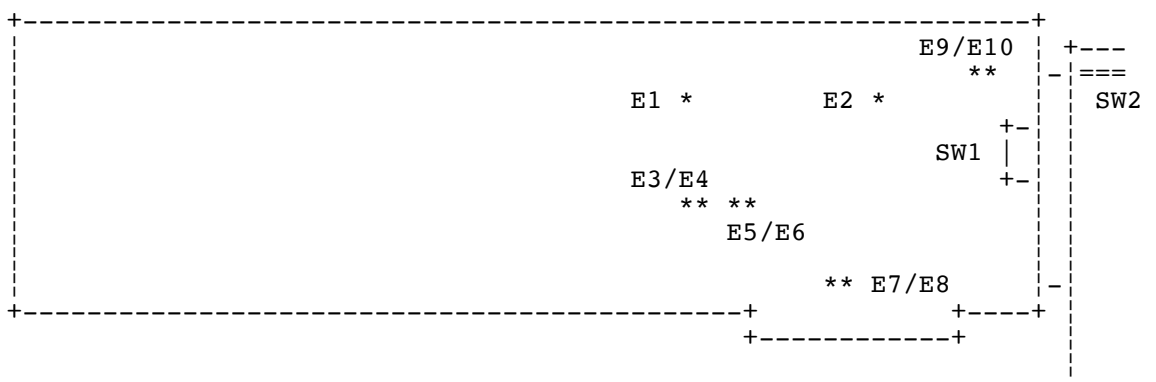
E3/E4 - Base I/O Address
Connect E3 side for 3xx

E5/E6 - Parallel port address
Connect E5 for LPT1:(378h); Connect E6 for LPT2:(278h)

E7/E8 - Interrupt Request
Connect E7 for IRQ5 (LPT2:); Connect E8 for IRQ7 (LPT1:)

E9/E10 - Monitor Type
Connect E9 for EGA monitor; Connect E10 for CGA or Mono TTL monitors

SWITCH AND JUMPER LOCATIONS



The AST-3G Plus II is a video graphics adapter for use with the IBM PC/XT, IBM PC/AT and 100% compatible machines. The 3G Plus II is an EGA (Enhanced Graphics Adapter) board. Through hardware reconfiguration, the 3G Plus II can also act as a standard color graphics adapter or as a monochrome display adapter. The 3G Plus II can also emulate Hercules monochrome graphics. Standard video memory installed on the 3G Plus II is 256K.

The 3G Plus II Adapter is compatible with the IBM EGA feature connector. The feature adapter allows for video input/output through the RCA video jacks at the rear of the 3G Plus II. These video jacks are not enabled unless the feature adapter is attached.

SWITCH SETTINGS

If AST-3G Plus II is the primary video adapter

SW1 Switch Block Settings 1	2	3	4	3G Mode at Powerup	2'nd Adapter Mode	Monitor Type
OFF	ON	ON	OFF	EGA 80x25	MDA 80x25	EGA
ON	ON	ON	OFF	CGA 80x25	MDA 80x25	EGA or CGA
ON	OFF	OFF	ON	CGA 40x25	MDA 80x25	EGA or CGA
OFF	OFF	ON	OFF	MDA 80x25	CGA 80x25	MONOCHROME
ON	OFF	ON	OFF	MDA 80x25	CGA 40x25	MONOCHROME

If AST-3G Plus II is the secondary video adapter

SW1 Switch Block Settings 1	2	3	4	3G Mode	Primary Adapter Mode	Monitor Type (on 3G)
OFF	OFF	ON	ON	EGA 80x25	MDA 80x25	EGA
ON	OFF	ON	ON	CGA 80x25	MDA 80x25	EGA or CGA
ON	ON	ON	ON	CGA 40x25	MDA 80x25	EGA or CGA
OFF	ON	OFF	ON	MDA 80x25	CGA 80x25	MONOCHROME
ON	ON	OFF	ON	MDA 80x25	CGA 40x25	MONOCHROME

SW1-5 - Emulation Switch

By turning on the emulation option (SW1-5), the 3G Plus II will emulate CGA graphics on an EGA monitor. This is useful for cases when your software does not support Enhanced Graphics. If you have a monochrome monitor, turning SW1-5 on will allow the 3G Plus II to emulate Hercules graphics. The emulation mode can be used with the 3G Plus II in the primary or secondary position.

