

DATA SETS 201A3,A4 AND 201B3,B4
TRANSMITTER-RECEIVER
DESCRIPTION AND OPERATION

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1. GENERAL

1.01 This section contains the physical and functional description and operation procedures for data sets (DS) 201A3,A4 (hereafter referred to as DS 201A-type) and 201B3,B4 (hereafter referred to as DS 201B-type). For more detailed information on these data sets, refer to Section 592-011-152.

1.02 This section is reissued to add information concerning data auxiliary sets 828A-, 828C-, and 829-type. Since this is a general revision, change arrows have been omitted.

1.03 DS 201A- and 201B-type are synchronous, serial binary transmitter-receivers that operate over private lines and the switched network. The data rate is 2000 bps for DS 201A-type and 2400 bps for DS 201B-type. DS 201A3 and 201B3 are internally timed; DS 201A4 and 201B4 are externally timed.

1.04 In 2-wire operation, DS 201A- and 201B-type can transmit and receive, but not simultaneously. When a data set transmits, its receiver monitors the transmitted data to provide local copy. In 4-wire operation, these data sets can transmit and receive simultaneously, but local copy is not provided.

1.05 DS 201A- and 201B-type may be used with the following auxiliary apparatus:

- Data auxiliary set (DAS) 829-type to provide a standard termination for 4-wire private lines with data only or alternate data/voice.
- DAS 828A-type to provide a standard termination for 4-wire private lines with data only or alternate data/voice.
- DAS 828C-type to provide switched network backup or to provide 4-wire transmission on two switched network lines.
- DAS 804A-type to provide voice capability, line control, and automatic answering on the switched network.
- DAS 801-type to provide automatic calling on the switched network under control of the customer provided equipment (CPE).

2. PHYSICAL DESCRIPTION

2.01 DS 201A- and DS 201B-type (Fig. 1 and 2) consist of a transmitter, receiver, and power supply in a dark gray aluminum housing with a light gray anodized aluminum front panel. These data sets are 17-1/2 inches wide, 7-3/4 inches high, and 11-5/8 inches deep. The data sets weigh 35 pounds.

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement



Fig. 1—Data Set 201A- or 201B-Type, Front View

2.02 The data sets will operate in an ambient temperature range of 40 to 120°F and a relative humidity range of 20 to 95 percent.

2.03 The J87212B power supply in the data sets provides +12 and -12 volts for data set operation. These voltages are available at the telephone line interface, for operation of DAS 804A-type, and at the customer interface. The power supply requires 105 to 129 volts, 22 watts, at 59.5 to 60.5 Hz.

2.04 Three cords are provided with each data set, as follows:

- A 25-conductor cord (D25D-61) for connecting the data set to a connecting block or a bridging adapter.
- A 50-conductor cord (M50J-61) for connecting the bridging adapter to a DAS 804A-type.
- A 3-conductor cord (KS-14532-L15) for connecting the data set to a power source.

2.05 The CPE must be supplied with an interface cord terminated in a Cinch or Cannon DB-19604-432 plug wired in accordance with Table A. This interface cord should not exceed 50 feet in length.

3. FUNCTIONAL DESCRIPTION

A. Data Sets

3.01 DS 201A- and DS 201B-type use phase-shift keying to transmit binary data over analog telephone lines. The basic functional components of these data sets are a transmitter and a receiver.

3.02 The transmitter converts serial binary data from the CPE into groups of two bits called dibits. These dibits are encoded into one of four carrier phase shifts, and used to modulate the carrier that is applied to the telephone line. This modulated carrier consists of a serial train of phase-shifted signals at one-half the bit rate. The continual shift of the signal phase enables the receiver to recover timing.

