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BROOKHAVEN NATIONAL LABORATORY  
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B.B. Culwick  
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DATACON2 TRANSMISSION BIT DEFINITIONS AND TERMINOLOGY

The DATACON2 serial transmission system is an Accelerator Department standard means of transmitting data between controllers (manual, automatic, or computer) and controlled equipment. The links in the transmission chain are shown schematically in Figure 1. The interface between the device controller and the Datacon transmission occurs in the Remote Receiver and is one of a small class of possibilities, depending on device requirements. It is standard for a given device.

The interface between the Datacon transmission and the controller occurs in the Datacon central and is controller dependent. It is therefore necessary to specify the interface to a device in terms of the Datacon transmission.

This note defines the logical terminology of the Datacon transmission and reply for purposes of reference. Hardware details are given in reference (1).

1. Transmission. The transmission from the Datacon central to a remote is illustrated in Figure 2. The FRAME, KEY and PARITY signals are properties of the transmission system inaccessible to the controller.

S/R BIT - This bit (the SET/READ bit) defines whether the transmission contains information to be received by the controlled device (S/R = logical 1), or is merely to trigger a reply (SR = logical 0).

ADDRESS FIELD - An eight bit field designated A7 through A0 with A7 the most, and A0 the least significant bit. This field defines  $256_{10}$  device addresses from 0 - 255.

MAGNITUDE FIELD - A sixteen bit field designated M15 through M0 with M15 the most, and M0 the least significant bit. When appropriate to the controlled device, this field contains binary magnitude information for, for instance, digital to analog converters.

COMMAND FIELD - A seven bit field designated C6 through C0. This field is normally used to transmit binary device commands via uniquely defined bits. In order to allow its use for numerical quantities in some devices C6 is considered the most, and C0 the least significant bit.

2. Reply. The reply generated by a remote device to the Datacon central is illustrated in Figure 3. Again the FRAME and KEY are not accessible.

PARITY - Errors on reply are detected by the CENTRAL and indicated to the controller.<sup>2,3</sup>

READING - A sixteen bit field designated R15 through R0 with R15 the most, and R0 the least significant bit. Devices returning a digital magnitude from, for instance, analog to digital converters may do so in this field.

STATUS - A sixteen bit field designated S15 through S0. This field is usually assigned to returning bit coded status information.

Where the status corresponds to commands in the COMMAND FIELD the corresponding status bits should be returned in S15 through S9 of the STATUS FIELD. If a device uses this field for numerical information S15 is the most and S0 the least significant bit.

3. Bit Usage by Devices. The above bit and field names are definitions. Actual bit usage by devices depends on the requirements of the device, but where practical, designers should adhere to the command, status, magnitude and reading conventions in order to avoid arbitrary variations and promote uniformity in device handling.

REFERENCES:

1. EP & S Technical Note #58  
Signal Specification and Transceiver Operation for  
Datacon II System. V.J. Kovarik, March 14, 1973.
2. EP & S Technical Note #53  
PDP-11 - Datacom Interface.  
B.B. Culwick, June 3, 1972
3. AGS Computer Note #21  
PDP-8E to DATACON2 Central Interface, Description  
and Operating Instructions.  
R. Frankel, December 6, 1972