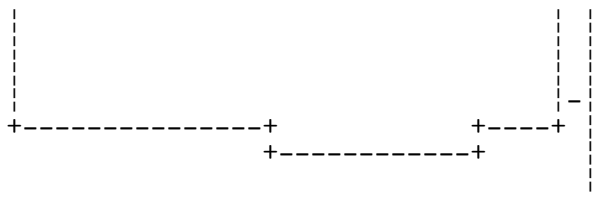
SW1-6 - Auto Configuration

Turning SW1-6 to the "on" position enables the auto configuration mode. This allows the 3G Plus II to detect the type of monitor it is attached to and configure itself. If SW1-6 is enabled, the first four switches on bank one are ignored.

JUMPER SETTINGS

E1 - I/O Address
Connect pins 1 & 2 for address 3xx.

SWITCH AND JUMPER LOCATIONS



AST VGA AST Part Number 202249-001

The AST VGA is a Video Graphics Array video adapter for use with the IBM PC, PC/XT, PC/AT, and 100% compatible machines. It comes standard with 256K of video memory and a 15-pin connector for sending analog video signals to a PS/2, VGA, or Multisynch monitor. Video modes supported by the AST VGA are MDA, HGC, CGA, EGA, and VGA, all on analog monitors.

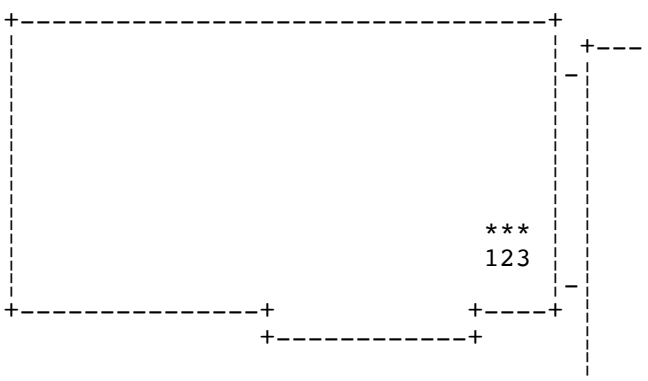
JUMPER SETTINGS

The AST VGA has only one user-configurable jumper setting; a three pin jumper that must be connected on the left or right pair of pins depending on the kind of monitor connected to the adapter.

The left pair (1 & 2) of pins should be connected if the monitor is a PS/2 or other analog only VGA monitor.

The right pair (2 & 3) of pins should be connected if the monitor is a Multisynch monitor. Note that the Multisynch must be set for analog operation. Most Multisynch monitors come with a standard 9-pin TTL cable. If this is the case, a 9-pin to 15-pin adapter cable must be obtained from the manufacturer of the monitor.

JUMPER LOCATION



AST VGA Plus AST Part Number 202262-001

The VGA Plus is a Video Graphics Array video adapter for use with the IBM PC, PC/XT, PC/AT, and 100% compatible machines. This board can operate in either 8-bit or (in an AT compatible) 16-bit mode. It comes standard with 256K of video memory (expandable to 512K) and a 15-pin connector for sending analog video signals to a PS/2, VGA, or Multisynch monitor. Video modes supported by the VGA PLUS are MDA, HGC, CGA, EGA, and VGA, all on analog monitors.

SWITCH SETTINGS

There is one bank of four switches accessable through the rear bracket of the board. They control the following features:

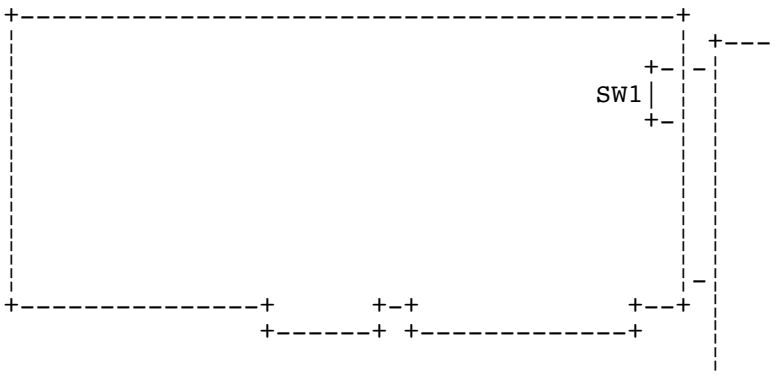
SW1 ON - Monitor attached is a multisynch operating in analog mode.
OFF - Monitor attached is a PS/2 or other analog display.

