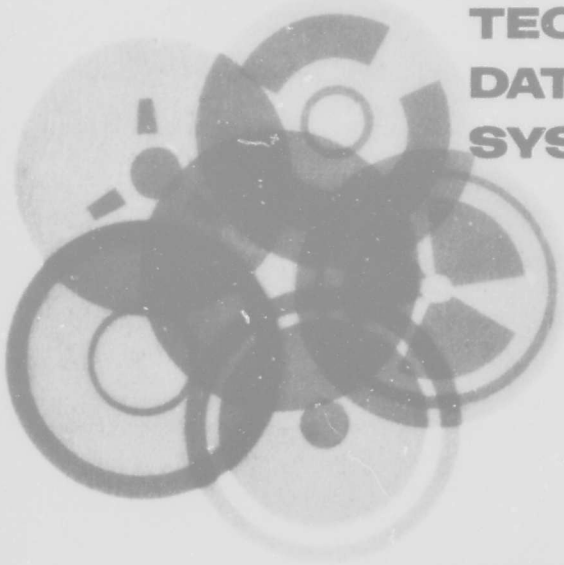
06349-W521-R0-00

(1)

INTEGRATED TECHNICAL DATA SYSTEM



COMPUTER SUBSYSTEM:

EQUIPMENT DESCRIPTION

JUNE 1969

PREPARED FOR
U.S. ARMY MATERIEL COMMAND
CONTRACT NO. DA-49-186-AMC-324 (X)

TRW SYSTEMS GROUP
WASHINGTON OPERATIONS
1735 I STREET N.W. • WASHINGTON, D.C. 20006

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FOREWORD

TRW Systems was awarded a contract [Contract Number DA-49-186-AMC -324(X)] by the U. S. Army Materiel Command to develop an Integrated Technical Data System (ITDS). The ITDS is intended to assist the Army Systems Manager in performing his management and technical tasks by operating on relevant data to produce, summarize, and condense information. This allows the manager and technical support personnel to a) determine status and monitor technical progress, b) identify and predict system technical/management problems and their impact, c) comprehend and evaluate proposed system changes, and d) assign and maintain awareness of responsibility for action.

The ITDS is composed of personnel, procedures, equipment, and computer programs. The organization of these elements provides a capability for the processing of systems program data, including the following functions:

- Data receipt and indexing
- Validation and verification for authenticity
- Storage
- Manipulation
- Retrieval
- Display and dissemination.

The organization is divided into three major subsystems: the Functional Disciplines Subsystem, the Data Operations Subsystem, and the Computer Subsystem. ITDS user documentation, of which this manual is a part, is oriented to the above subsystems, with the exception of an overall Systems User's Guide and a Configuration Management Plan.

Following is a tabulation of ITDS user documentation (title of this volume is heavily underscored):

ITDS - Overall

- System User's Guide
- Configuration Management Plan

Functional Disciplines Subsystem

- Administrative Manual
- Operations Manual
- Personnel Position Descriptions

Data Operations Subsystem

- Administrative Manual
- Operations Manual
- Equipment Description
- Personnel Position Descriptions

Computer Subsystem

These 12 manuals, in general, cover administration of the subsystem, operating and maintenance instructions for the programs, computing equipment description, and personnel position descriptions.

- Administrative Manual
- Generalized Processing Program, General Description
- Applications Programs, General Description
- Peripheral Programs, General Description
- Computer Programs Maintenance Manual
- Computer Programs Operations Manual
- Data Processing Center Operator's Manual

- **Equipment Description**
- Personnel Position Descriptions
- Generalized Processing Program, Programming Documentation
- Applications Programs, Programming Documentation
- Peripheral Programs, Programming Documentation

This manual describes the equipment for the Computer Subsystem.

