PUB 41450A

PRELIMINARY

Bell System Data Communications
TECHNICAL REFERENCE

DIGITAL DATA SYSTEM
DATA SERVICE UNIT
INTERFACE SPECIFICATIONS

ADDENDUM
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ENGINEERING MANAGER – DATA NETWORK SERVICES

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This addendum covers changes in preliminary Technical Reference (PUB 41450), "Digital Data System - Data Service Unit Interface Specifications" since its publication in March, 1973.

These changes reflect the fact that the Circuit Assurance and System Status customer options are not available in the Data Service Unit (DSU) as described on pages 19 and 20 of PUB 41450. In addition, AMP and Burndy pin designations are added to the Table of 56 kb/s interface connector pin assignments shown on page 14, and the interface cable requirements stated on page 15 are relaxed as described below.

The following items cover section-by-section changes to the original Technical Reference. Also make the appropriate deletions from the Table of Contents (viz., Sections 5.3, 5.4, 6.2.1, 6.2.2).

Section 4.1.7 (page 10)

Delete last sentence.

Section 4.1.8 (page 10)

Delete first sentence of the last paragraph.

Section 4.1.9 (page 11)

Delete last paragraph.

Section 4.1.10 (page 12)

Change the next to the last paragraph to read as follows:

The Received Line Signal Detector circuit will turn OFF approximately 1 second after a transition from a received data to a no signal condition. After a transition from received data to idle signal, the turn OFF delay is 18 bits for 2.4, 4.8, or 9.6 kb/s service and 21 bits for 56 kb/s service.

Section 4.2 (page 14)

Replace page 14 with the following which adds AMP and Burndy pin designations to the 56 kb/s connector pin assignment Table:

PIN ASSIGNMENTS FOR 34-PIN CONNECTOR

56 kb/s SERVICE

Winchester Connector Pin	AMP and Burndy Connector Pin	Function	EIA RS-232-C Designation	CCITT Designation
A	A	Protective Ground	AA	101
B	B	Signal Ground	AB	102
C	C	Request to Send	CA	105
D	D	Clear to Send	CB	106
E	E	Data Set Ready	CC	107
F	F	Received Line Signal Detector	CF	109
R	R	Received Data	BB(A)	104
T	T	Received Data	BB(B)	104
V	V	Receiver Signal Element Timing	DD(A)	115
X	X	Receiver Signal Element Timing	DD(B)	115
P	P	Transmitted Data	BA(A)	103
S	S	Transmitted Data	BA(B)	103
Y	Y	Transmitter Signal Element Timing	DB(A)	114
a	AA	Transmitter Signal Element Timing	DB(B)	114
m	MM	Reserved for DSU Testing	-	-
H, J, K, L, M, N, U, W, Z		Not Used	-	-
b-d	BB-FF	Not Used	-	-
f-k	HH, JJ-LL,	Not Used	-	-
n	NN	Not Used	-	-

Section 4.3 (page 15) - replace Section as follows:

The characteristics of the interconnection cable between the data terminal equipment are specified below. An interconnecting cable meeting these specifications will result in a transmission line with a nominal characteristic impedance on the order of 100 ohms to frequencies greater than 100 kHz. The cable may be composed of twisted pairs or untwisted pairs (flat cable) possessing the following characteristics uniformly over its length:

Conductor Size. The cable shall be composed of pairs of wires of 24 gauge, or larger, conductor for solid or stranded copper wires,

or for non-copper conductors, a sufficient size to yield a dc wire resistance not to exceed 30 ohms per 1000 feet per conductor.

Mutual Pair Capacitance. The capacitance between one wire in the pair to the other wire shall not exceed 20 picofarads per foot, and the value shall be reasonably uniform over the length of the cable.

Stray Capacitance. The capacitance between one wire in the cable to all others in the cable sheath, with all others connected to ground, shall not exceed 40 picofarads per foot and shall be reasonably uniform for a given conductor over the length of the cable.

Pair-to-Pair Balanced Crosstalk. The balanced crosstalk from one pair of wires to any other pair in the same cable sheath shall have a minimum value of 40 decibels of attenuation measured at 150 kilohertz.

The cable drivers and cable terminators will operate satisfactorily with up to 100 feet of 24 gauge copper conductor cable.

To reduce the possibility of crosstalk between the various leads, the following recommendations are made regarding the cable pair assignments for a twisted pair cable. The greatest crosstalk problems are between the control and signal circuits. It is recommended that one twisted pair be used for each control signal with one lead of the pair tied to signal ground at the connector of the cable. The amount of crosstalk depends on the cable, the cable driver characteristics and the cable terminator input impedance. In order to minimize crosstalk the balanced data and clock signals should be assigned to pairs in the center of the cable. The cable pairs around the outside of the cable should be assigned to the control signals. An extra twisted pair with both leads tied to signal ground at the connector of the cable should be used between each control pair to provide isolation. This arrangement with the extra ground wires around the outside of the cable also provides some shielding from interfering signals in the outside environment.

Section 5 (page 18) - Replace first sentence as follows:

There are three customer options that must be specified at the time an order is placed: Request to Send, Signal and Frame Grounding, and Loopback Switch and Indicator Lamp Location. The following paragraphs describe these options in detail.

Section 5.1 (page 19) - Change sentence at top of page 19 to read as follows:

Since an operating DSU with the Permanent Request to Send Option presents a permanent ON condition to the Clear to Send Circuit, a data terminal in strict compliance with a type D interface could not turn its Request to Send Circuit ON again once having turned it OFF. Thus the terminal could not go back into the transmit mode of operation.

Section 5.3 (page 19)

Delete.

Section 5.4 (page 20)

Delete.

Section 6.0 (page 21)

Delete next to the last sentence which is the parenthetical sentence describing the System Status option.

Section 6.2.1 (pages 22 and 23)

Delete.

Section 6.2.2 (page 23)

Delete.

Figure 6 (page 35)

Delete.