SW2 ON - Data transfer rate is 16-bit (board must be in 16-bit slot).
OFF - Data transfer rate is 8-bit.

SW3 ON - Adds one wait state to buss speed.
OFF - Board operates at speed of buss.

SW4 OFF - AT ALL TIMES

SWITCH BLOCK LOCATION



**** AST MISCELLANEOUS MEMORY PRODUCTS ****

Combo Plus AST Part Number 03-01140

The Combo Plus is a multi-function memory expansion board designed for use with the IBM PC , XT , and 100% compatibles running at 4.77 MHz. In it's standard cofiguration, it comes with anywhere between 64K and 256K of RAM using industry standard 64K dynamic RAM chips; a Clock/Calander; and a serial port configurable as COM1: or COM2. Options include a parallel port configurable as LPT1: or LPT2:. All memory installed on the Combo Plus is

designed to expand a PC to it's 640K maximum. It does not support Extended or EMS/EEMS type memory. The Combo Plus is rated for use with 200ns speed RAM, and may not work properly with faster memory.

SWITCH SETTINGS

STARTING ADDRESS

	SW1	SW2	SW3	SW4	SW5	SW6	SW7
64K	ON	ON	ON	OFF	OFF	OFF	OFF
128K	ON	ON	OFF	ON	OFF	OFF	OFF
192K	ON	ON	OFF	OFF	OFF	OFF	OFF
256K	ON	OFF	ON	ON	OFF	OFF	OFF
320K	ON	OFF	ON	OFF	OFF	OFF	OFF
384K	ON	OFF	OFF	ON	OFF	OFF	OFF
448K	ON	OFF	OFF	OFF	OFF	OFF	ON
512K	OFF	ON	ON	ON	OFF	ON	ON
576K	OFF	ON	ON	OFF	ON	ON	ON

SW8 - PARITY ENABLE (Recommend on at all times)

JUMPER SETTINGS

PORT ENABLE JUMPER BLOCK

P2 - Short to enable parallel as LPT2: (278)
P1 - Short to enable parallel as LPT1: (378)
C2 - Short to enable serial as COM2: (2F8)
C1 - Short to enable serial as COM1: (3F8)

IRQ ENABLE JUMPER BLOCK

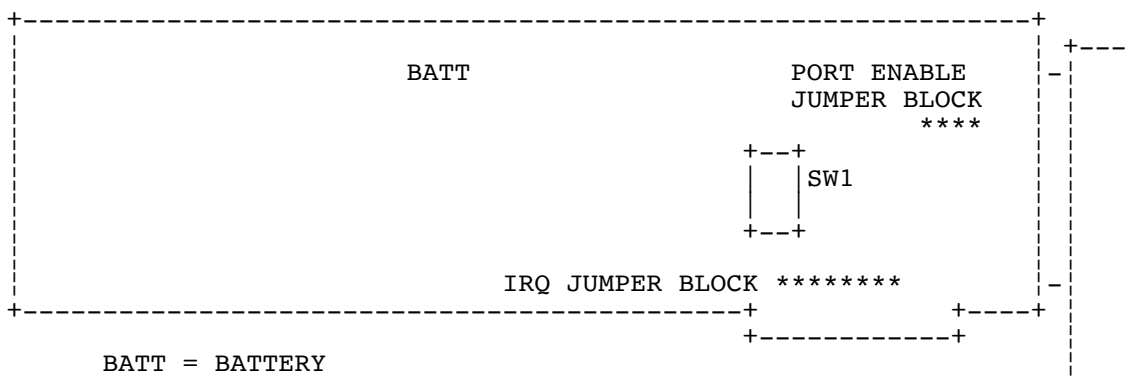
2 - Not used, leave open
3 - Not used, leave open
3A - IRQ 3 short in combination with C2 for COM2:
4A - IRQ 4 short in combination with C1 for COM1:
4 - Not used, leave open
5 - Not used, leave open
7 - Not used, leave open

Pins at location J2 are for the parallel port cable

DISABLING THE CLOCK/CALENDER

Remove chip at location U32 (the clock chip) and cut the trace at pin #12, chip location U52.

