1070

Process Communication System

The IBM 1070 is a Tele-Processing System designed for transmission of on-line process data and control information between remote process locations and a centrally located computer system. Two-way transmission between an individual terminal station and the central station is via standard communications facilities.

Applications

Some of the general applications of the 1070 System are:

Tele-communication applications—where transmission lines over long distances connect a number of 1070 Systems at remote process locations to a central computer for on-line process control.

In-plant applications—where 1070 Systems located at various points in a process area employ data transmission facilities for connection to a central computer.

Data collection applications—where 1070 Systems as well as IBM 1030 and 1050 Terminals use data transmission facilities for connection to a common computer, for the purpose of facilitating overall plant operation.

Data acquisition applications—where 1070 Systems are controlled by a 1050 Data Communication System.

Specifically, the IBM 1070 is a system which will facilitate control of oil fields, natural gas and oil pipe lines, petroleum refineries, chemical plants, paper mills, iron and steel works, power distribution systems, traffic control systems, and batch processes in manufacturing.

Components

Each IBM 1070 Process Terminal Station consists of a 1071 Terminal Control Unit and up to six 1072 Multiplexer and Terminal Units. In addition, 1073 Terminal Units and any or all of the following Process Operator Console Units may be included:

    1074   Binary Display
    1075   Decimal Display
    1076   Manual Binary Input
    1077   Manual Decimal Input
    1053   Output Printer

Except for the output printer, all 1070 units are mounted in standard 19-inch racks and use high speed encapsulated reed relays. The 1071 Terminal Control Unit is designed in Solid Logic Technology (SLT). SLT is the latest engineering development in solid-state micro-electronics. The SLT modules are miniaturized transistor, resistor, and diode circuits encapsulated in ceramic. They are grouped on six- or twelve-pack cards, which are plugged into printed circuit panels. The net result is decreased size and cooling requirements, and increased ruggedness and reliability.

Service Aids

Customer Engineering features of the 1070 System include off-line serviceability and on-line operation monitoring. A portable CE test box is provided for testing and monitoring the 1070; a CE switch transfers the Terminal Station from the communication line to the tester. Thus, the Central Processing Unit is simulated and the terminal can be operated in all modes. CE test box features include:
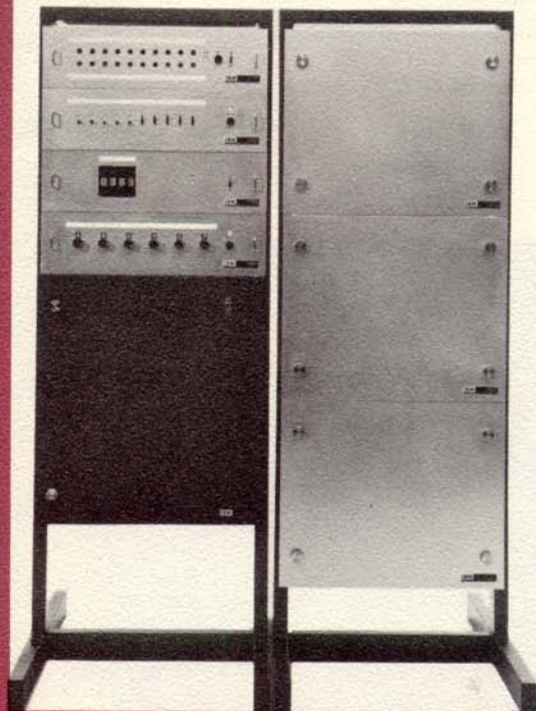
Indicator Panel—displays all important data registers and control latches.

Control Panel—provides character emitters, bit emitters, character generators, and a 16-step program counter. These features provide the CE with the ability to:

- Step through various messages (up to 16 characters) automatically at normal computer speed.

- Step through messages manually—one step at a time.

- Stop at any step and re-cycle at either single cycle or normal speed.

- Stop on the message character causing the terminal error.

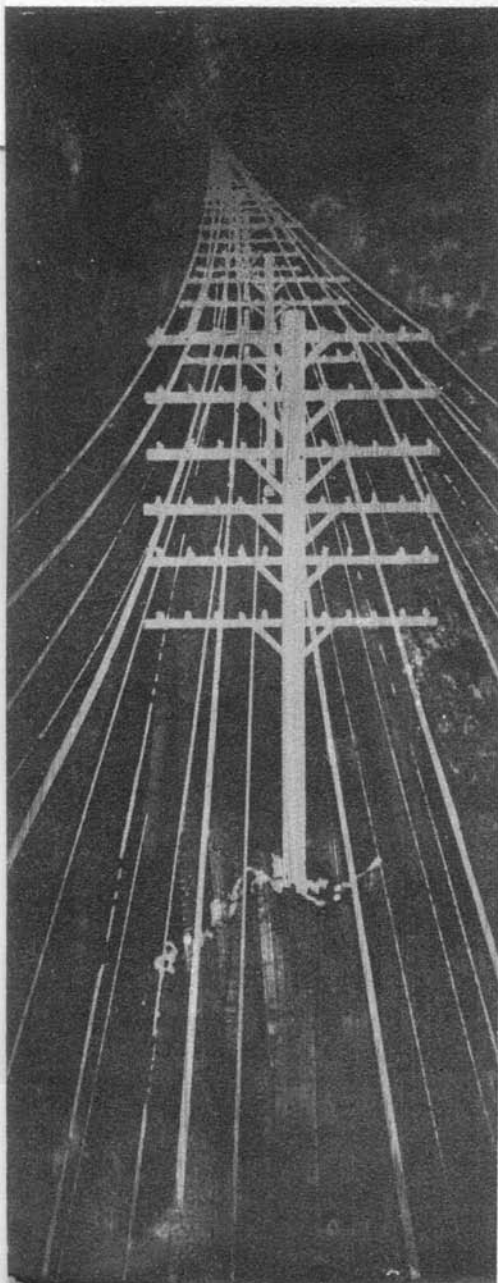- Manually read input data and operate display units and output typewriters.

