

PHILIPS



Data
Systems

PHILIPS

P855M/P860M System Description

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MAIN FEATURES

- CYCLE SPEED OF 0.84 MICROSECONDS
- MEMORY SIZE OF 4K UP TO 32K WORDS
- 16-BIT WORD ORIENTED
- 16 GENERAL PURPOSE REGISTERS
- 98 INSTRUCTIONS
- DIRECT, INDIRECT, INDEXED, INDEXED INDIRECT ADDRESSING
- UP TO 48 INTERRUPT LINES
- LOW AND HIGH SPEED DATA CHANNELS (INCL. DMA AND MIOB)
- INTERFACES FOR INDUSTRIAL EQUIPMENT
- DATA COMMUNICATION
- REAL TIME CLOCKS
- AUTOMATIC STACK HANDLING
- MEMORY PROTECTION
- HARDWARE MULTIPLY/DIVIDE
- POWER FAILURE DETECTION WITH AUTOMATIC RESTART
- POSSIBILITIES TO CONNECT ALL STANDARD PERIPHERALS,
INCLUDING CASSETTE TAPE
- EXTENSIVE SOFTWARE PACKAGE INCLUDES:
 - BASIC AND BASIC REAL TIME MONITORS
 - DISC AND DISC REAL TIME MONITORS
 - ASSEMBLERS, FORTRAN COMPILERS, LINKAGE EDITORS
 - UPDATE PACKAGE, TEXT EDITOR, DEBUGGING PACKAGE

Th. C. Engel

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IMPORTANT

From November 1st, 1973 onwards, the performance of the P855M minicomputer has been improved to that of the P860M model. In this and all companion manuals, performance figures shown for the P860M model therefore also apply to the improved P855M. The P800M Minicomputer Equipment Catalogue has also been updated to reflect this improvement, at the same time bringing the product offering more in line with market demand. Thus a number of standard CPU configurations, including a range of memory module sizes, control panels, slides and other options may be ordered by a single type number.

Although the P860M has been removed from this new catalogue, it is still available on an 'on request' basis.

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Preface

This handbook contains general information on both the hardware and software aspects of the P855M and P860M computers. It is intended to serve as a guide to the most important possibilities and features available with these computers. That includes short descriptions of the standard peripherals which may be connected.

For more detailed information, a set of handbooks is available: a System Introduction, giving a more detailed analysis of the features described in this book; an Interface Manual describing the interfacing possibilities; an Installation Manual, providing directions and details for installing a system; a set of service manuals for CPU and control units; manuals providing the necessary information about Data Communication with a P855M or P860M; a set of software manuals with detailed information about the available Monitors, Software Processors and Instruction Set, about Basic and Full FORTRAN and about the FORTRAN Mathematical Library.

The appendix on page 95 gives a complete survey of the P800M manuals.

To understand the information contained in this book, readers have only to be familiar with the general principles of computers and programming.

Great care has been taken to ensure that the information in this handbook is accurate and complete. However, should any errors or omissions be discovered, or should any user wish to make a suggestion for improving this handbook, he is invited to write his comments on the sheet provided at the end of the book and send it to:

Manual Writing Small Computers,
at the address on the opposite page.