SWITCH BLOCK AND JUMPER LOCATIONS



EXPANSION MEMORY AST Part Number 03-01128-0

The Expansion Memory adapter is a conventional memory board for the IBM PC, PC/XT, and 100% compatibles running at 4.77MHz. This board can be configured with from 64K to 256K of memory using industry standard 64K DRAMS with a maximum speed of 200NS. The Expansion Memory adapter does not support extended memory or the LIM Expanded Memory specification.

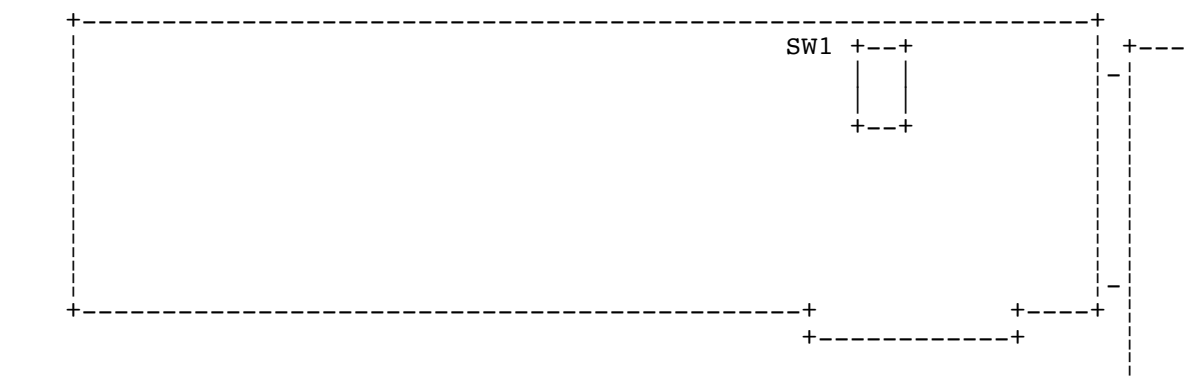
SWITCH SETTINGS

Starting Address

	SW1	SW2	SW3	SW4	SW5	SW6	SW7
64K	ON	ON	ON	OFF	OFF	OFF	OFF
128K	ON	ON	OFF	ON	OFF	OFF	OFF
192K	ON	ON	OFF	OFF	OFF	OFF	OFF
256K	ON	OFF	ON	ON	OFF	OFF	OFF
320K	ON	OFF	ON	OFF	OFF	OFF	OFF
384K	ON	OFF	OFF	ON	OFF	OFF	OFF
448K	ON	OFF	OFF	OFF	OFF	OFF	ON
512K	OFF	ON	ON	ON	OFF	ON	ON
576K	OFF	ON	ON	OFF	ON	ON	ON

SW8 - PARITY ENABLE (Recommend on at all times)

SWITCH LOCATIONS



MP-II AST Part Number 202033-xxx

The MP-II board is a Memory Expansion board designed for the IBM PCs and XTs and 100% compatibles running at 4.77 MHz. It can be configured to hold between 64K and 384K of conventional memory using industry standard 64K Dynamic RAM memory chips. In addition to any installed memory, the MP-II comes complete with a Clock/Calendar. The MP-II cannot expand your computer beyond 640K and does not support Extended Memory or EMS/EEMS memory.

SWITCH SETTINGS

STARTING ADDRESS				MEMORY INSTALLED ON MP II			
	S1	S2	S3		S4	S5	S6
64K	OFF	OFF	OFF	0K	OFF	OFF	OFF
128K	OFF	OFF	ON	64K	OFF	OFF	ON
192K	OFF	ON	OFF	128K	OFF	ON	OFF
256K	OFF	ON	ON	192K	OFF	ON	ON
320K	ON	OFF	OFF	256K	ON	OFF	OFF
384K	ON	OFF	ON	320K	ON	OFF	ON
448K	ON	ON	OFF	384K	ON	ON	OFF
512K	ON	ON	ON				

