DMNI/DMNO

Devices for linking the Philco 2000 to many communications lines of varied speeds

The DMNI and DMNO are interface devices designed and manufactured by the Philco Computer Division to multiplex data for communications lines having differing transmission rates. These lines transfer data to and from a Philco 2000 System through the Real-Time System. The computer is part of the USAF SPACETRACK Center located in Colorado Springs, Colorado.

The DMNI, device for multiplexing non-synchronous inputs, and the DMNO, device for multiplexing non-synchronous outputs, link the computer to voice-grade data lines, teletype lines, and display equipment.

DMNI

The DMNI connects the Philco 2000 through Teletype Model 28RT Sets to a number of lines having a transmission rate of 10 characters per second and to three voice-grade data lines having a transmission rate of 1200 bits per second. The teletype lines carry messages from tracking stations; the voice-grade lines carry data from BMEWS stations. The DMNI can accommodate 54 communications lines, 8 of which may be voice grade. Data can be transferred simultaneously over all lines.

Line Scanning

The DMNI continuously samples all communications lines to which it is connected. When a data character is sensed, it is read into a register in the DMNI along with an identifier for the line read. To accommodate the higher transmission rates on the voice-grade lines, they are all scanned between each check of a teletype line.

Programming Features

Data is transferred from the DMNI to the Philco 2000 when an input-output order is issued by the program. This order, which remains effective until a stop-input order is issued, is similar to the standard input-output order of the Philco 2000, except that no memory address or word count is required. The order initiates transfer of data from the DMNI to a portion of the Philco 2000 memory predesignated as a buffer area. One character and its line identifier are stored in each word of this 1024-word buffer area in the order in which they are received by the DMNI. When each 1024th character is stored in the buffer area, additional incoming data is stored starting again at the beginning of the buffer area.

Two special control features are used with the DMNI. A stop-input order can be issued to terminate the data transfer. An interrupt signal is also forwarded to the program when the buffer is half full and again when it is completely full. This signal gives the program the opportunity to move data from the just-filled half of the buffer area before incoming data overlays it.

DMNO

The DMNO connects the computer to various output devices having differing transfer rates. Output orders designate the line on which the information is to be transmitted. The DMNO at the USAF SPACETRACK Center is connected to the BMEWS displays located in the Combat Operations Center at the North American Air Defense Command Headquarters in Colorado Springs, Colorado. The DMNO also connects to various communications lines and to a Console Typewriter at NORAD's Combat Operations Center. Output can be transmitted simultaneously to all devices.

Programming Features

The data to be transferred is stored in memory locations predesignated for each output line. Therefore, the instruction to transfer output to a particular line does not require a memory address, though a word count, specifying the amount of data to be transmitted, is required for most of the output devices.

The DMNI and DMNO illustrate the capability of interfacing the Philco 2000 with input and output units of widely varying characteristics, thus permitting complete integration of any system.