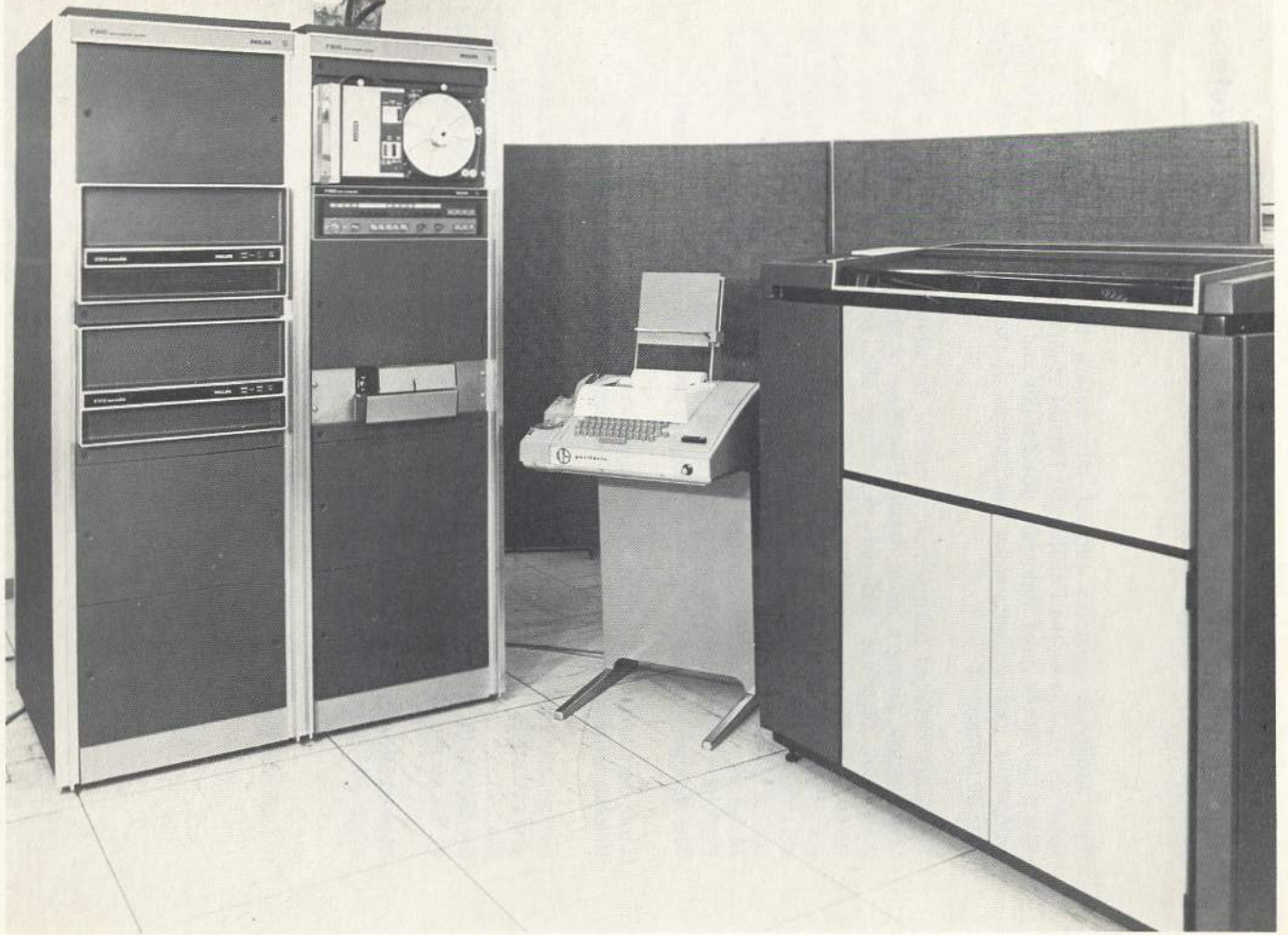


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Introduction

The P855M and P860M are general-purpose digital mini-computers ideally suited for industrial and scientific applications, such as process control, test and measurement, data acquisition, numerical control and scientific problem-solving.

The basic central processor of both machines contains at least 4k of memory; it can be expanded up to 32k 16-bit words.

A number of I/O facilities are available: programmed channel is standard and, depending on the type of peripheral equipment connected, Multiplex Channel, Direct Memory Access (DMA) or Memory Increment Data Break (MIDB) can be added. For analog or digital processes MIOS or DIOS can be used to connect external devices to the P855M or P860M.

The basis of the interrupt system is made up of eight interrupt levels one of which is programmable by software and able to accept up to 16 signals (to be inhibited or enabled by means of a mask register). The others accept one signal each. The standard system can be expanded with groups of additional interrupt lines. The maximum interrupt system can accept 63 (47 + 16) interrupt signals hierarchized on 48 levels.

To increase the capability of the central processor, a number of extra hardware features are available, such as Real Time Clock, Memory Protection, Power Failure/Automatic Restart and Hardware Arithmetic.

The instruction set used for programming in Assembly language is based on the 16-register structure of the central processor. This makes it a very powerful and versatile set, providing the programmer with a wide range of possibilities and ensuring fast execution of his programs. Different monitors are available for various applications. For non-disc configurations a Basic and a Basic Real Time Monitor can be supplied. For disc systems there are also two different monitors: a Disc Real Time Monitor and a Monitor for non-real time disc systems, mainly intended as a program development tool.