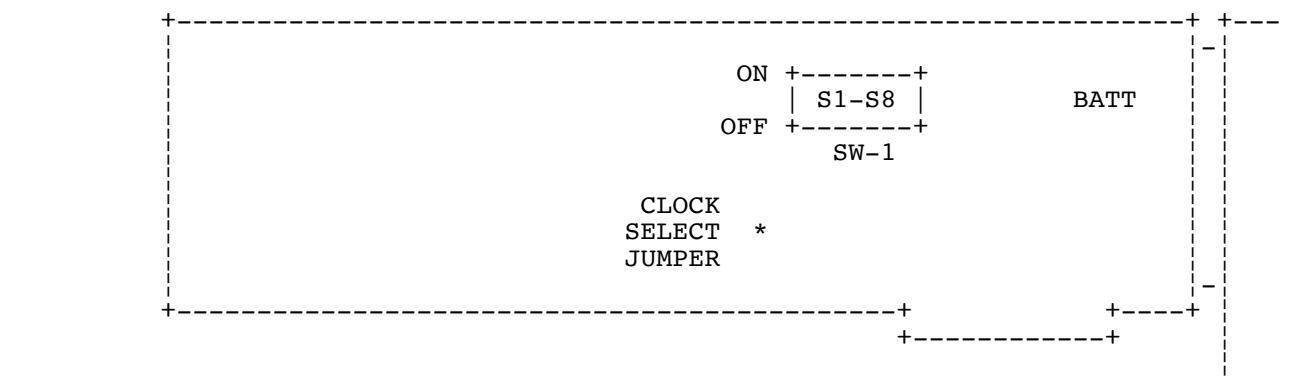
S7 - NOT USED
S8 - Parity Enable (Recommended to be set ON at all times)

JUMPER SETTINGS

Location "CS"

Installed - Clock Enabled
Removed - Clock Disabled

SWITCH AND JUMPER LOCATION



MegaPlus II AST Part Number 201165-xxx

The MegaPlus II is a multi-function Memory Expansion board designed for the IBM PC and XT and 100% compatibles running at 4.77 MHz. In it's standard configuration, it comes with anywhere between 64K and 256K of RAM using industry standard 64K dynamic RAM chips, a Clock/Calendar and a serial port configurable as COM1: or COM2:. All memory installed on the MegaPlus II is designed to expand your PC to it's 640K maximum. It does not support Extended or EMS/EEMS type memory. In addition to the basic configuration, it can be expanded with an optional Parallel port (can be set for LPT1: or LPT2:), an additional Serial Port, a Game Port, and an additional 64K - 256K on a Piggyback card. Note that even with the addition of the Memory Expansion Piggyback, the MegaPlus II cannot expand your PC beyond 640K.

SWITCH SETTINGS

Starting Address

	SW1	SW2	SW3	SW4	SW5	SW6	SW7
64K	ON	ON	ON	OFF	N/A	N/A	P
128K	ON	ON	OFF	ON	N/A	N/A	A
192K	ON	ON	OFF	OFF	N/A	N/A	R
256K	ON	OFF	ON	ON	N/A	N/A	I
320K	ON	OFF	ON	OFF	N/A	N/A	T
384K	ON	OFF	OFF	ON	N/A	N/A	Y
448K	ON	OFF	OFF	OFF	N/A	N/A	
512K	OFF	ON	ON	ON	N/A	N/A	
576K	OFF	ON	ON	OFF	N/A	N/A	

SW7 - PARITY ENABLE (Recommended ON at all times)
SW8 - NOT USED

JUMPER SETTINGS

PORT ENABLE JUMPER BLOCK

CS - Installed to Enable Clock/Calendar
C1 - Installed to Enable 1st Serial Port as COM1:
C2 - Installed to Enable 1st Serial Port as COM2:
S2 - Installed to Enable 2nd Serial Port as COM2:

PARALLEL PORT ENABLE JUMPER BLOCK

P1 - Installed to Enable Parallel Port as LPT1:
P2 - Installed to Enable Parallel Port as LPT2:

IRQ ENABLE JUMPER BLOCK:
2S - NOT USED
2C - NOT USED
3S - IRQ 3; Installed if COM2: is Enabled with S2. Second Port
3 - IRQ 3; Installed if COM2: is Enabled with C2. First Port
4 - IRQ 4; Installed if COM1: is Enabled with C1. First Port
4C - NOT USED
5C - NOT USED
5S - NOT USED
7C - NOT USED