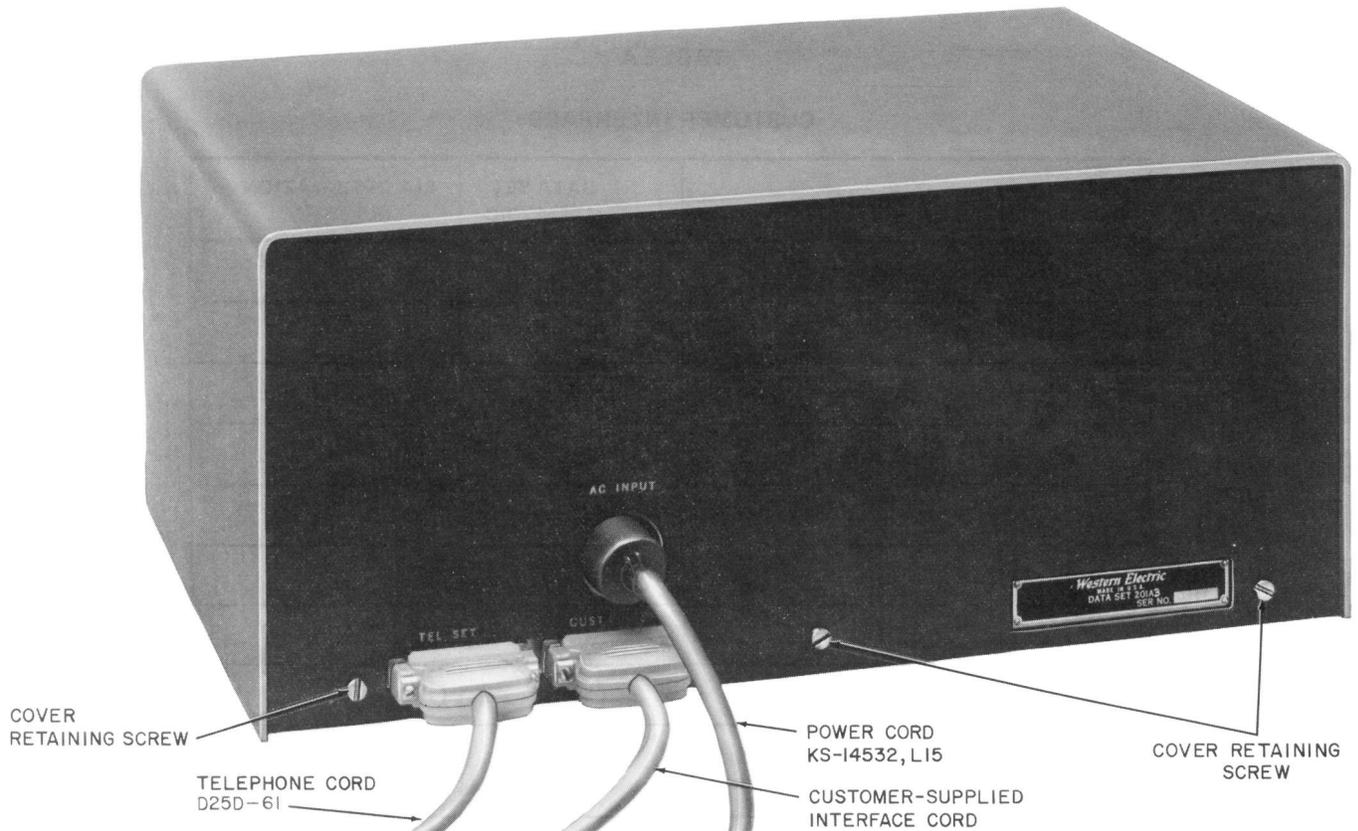


Fig. 2—Data Set 201A- or 201B-Type, Rear View

3.03 The receiver recovers timing, converts the phase-modulated carrier from the telephone line into serial binary data, and delivers this received data to the CPE.

3.04 For a detailed functional description of the data sets, refer to Section 592-011-152.

B. Customer Interface

3.05 The customer interface is accessible through the CUST EQUIP connector at the rear of the data sets. The connector pin numbers and the corresponding lead designations are shown in Table A. For a detailed description of the interface leads, refer to Section 592-011-152.

C. Telephone Line Interface

3.06 The telephone line interface is accessible through the TEL SET connector at the rear of the data sets. The connector pin numbers and

the corresponding lead designations are shown in Table B.

D. Options

3.07 DS 201A3,A4 and DS 201B3,B4 have features or options that may be requested by the user. A detailed description of these options is contained in Sections 592-011-152 and 592-011-201. A summary of the options is contained in Table C.

3.08 Table D lists circuit packs and assemblies used in DS 201A,B-type. Any data set code in this table can be converted to any other code in the table by changing the appropriate circuit packs. When this is done, the designation on the data set nameplate should be changed accordingly.