Both machines accept the same Assembly language, with additional facilities for machines with 8k or more words of memory. FORTRAN is also available in different versions. Updating can be done on the statement level or, by means of the Text Editor, on the character level. Finally, a Linkage Editor and a Program debugging Package are supplied.

All these features are treated in more detail in the following sections of this book.

The following figure shows the standard and optional features of the P855M and P860M computers. The dotted lines indicate options.

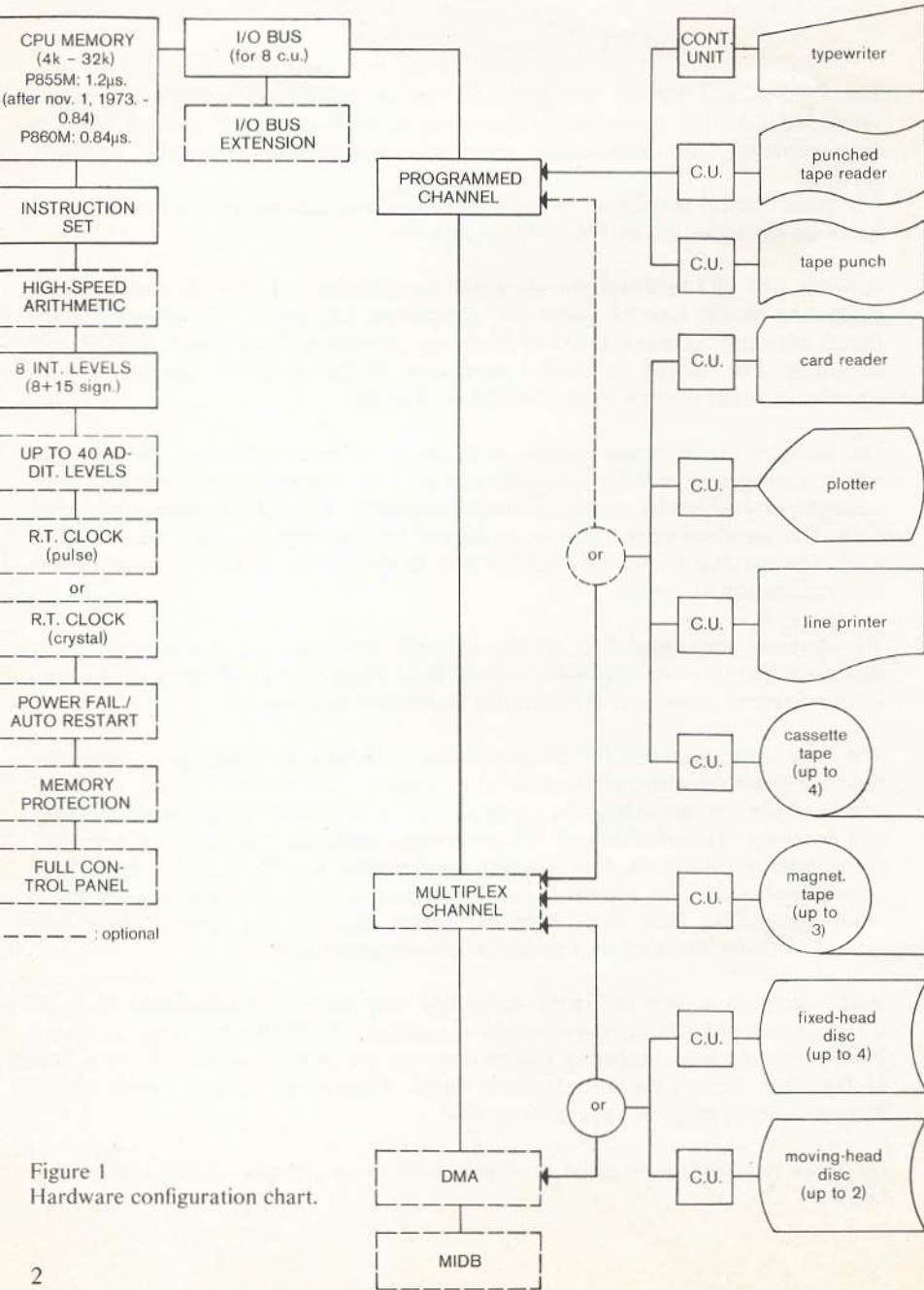


Figure 1
Hardware configuration chart.