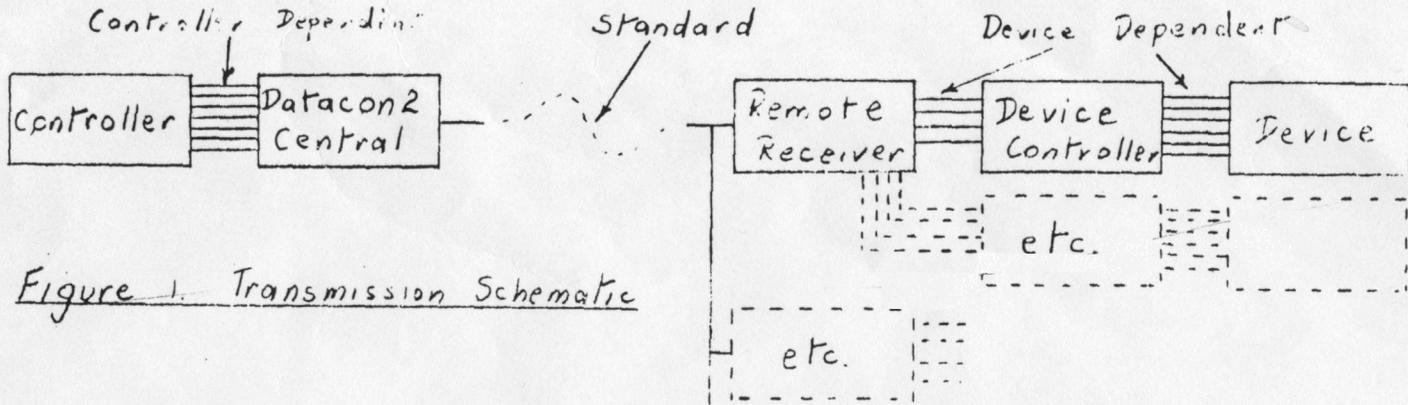


Figure 1. Transmission Schematic

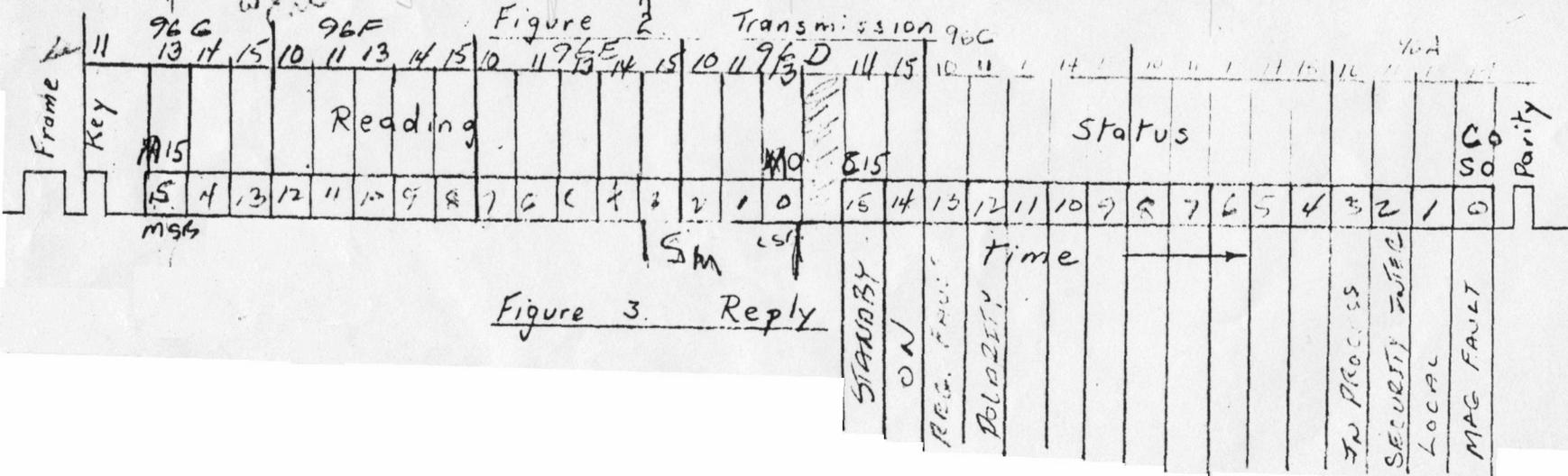
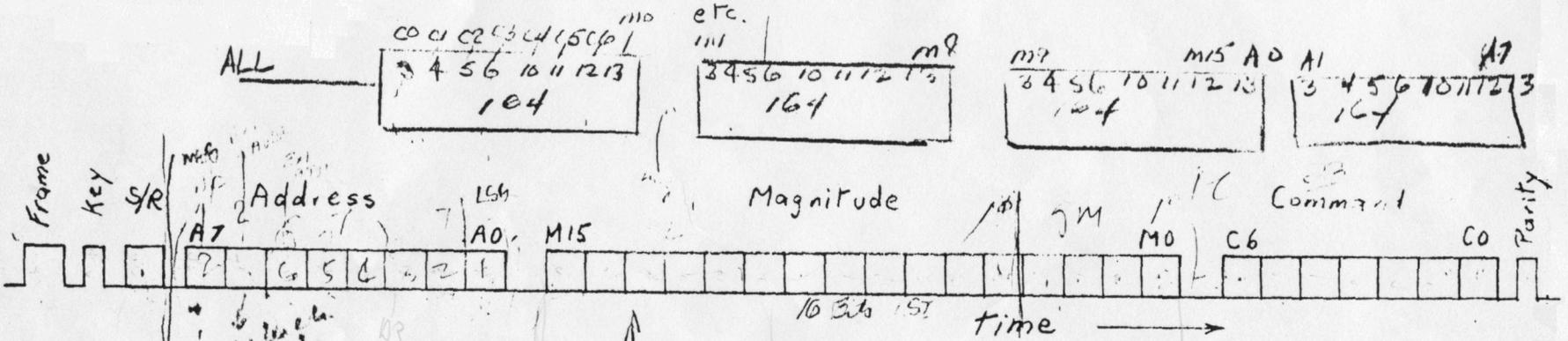


Figure 3. Reply