

## Chapter 16

# Expansion Memory

This chapter describes the optional memory expansion cards for Z-200 Series computers. Figure 16-1 illustrates the basic card.

These cards can increase the system memory to 640K or add up to 1.5M of expansion memory per card.

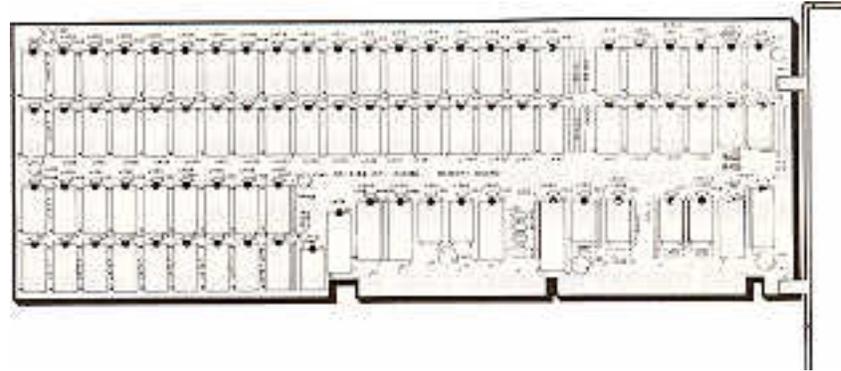


Figure 16-1.

### Expansion Memory Card

The memory expansion card contains all of the address decoding, multiplexing, and memory control logic necessary to allow the CPU to access memory locations and read data from or write data into them. Various data buffers are present on the card to buffer data into and out of memory locations. This card also contains parity generation and checking circuits.

There are three versions of the memory expansion card used in Z-200 Series computers: the Z-405A, the Z-415, and the Z-445.

The Z-405A and Z-415 are for used in Z-286 computers. The main difference between these two cards is the amount and type of memory ICs installed on the cards.

## Expansion Memory

The Z-405A is shipped from the factory with 640K of memory installed. It is intended to be the first memory expansion card installed. Bank 0 on this card is populated with 18 64-kilobit memory ICs. Bank 1 is populated with 18 256-kilobit memory ICs. Installing 256-kilobit memory ICs in bank 2 of this card will bring the total expansion memory on this card to 1.2M. You can assign the first 128K of memory on this card as system memory and the remaining 256K as expansion memory. Or, if you wish, you can limit the system memory to 512K and use the total memory on this card as expansion memory. However, you will need to replace the 64-kilobit memory ICs in bank 0 with 256-kilobit memory ICs.

The Z-415 is the 1.5M version of the memory expansion card. It is intended to be the second (or later) memory expansion card. The first memory card (Z-405A) must be fully populated with memory ICs before additional memory cards can be added to the system. The Z-415 memory expansion card is shipped with enough 256- kilobit memory ICs to fully populate the Z-405A card.

The Z-445 memory expansion card, which replaces the Z-405A and Z-415 memory cards, can be used in all Z-286 computers. The Z-445 memory expansion card comes from the factory with bank 0 populated with 256-kilobit memory ICs. You can assign the first 128K of memory on this card as system memory or you can assign the entire 256K as expansion memory. Populating banks 1 and 2 with 256-kilobit memory ICs will bring the total expansion memory on this card to 1.5M.