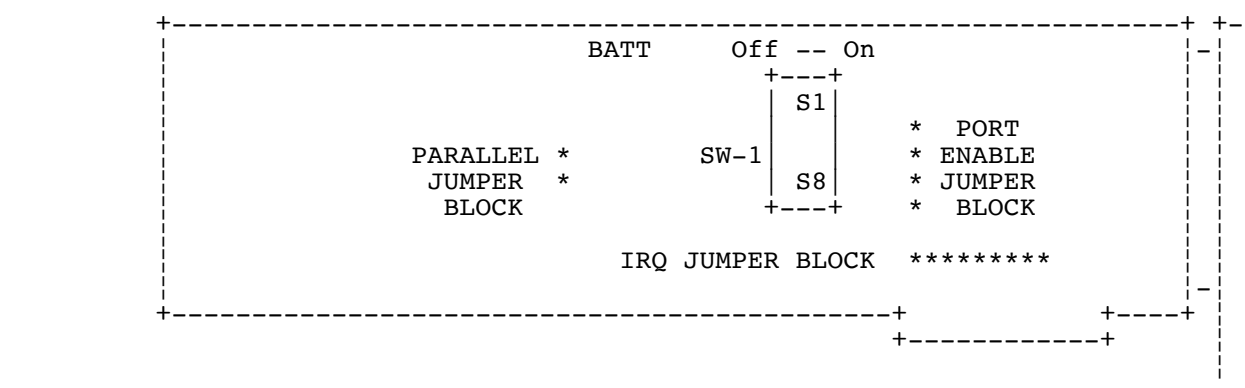
NOTE: In some of the revisions of the MegaPlus II, the labeling on the IRQ Jumper Block is incorrect. On these boards, the jumper designations are as follows:

2S 2C 3 3S 4S 4C 5C 5S 7C

On this version, Install 3 in combination with S2. Install 3S in combination with C2, and Install 4S in combination with C1

Reference Technical Bulleting (TB) #0012 for further information

SWITCH AND JUMPER LOCATIONS:



SHORT PAK AST Part Number 202085-001

The ShortPak is a memory expansion adapter for the IBM PC, PC/XT, and 100% compatibles running at 4.77 MHz. The ShortPak can be configured with from 64K to 576K of memory using industry standard 64K and 256K DRAMS with a minimum speed of 150NS. This board will bring a PC up to it's DOS limit of 640K. It does NOT support memory above 640K, such as extended memory or expanded memory (EMS).

SWITCH SETTINGS

STARTING ADDRESS (MEMORY IN SYSTEM BEFORE SHORTPAK INSTALLED)

	S1	S2	S3
64K	OFF	OFF	OFF
128K	OFF	OFF	ON
192K	OFF	ON	OFF
256K*	OFF	ON	ON
320K	ON	OFF	OFF
384K	ON	OFF	ON
448K	ON	ON	OFF
512K	ON	ON	ON

* = Factory Default

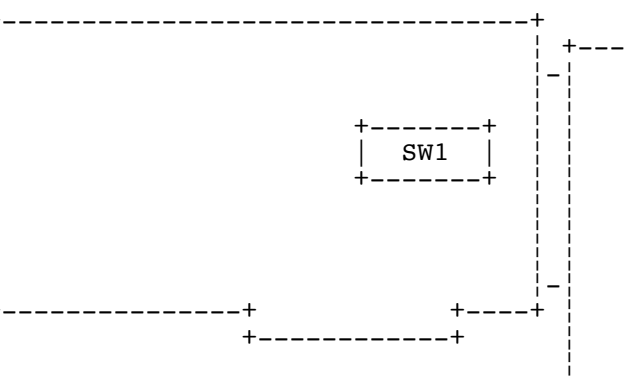
MEMORY INSTALLED ON SHORTPAK

	S4	S5	S6	BANK 0	BANK 1	BANK 2
0K	OFF	OFF	OFF	-	-	-
64K	OFF	OFF	ON	64K	-	-
128K	OFF	ON	OFF	64K	64K	-
256K	OFF	ON	ON	256K	-	-
320K	ON	OFF	OFF	64K	256K	-
384K*	ON	OFF	ON	64K	64K	256K
512K	ON	ON	OFF	256K	256K	-
576K	ON	ON	ON	64K	256K	256K

S7 - NOT APPLICABLE

S8 - PARITY ENABLE (recommend "ON" at all times)

SWITCH LOCATIONS



**** AST HOTSHOT/286 ****

HotShot/286 AST Part Number 202160-001 **

HotShot/286 is an accelerator card designed to fit any expansion slot in your IBM personal computer PC or PC XT or compatible computer.

