

# VIAGRAM

## Information Note



**Subject:** Data Management Station  
Communication Considerations

**No:** 21

**Date:** March 25, 1970

This VIAGRAM lists those operational characteristics of the System 21 Data Management Station which must be taken into account when it is used in a communications network. Additional information on the compatible data sets and the Communication Adapters is contained in VIAGRAMS 5 and 9, respectively.

### DATA INTERCHANGE -- Asynchronous Binary Serial

Data is sent/received asynchronously in 11-bit serial units. Each unit contains one start bit, seven data bits, one parity bit (even), and two stop bits. The synchronization of bits within units is controlled by the Communication Adapter.

### DATA CODE -- 7-Level USASCII

This is the USA Standard Code for Information Interchange, containing 128 characters.

### OPERATING MODE -- Half Duplex

The Data Management Station supports half-duplex communication operations, i.e., either send or receive one direction at a time.

### OPERATING ENVIRONMENT -- Point-to-Point

The Data Management Station is designed to operate in a point-to-point environment in which the data call is initiated through a dial-up procedure, eliminating the need for polling and answer-back capability. Calls are initiated only when required (no need for dialogue to determine servicing requirements) and only to specific stations (identified by the data set telephone number).

All standard voice-grade lines (approximately 3,000 cycle) can be used for communications purposes, including those within a network switched through a central facility or a network dedicated to point-to-point data transmission over single, leased lines. All Communication Adapters provide a standard EIA interface to all data sets which can be attached to such voice-grade lines.

### DATA TRANSMISSION -- Record-Oriented

The Data Management Station is designed to use 80-character records for all operations, including communications. An optional Short Record feature permits data to be transmitted in blocks of 80 characters or less. The transmission of successive blocks to the Data Management Station must be spaced to allow for the disposition of data. If, for example, data is being sent to VIATAPE on a Data Management Station, a 1-second delay must be provided to write the record on tape prior to receipt of the next transmission.

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### COMMUNICATION MODES -- Conversational/Batch

In the conversational mode, a dialogue is maintained between two stations on the same line. An inquiry is initiated by one station and a response is provided by the other.

In the batch mode, one station transmits successive records or blocks to the other. The 2111 Microprocessor can be provided with an automatic answer feature which allows the station being called to operate unattended in the batch mode. (Unattended batch operations cannot be interrupted and then restarted automatically.)

An acknowledge capability is provided for synchronizing communications between Data Management Stations. The receiving station initiates a 0.5 second acknowledge pulse to indicate that it has received a record and is now ready for the next. When the acknowledge capability is desired with a half-duplex data set, the data set must be equipped with the "Reverse Channel" option which permits the sending of the acknowledge signal without reversing the direction of the data signal.

### DATA MANAGEMENT STATION -- Configuration Considerations

The 2101 Microprocessor can be used in conversational and attended batch operations. It can be used in unattended batch operations only as the calling station because: (1) the 2101 does not recognize the file separator (End-of-VIATAPE) character which terminates tape operations, and (2) the 2101 cannot be equipped with the automatic answer capability.

The Automatic Multiple Input feature is required for batch operations with the 2111. INPUT option D provides a batch throughput capability, and INPUT option E, in conjunction with the Automatic Multiple Output feature, OUTPUT option A, provides a reformatting capability which strips blank fields from a data record to reduce transmission time. If less than 80-character blocks are to be sent/received, the Microprocessor must be equipped with the Short Record feature. This feature facilitates transmission of reformatted records which have been stripped of blanks.

Even parity generated by the Communication Adapter can be inhibited when the receiving device is an odd parity machine. The odd-parity machine must be modified so that it doesn't check for odd parity. In effect, the parity check is inhibited for such a communications network, resulting in the inability to insure data validity.

If the Data Management Station is to be equipped with two Communication Adapters, a custom speed-selector panel is installed which prevents clock and fuse damage resulting from incorrect operator switch settings.

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SYSTEM ARCHITECTURE -- Design Considerations

The following points should be considered when a Data Management Station is interfaced with an operating system:

- Non-pollable.
- No answer-back capability.
- 128-character USASCII set.
- Time delay between receipt and transmission of 80-character blocks.
- Terminal is designed for operator control. The 2101/2111 cannot be controlled by data stream device-control characters