TABLE A
CUSTOMER INTERFACE

PIN NO.	FUNCTION	DATA SET MNEMONIC	EIA DESIGNATION (RS-232-B)
1	Frame Ground	FG	AA
2	Send Data	SD	BA
3	Receive Data	RD	BB
4	Request to Send	RS	CA
5	Clear to Send	CS	CB
6	Interlock	IT	CC
7	Signal Ground	SG	AB
8	Carrier On	CO	CF
9	Positive Battery	+12V	Reserved for Data Set Testing
10	Negative Battery	-12V	Reserved for Data Set Testing
14	New Sync	NS (Non-EIA)	Unassigned
15	Serial Clock Transmitter	SCT	DB
16	Dibit Clock Transmitter	DCT (Non-EIA)	Unassigned
17	Serial Clock Receiver	SCR	DD
18	Dibit Clock Receiver	DCR (Non-EIA)	Unassigned
19	Remote Release	RR* (Non-EIA)	Unassigned
20	Remote Control	RC*	CD
21	Ready	RDY* (Non-EIA)	Unassigned
22	Ring Indicator 1	RG1†	CE

TABLE A (Cont)

CUSTOMER INTERFACE

PIN NO.	FUNCTION	DATA SET MNEMONIC	EIA DESIGNATION (RS-232-B)
23	Ring Indicator 2	RG2† (Non-EIA)	Unassigned
24	Serial Clock Transmitter External	SCTE	DA

* When contact interface is used, these leads are for automatic answering and are used for terminating dialed calls. When voltage interface is used, the Remote Control (RC) lead performs this functions and leads 19 and 21 are not used.

† When contact interface is used, these leads indicate to the customer provided equipment that a ringing signal is present on the line. When voltage interface is used, the Ring Indicator 1 (RG1) lead performs this function and lead 23 is not used.

4. OPERATION

4.01 DAS 804A-type has six illuminated button keys for voice and data operation. Refer to Table E for the designations and functions of the button keys.

4.02 When using DAS 804A-type with DS 201A- or DS 201B-type, the manual operation procedure of the calling station is as follows:

Depress the TALK button and dial the distant station in the usual manner. The dialed station may answer either manually or automatically.

(a) **If Answered Manually:** Verbally agree to begin data transmission. Depress and release the DATA button. Release of the DATA button restores the TALK button to normal and lights the DATA lamp. The data set is now in the data mode and data transmission can begin. Place the telephone handset on-hook.

(b) **If Answered Automatically:** A 2025-Hz tone should be heard. This tone indicates that the distant data set is ready to receive data. Depress and release the DATA button. Verify that the DATA lamp lights, indicating that the data set is in the data mode.

4.03 The called data station equipped with DAS 804A-type responds in the following manner:

(a) **To Answer Manually:** Depress the TALK button and answer in the usual manner. After agreeing to begin data transmission, depress and release the DATA button. Verify that the DATA lamp lights, indicating that the data set is in the data mode.

(b) **To Answer Automatically:** Operation by the data set attendant is not required.

Note: If DAS 804A-type is connected for selective automatic answering, the AUTO button must be operated in order to automatically answer the call. If DAS 804A-type is connected for permanent automatic answering without the AUTO button, the CPE must be programmed to answer data calls automatically.

4.04 When using two 2-wire direct distance dialing (DDD) lines and DAS 804A-type, DS 201A- and 201B-type can provide full-duplex service. Manual calling and answering are required.

(a) **Calling Procedure:** Depress the TALK button and select the desired line by depressing either the DD1 or DD2 button. This connects the dial and handset to the desired line and lights the appropriate DD lamp to indicate which line is in use. Dial the distant station in

TABLE B
TELEPHONE LINE INTERFACE

PIN NO.	DESIGNATION	FUNCTION
1	RG2	Ring Indicator 2
2	-12V	Negative Battery
3	Not Used	
4	RG1	Ring Indicator 1
5	TK LAMP	TALK Lamp (on 804A)
6	TEK 1	TEST Key 1
7	DT1	Data Tip 1
8	DR1	Data Ring 1
		Transmit Pair
9	DT	Data Tip
10	DR	Data Ring
		Receive Pair
11	AR	ACU Ring (on 801)
12	ADT	ACU Data Tip (on 801)
13	Not Used	
14	TEK 2	TEST Key 2
15	LSM1	Line Status Make Contact 1
16	GRD	Ground
17	RDY	Ready From Customer
18	LSM2	Line Status Make Contact 2
19	RC	Remote Control From Customer
20	+12V	Positive Battery
21	RM2	Ring Memory Hold Circuit
22	RM3	Ring Memory Control
23	A GRD	Signal Ground
24	RM4	Ring Memory Set Circuit
25	ITO	Interlock Obsolete

the usual manner. The calls must be made from the DD1 or DD2 line of a station to the DD2 or DD1 line of the other station, respectively, for proper connection of the data set transmitter to receiver. When the contact is established, momentarily depress the AUX button to hold the line. Depress the other DD button and dial the distant station as before. Again depress the AUX button to hold the second line. After

verbally agreeing to begin data transmission, depress and release the DATA button. The DD lamps will extinguish and the DATA lamp will light, indicating that the data set is in the data mode and data transmission can begin. Place the telephone handset on-hook.

