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AVT-921 - Reserving Memory

It has been reported that a very few users experience a problem when installing the AVT-921 (or 931) and cannot reliably communicate with the board. These problems have usually been identified as memory conflicts caused by installing the board in memory space already occupied by another device or from conflicts between a memory manager (of some type) and the AVT-921 hardware.

This document describes some of these conflicts and how to resolve them.

Introduction

The AVT-921 and AVT-931 are memory mapped devices. They occupy 16 bytes of memory somewhere in the first megabyte of memory space. (Only 3 bytes are actually used by the board.)

The device is memory mapped because I/O space is often at a premium in desktop PCs. By mapping the device into memory permitted much more flexibility to the user as to where, in memory, the device could be installed. (It is also possible that the application software may be able to run more efficiently since I/O accesses are special processor functions, unlike memory accesses.)

The AVT-921 is shipped from the factory set to segment address \$B400. In older machines this memory space was reserved for use by a monochrome monitor. As a result this space was ordinarily vacant.

The AVT-921 and 931 are 8-bit ISA bus boards and are restricted to 20 address lines, thus the first megabyte of memory. There are two DIP switches on the board, 16 bits. The lowest 4 bits are used by the board (and not represented on the DIP switches).

In MS-DOS based machines the DIP switch settings represent the segment address of the board. The board decodes and uses the first 4 bytes, the offset, for host accesses.

In MS-Windows 95/98 machines the addressing space is flat (no segment / offset). Thus, the DIP switches represent address bits A19 - A04. Address bits A03 - A00 are decoded on the board and used by the board for host accesses.

MS-DOS

Ordinarily, the AVT-921 installed in an MS-DOS based machine does not represent a problem.

There are some cases where an installed memory manager (EMM386, HIMEM, or similar) may recognize the presence of the 921 (or 931) board and a conflict occurs.

This is usually resolved by excluding the memory space occupied by the AVT-921 from the memory manager.

For some memory managers, this requires the exclude or “/X=mmmm” switch to be used on the line in the CONFIG.SYS file for the offending memory manager. The user specifies the segment address of the AVT-921 in the exclude switch. This excludes the memory space occupied by the AVT-921 from use and access by the memory manager.

Windows 3.1x

MS-Windows 3.1x was an MS-DOS based application.

Any memory conflict problems experience with MS-Windows 3.1x can usually be resolved as described in the MS-DOS section (above).

MS-Windows 95/98

MS-Windows 95/98 is a lot different than previous versions of MS operating systems.

Most all access problems with the AVT-921 can be tracked down to the memory manager being used by the Windows 95/98 operating system.

Fortunately, there is a relatively simple way to exclude or reserve memory space for use by the AVT-921 and thus resolve most problems.

The procedure described below assumes that the AVT-921 board DIP switches are set for \$B400.

Segment address \$B400 has a flat address equivalent of \$B4000. The AVT-921 board occupies memory space \$B4000 to \$B400F.

To reserve this memory space (or whatever space the board is to occupy), follow the listed procedure.

- Open the START menu.
- Select SETTINGS.
- Select CONTROL PANEL.
- Double click on SYSTEM.
- Select the DEVICE MANAGER tab (on the top).
- Double click on the COMPUTER entry at the top of the list.

- Select the VIEW RESOURCES tab.
- Select the MEMORY radio button.
- Search through the list (in the first megabyte of memory) for an open area.
- Note the open memory area address,
[For this example we assume \$B4000 is open.]
- Set the AVT-921 board DIP switches to that memory location.
[Remember to omit the lowest 4 bits of the address when setting the DIP switches.]
- [The AVT-921 board DIP switches can be changed at will. There is no need to re-boot the machine just to change the DIP switches.]
- Select the RESERVE RESOURCES tab.
- Select the MEMORY radio button.
- Click on the ADD button.
- Enter the address of the board as the start address. Enter the stop address of the memory range you want to reserve. (One board occupies 16 bytes, additional boards can be installed in contiguous memory.
- For example:

Start:	\$B4000
Stop:	\$B400F
- Select OK for all open windows.
[If any memory conflict is detected by the operating system, you will be notified. If that happens, select another open memory location.]
- That memory space has now been reserved for use by the AVT-921 board.