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COMPUTER SUBSYSTEM: EQUIPMENT DESCRIPTION

1. INTRODUCTION

1.1 PURPOSE

This document describes the performance characteristics of the computer equipment necessary for the operation of the ITDS and for the processing of all dynamic project data. Each component of the ITDS Computer Subsystem is described separately in qualitative rather than quantitative terms. This document is intended for use in specifying computer equipment requirements in terms of functions, general operating requirements, and structural relationship (see Figure 1). It is not intended to be used to specify any particular manufacturer's computer equipment.

1.2 SCOPE

This document identifies and describes only those components of a computer system known to be required for the operational support of an ITDS.

2. APPLICABLE DOCUMENTS

Specifications

ITDS System Description, Part II: Product Description, Document No. 06349-W510-R0-01, dated April 1969.

3. REQUIREMENTS

3.1 GENERAL

The ITDS computer equipment shall be a general purpose computer system designed to perform commercial, scientific, communications, and control applications.

3.2 CENTRAL PROCESSOR

The central processor shall be composed of main control, logical, and arithmetic control units, and shall also have an interface to provide for transmitting and receiving information from the input and output peripheral devices.

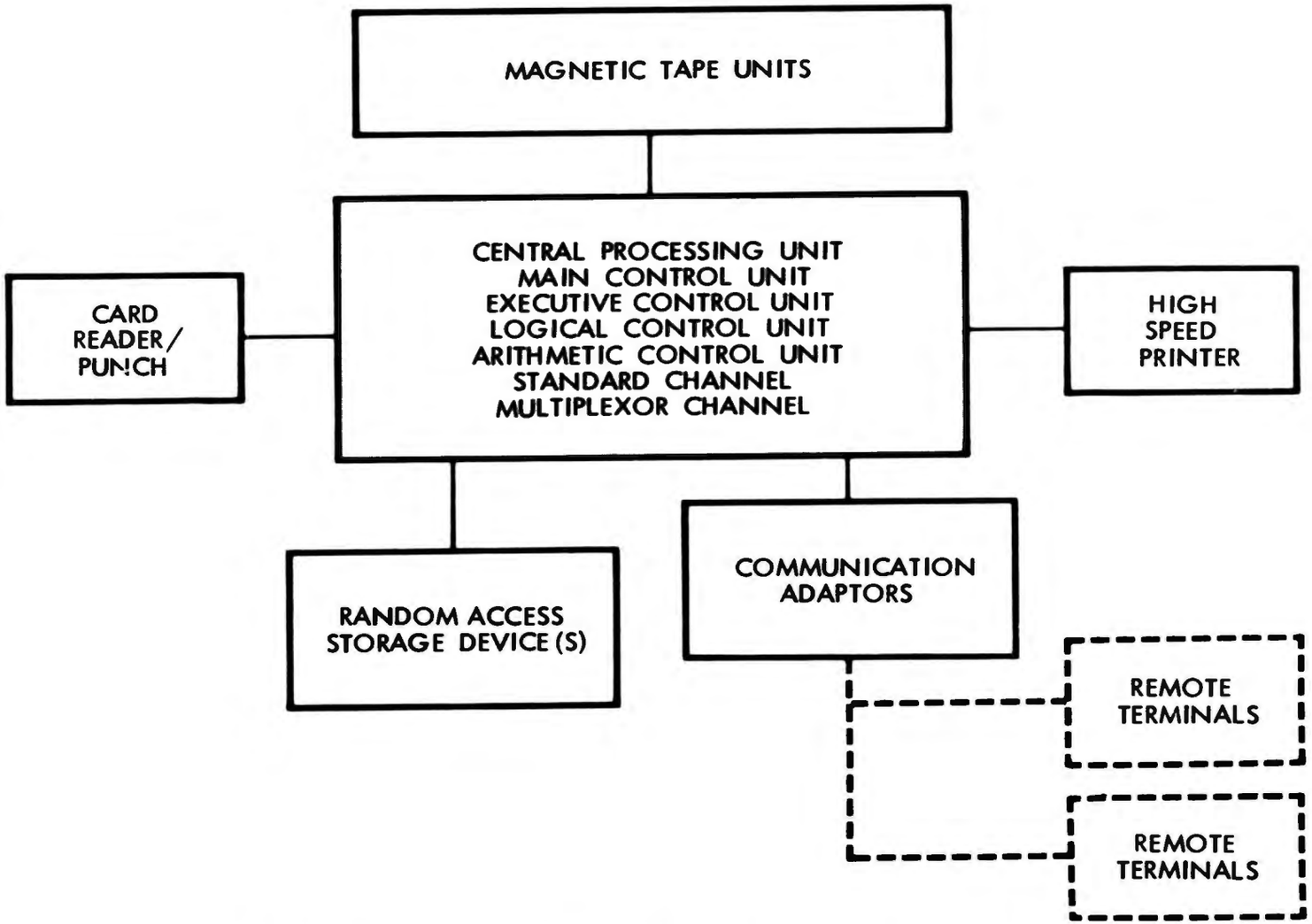

Figure 1. ITDS Computer Subsystem Equipment Configuration

3.2.1 Main, Control, Logical, and Arithmetic Control Units

The main memory storage capacity of the ITDS Computer Subsystem shall have a minimum capacity of 64,000 characters of dedicated core storage. The minimum acceptable central processing unit (CPU) cycle time shall be 2.5 microseconds. The CPU control and logical units shall be the executive control units used to monitor the individual programs being executed by the computer. The arithmetic control units shall be capable of integer, fixed-point, and floating-point arithmetic.

3.2.2 Interface Communication and Channel Facilities

There shall be input/output communications channels capable of operating in two modes: standard handling of high-speed input/output devices, e.g., tape units; and multiplexor handling of communications devices.

3.2.2.1 Standard Communication Channels

The standard communication channels shall be capable, as a minimum, of transferring data to and from the following:

a) four magnetic tape units,

