

## 6800 Hardware - Introduction

The hardware section of this manual gives a detailed description of the various elements contained within the 6800 family of integrated circuits. Although there are many other components on each of the boards within the SWTPC 6800 Computer System, their purpose is to provide the clocks, buffering and address decoding for the 6800 parts described in this section. In order to be able to program the system, some knowledge of the hardware involved, especially the architecture of the microprocessor chip, is absolutely essential. One must have a through understanding of the operation and use of the various internal registers and the system's response to the various interrupts. Familiarity with both the binary and hexadecimal number system is absolutely essential.

Pages MPU-1 thru MPU-19 describe the architecture as well as the various data and control lines of the 6800 microprocessor element. The descriptions given for the various data and control lines on pages MPU-8 thru MPU-11 need not be read since the material may be confusing and is not related to programming the system.

Pages MPU-20 thru MPU-30 describe the relations and conversion between decimal (base 10), binary (base 2), octal (base 8) and hexadecimal (base 16) number systems. This section is extremely important and if not understood must be supplemented with additional material. The programmer must have a firm background in especially the binary and hexadecimal number systems before any programming can be done. Even the mini-operating system described in Engineering Note 100 within this notebook looks for all address and data entry in hexadecimal notation. An understanding of the binary representation is important since all data contained within the system's internal registers is stored in binary form.

Pages PIA-1 thru PIA-14 discuss the data and control lines on, and registers within the 6820 peripheral interface adapter integrated circuit used on the MP-C serial, control interface and MP-L parallel interface boards. It is not necessary to be familiar with this section to use the MP-C serial, control interface board supplied with the MP-68 system, however, it is recommended reading when using the MP-L parallel interface option.

Pages ACIA-1 thru ACIA-9 discuss the data and control lines on, and registers within the 6850 asynchronous communications adapter integrated circuit used on the MP-S Serial interface board. This section is recommended reading only when using the MP-S serial interface option.

The "Motorola M6800 Systems Reference and Data Sheets" booklet and a data sheet on the MC14411 bit rate generator have been included as additional information on the major elements within SWTPC 6800 Computer System. Much of the material contained within the booklet has already been talked about in the preceding sections, however, it is suggested reading which may help clear up any misunderstandings you may have about elements within the system.

Chapter 3 of the "Motorola 6800 Programming Manual" is also recommended as supplemental material before proceeding to the Programming section of this notebook