HotShot/286 features:

- A 16-bit Intel 80286 microprocessor that runs at a clock speed of 10 megahertz (MHZ)
- Cache memory

Using Cache:

HotShot/286 speeds your PC's access to the most-recently accessed data and instructions. Words can be accessed up to twice as fast from cache memory. Switch-selectable cached memory also allows HotShot/286 to avoid areas of memory that cannot be cached (for example, the memory range used by the PC-XT fixed disk controller).

Using a Co-Processor:

HotShot/286 accommodates the Intel 80287 math co-processor. With the appropriate software, the math coprocessor enables your PC to perform high-speed, highly accurate arithmetic, logarithmic, and trigonometric functions in parallel with the processor.

EEMS Compatibility:

HotShot/286 is designed to complement and accelerate operation with AST's enhanced expanded memory specification (EEMS) products such as Rampage or SixPakPremium. HotShot/286 automatically updates cache memory whenever your AST EEMS product swaps memory pages, providing designed-in compatibility.

SWITCH SETTINGS

Cached Memory Settings for Base (0-640K)

SW1	SW2	SW3	Cached Area
OFF	OFF	OFF	Cache Disabled *
ON	ON	OFF	0-256 KB
ON	OFF	ON	0-512 KB
ON	ON	ON	0-640 KB

* = Default Setting

Cached Memory Settings for Extended (640KB-1024KB)

SW4	SW5	SW6	SW7	Cached Area
OFF	OFF	OFF	OFF	Cached Disabled *
ON	OFF	OFF	OFF	0C0000-0CFFFFH
ON	ON	OFF	OFF	0C4000-0D3FFFH
OFF	ON	OFF	OFF	0C8000-0D7000H
OFF	ON	ON	OFF	0CC000-0DBFFFH
OFF	OFF	ON	OFF	0D0000-0DFFFFH
ON	OFF	ON	OFF	0D4000-0E3FFFH
ON	ON	ON	OFF	0D8000-0E7FFFH
ON	ON	ON	ON	0DC000-0EBFFFH
OFF	ON	ON	ON	0E0000-0EFFFFH
OFF	OFF	ON	ON	0CC000-0EFFFFH
ON	OFF	ON	ON	0A0000-0AFFFFH
ON	OFF	OFF	ON	0A0000-0B7FFFH
ON	ON	OFF	ON	0CC000-0DBFFFH and 0A0000-0AFFFFH
OFF	ON	OFF	ON	0CC000-0DBFFFH and 0A0000-0B7FFFH
OFF	OFF	OFF	ON	0D0000-0DFFFFH and 0A0000-0B7FFFH

* = Default Setting

JUMPER SETTINGS

JP1 = Boot mode

Upper pair of pins = Fast mode boot

Lower pair of pins = Non-accelerated mode boot (default)

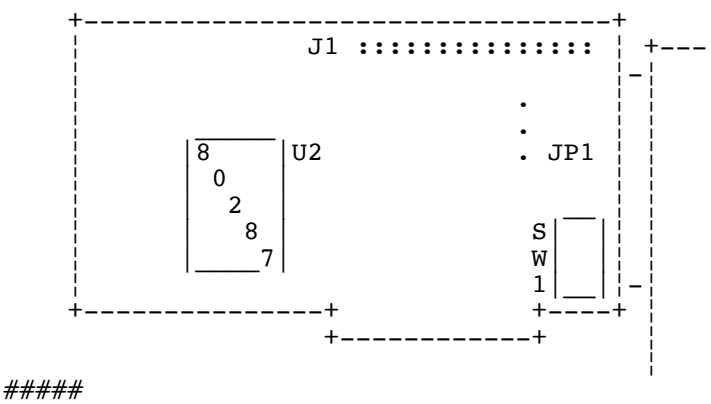
CONNECTORS

J1 = Ribbon cable connection from 8086/8088 socket to HotShot/286

SOCKETS

U2 = Socket for math co-processor (80287)

BOARD DIAGRAM



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Source: minuszerodegrees
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Import: macOS, Openoffice, saved as PDF
Date: 14.02.2019, tbr