IBM

D/S

1070
Terminal
Station

Operations

The 1070 System operates at transmission speeds of 14.8 or 66.6 characters per second, depending upon the type of communication service used. Data Sets (D/S) are required for transmission over Common Carrier facilities. These are not IBM units but are available from communication vendors.

The central computer system controls all transmission sequences to and from 1070 terminals. Transmission sequences are checked for validity by character and by message at both the transmitting and receiving system. The 1070 terminals are con-
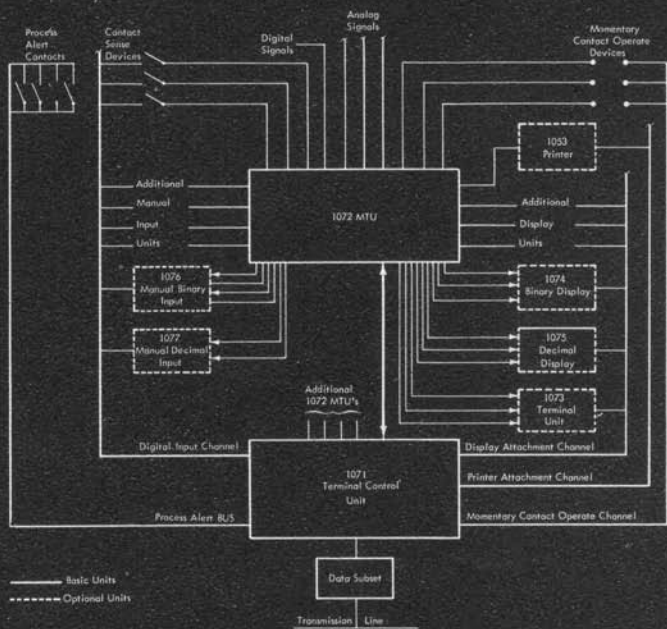
D/S | Transmission Control Unit | Central Computer System

Terminal
Station
1070

D/S

trolled by the transmission of special control characters. The 1071 Terminal Control Unit translates the control characters into operating instructions for the desired input/output operation. Thus, process signals are monitored and process data is transmitted to the central computer system, on-off devices in the process are controlled, and communication between the central station and process operators is effected.

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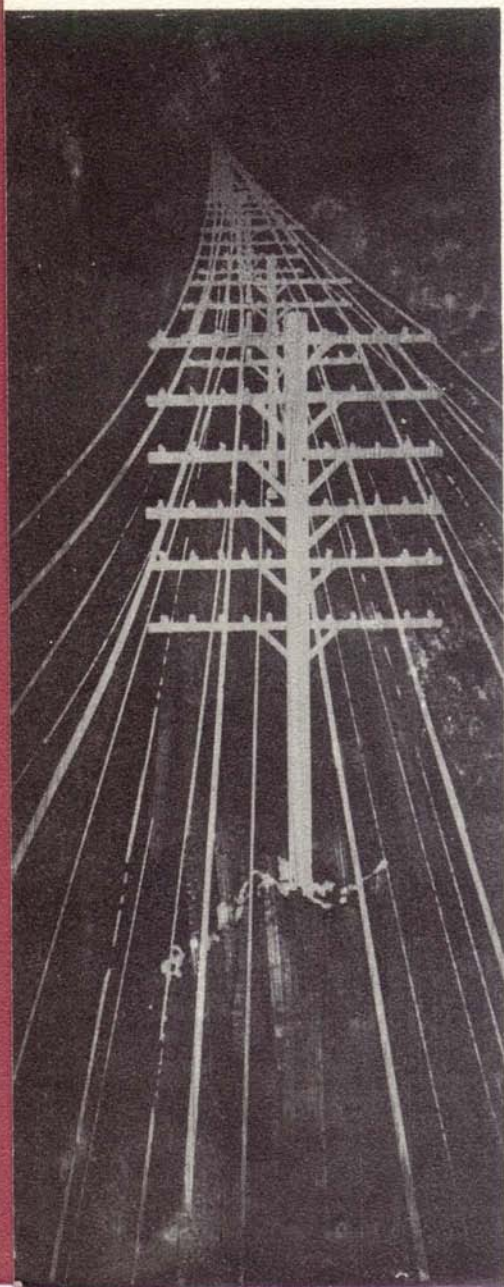tput
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System Description

An overall system consists of an IBM System/360 as the central computer with either an IBM 2701 Data Adapter Unit or 2702 Data Communications Unit, and up to 25 1070 Terminals for each communication line. The 2701 accommodates one or two communication lines; the 2702 can accommodate up to 31 communication lines.

Both the 2701 and 2702 provide control of data transmission between the System/360 and the remote 1070 Terminals. The 2701 and 2702 also allow the System/360 to continue programmed operation during the relatively slow transmission of characters over the communication line.

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