b) a random access capacity consistent with data base requirements,

c) one card reader/punch unit,

d) one high speed printer.

3.2.2.2 Multiplexor Channel

The multiplexor channel shall be capable of handling communication adaptors servicing a minimum of 32 remote inquiry display devices.

3.3 COMPUTER OPERATING SYSTEM

The computer operating system shall consist of a control program and a number of processing programs. The control or executive program shall

govern the order in which the processing programs are executed. The processing programs shall consist of programming language translators and service programs.

3.3.1 Executive (Control) Program

The executive program shall consist of a program or group of programs able to respond to the following requirements:

a) Alter or interrupt the flow of operations through the CPU for the performance of input/output or other operations.

b) Maintain the medium through which the use of resources is coordinated and the flow of operations through the CPU.

Other operations, mentioned in a) above, are equivalent to the execution of service or utility programs or the execution of ITDS (user) programs.

3.4 CARD READER

The card reader shall be able to read cards at the minimum rate of 250 cards per minute. A card reader shall be defined as a device which senses and translates into internal form the holes in Hollerith punch cards.

3.5 CARD PUNCH

The card punch shall be able to punch cards at the minimum rate of 100 cards per minute. A card punch shall be defined as a device which records information in cards by punching Hollerith holes in the cards to represent letters, digits, and special characters.

3.6 HIGH SPEED PRINTER

The high speed printer shall be capable of printing a minimum of 500 lines per minute. A high speed printer shall be defined as a device which expresses coded characters as hard copy.

3.7 RANDOM ACCESS DEVICE

The random access device shall be capable of storing a minimum of 100 million characters with a modular growth capability to 1 billion characters in information. The random access device shall provide access to the stored information so that the access time shall be an average of 75 milliseconds and be independent of the location of the data.

3.8 MAGNETIC TAPE UNITS

The magnetic units shall each be capable of transferring information at the minimum rate of 60,000 characters per second. The magnetic tape units shall have both reading and writing heads along with the necessary control units.