(b) **Answering Procedure:** At the called station, one of the DD buttons will flash to indicate

which line is being called. Depress the TALK button, lift the handset, and momentarily depress the DD button that is flashing. This will connect the handset to that line and light that DD lamp. When one line has been established, momentarily depress the AUX button to hold that line while waiting for a call on the other line. Do not place the telephone handset on-hook. When the second line is called, its associated DD button will flash. Momentarily depress the flashing DD button to answer the call, and again depress the AUX button to hold the second line. After

verbally agreeing to begin data transmission, depress and release the DATA button. The DATA lamp will light and the DD lamps will extinguish. The data set is now in the data mode.

4.05 Both stations should terminate the call. The procedures for termination are as follows:

(a) **Manually:** Lift the handset, depress the TALK button, and replace the handset on-hook.

TABLE C

DATA SETS 201A3, A4 AND 201B3, B4 OPTIONS

FEATURE OR OPTION		WIRING OPTION (NOTE 6)	CIRCUIT PACK	STRAP TERMINALS
Alternate Voice	Without 804A	ZJ	T10 (CP AN4)	(1,2)
	With 804A (requires option Y)	Z (Note 1)		Remove (1,2)
New Sync	Used	ZK	L1 (CP AN6)	None
	Not Used	W (Note 1)		(7,15)
Echo Delay	Used	V (Note 2)	L1 (CP AN6)	(1,5)(11,12)
	Not Used (Short Clear-to-Send Interval)	T (Note 3)		(11,16)
	Not Used (Long Clear-to-Send Interval)	ZL		(1,5)(11,16)
Terminal Impedance	600 Ohms	Y (Note 1)	L1 (CP AN6)	(6,10)(3,8)
	900 Ohms	X		(2,10)(3,4)
2-Wire or 4-Wire	4-Wire Private Line (Full-Duplex)	Continuous Carrier	L2 (CP AN7)	(22,24,25) (20,21,23) (13,16)(11,12)
		Carrier Controlled by Request-to-Send or Multiparty		ZB
	2-Wire PL or DDD (Half-Duplex)	ZC (Note 2)		(22,24)(20,23) (15,25)(10,21) (9,14,17)
Transmitter Line Signal (dBm)	0	G	L2 (CP AN7)	(26,30)
	-2	F		(27,30)
	-4	E		(28,30)
	-6	B		(29,30)
	-8	A (Note 1)		(30,31)

TABLE C (Cont)

DATA SETS 201A3, A4 AND 201B3, B4 OPTIONS

FEATURE OR OPTION		WIRING OPTION (NOTE 6)	CIRCUIT PACK	STRAP TERMINALS
Receiver Line Signal (Notes 4 and 5)	Rec Sig (dBm) Max Line Noise (dBrnc)		L2 (CP AN7)	
	Compromise Equalizer Out			
	-50 to -20 28	S		(5,7)
	-44 to -14 34	R		(1,7)(3,5)
	-38 to -8 40	Q		(6,7)(4,5)
	-32 to -2 46	N (Note 3)		(1,7)(3,6)(4,5)
	Compromise Equalizer In			
	-42 to -12 36	M		(2,7)(5,8)
	-36 to -6 42	K		(1,7)(2,3)(5,8)
	-30 to 0 48	J		(2,4)(5,8)(6,7)
	-24 to +6 54	H (Note 2)		(1,7)(3,6)(2,4) (5,8)
EIA RS-232-B Voltage Interface	Interlock (IT) Corresponds to Data Set Ready Function of RS-232-B	ZD (Note 1)	L4 (CP AP1)	(1,3)(5,6) (11,13)(21,24)
	Ring Indicator 1 (RG1) Corresponds to Ring Indicator Function of RS-232-B	ZF (Note 1)		(9,10)(17,18) (19,20)(21,22) (8,14,15)
	Remote Control (RC) Corresponds to Data Terminal Ready Function of RS-232-B			
Contact Closure Interface	Interlock (IT)	ZE		(1,2)(4,5,7) (11,12,24)
	Ring Indicator 1 (RG1); Ring Indicator 2 (RG2); Remote Control (RC); Remote Release (RR); Ready (RDY)	ZG		(8,9)(15,16) (18,20)(22,23)

Note 1: Factory-wired option for 201A3, A4 and 201B3, B4.

Note 2: Factory-wired option for 201A3, A4 only.

Note 3: Factory-wired option for 201B3, B4 only.

Note 4: Usually, the equalizer is not used on private lines.

Note 5: Option J should be used when loop loss is less than 4 dB. Option K should be used when loop loss is between 4 and 10 dB. If line noise causes faulty operation of the data terminal when using option K, then option J should be used.

Note 6: The designation "factory-wired" indicates that the option will be installed by WECO at the factory on new data sets and at the distributing house on class C sets. A set that has been previously in service and not returned to WECO may have any option installed. Installation of the correct options should be verified before again placing the set in service.

TABLE D
CIRCUIT PACKS USED IN DATA SET 201A, B-TYPE

CIRCUIT PACK DESCRIPTION	CARD LOCATION	CPS AN CODE	CPS CODE	EQUIPMENT DESIGNATION	ASSEMBLY NUMBER	SD-1D060-01 SHEET	DATA SET 201A, B-TYPE							
							A1	A2	A3	A4	B1	B2	B3	B4
CIRCUIT PACKS COMMON TO ALL 201A, B-TYPE SETS														
Transmitter Data Logic	T4	AN43	CPS 5	ED-1D028-30,G2	A-835985	J473	X	X	X	X	X	X	X	X
Envelope Binary Count	T6	AN46	CPS 7	ED-1D030-30,G2	A-835988	J476	X	X	X	X	X	X	X	X
Phase Logic	T7	AN47	CPS 8	ED-1D031-30,G1	A-835989	J477	X	X	X	X	X	X	X	X
Timing Control	T9	AN3	CPS 10	ED-1D033-30,G3	A-835290	J127	X	X	X	X	X	X	X	X
Line Circuits II	L1	AN6	CPS 14	ED-1D037-30,G1	A-835293	J130	X	X	X	X	X	X	X	X
360A Equalizer	L3	—	—	—	—	—	X	X	X	X	X	X	X	X
Auto Vol Control I } Auto Vol Control II } Preamplifier	R1	AN8	CPS 16	ED-1D013-30,G1	A-835645	J182	X	X	X	X	X	X	X	X
	R2	AN9	CPS 17	ED-1D014-30,G1	A-835646	J183	X	X	X	X	X	X	X	X
	R3	AN1	CPS 18	ED-1D015-30,G1	A-835228	J125	X	X	X	X	X	X	X	X
Demodulator	R6	AN54	CPS 19	ED-1D016-30,G1	A-835996	J484	X	X	X	X	X	X	X	X
Data Sample	R7	AN55	CPS 20	ED-1D017-30,G1	A-835997	J485	X	X	X	X	X	X	X	X
Demodulator	R8	AN54	CPS 19	ED-1D016-30,G1	A-835996	J484	X	X	X	X	X	X	X	X
Data Sample	R9	AN56	CPS 33	ED-1D018-30,G1	A-835998	J486	X	X	X	X	X	X	X	X
Receiver Data Logic	R10	AN57	CPS 21	ED-1D019-30,G2	A-835999	J487	X	X	X	X	X	X	X	X
Carrier On-Off	R12	AN59	CPS 23	ED-1D021-30,G1	A-836001	J489	X	X	X	X	X	X	X	X
CIRCUIT PACKS USED IN SPECIFIC 201A, B-TYPE SETS														
Osc for Int Timing	T1	AN38	CPS 2	ED-1D025-30,G3	A-835980	J468	X		X					
Osc for Int Timing	T1	AN60	CPS 2	ED-1D025-30,G4	A-836026	J517					X		X	
Osc for Ext Timing	T1	AN39	CPS 27	ED-1D057-30,G1	A-835981	J469		X		X				
Osc for Ext Timing	T1	AN61	CPS 27	ED-1D057-30,G2	A-836027	J518						X		X
Timing 1 for Int Timing	T2	AN40	CPS 3	ED-1D026-30,G5	A-835982	J470	X		X					
Timing 1 for Int Timing	T2	AN62	CPS 3	ED-1D026-30,G6	A-836028	J519					X		X	
604C Filter	T2	—	—	—	—	—		X		X				
604D Filter	T2	—	—	—	—	—						X		X
Timing II for Int Timing	T3	AN41	CPS 4	ED-1D027-30,G3	A-835983	J471	X		X					
Timing II for Int Timing	T3	AN63	CPS 4	ED-1D027-30,G4	A-836029	J520					X		X	
Timing for Ext Timing	T3	AN42	CPS 28	ED-1D058-30,G3	A-835984	J472		X		X		X		X
Input Buffer — Int Timing	T5	AN44	CPS 6	ED-1D029-30,G1	A-835986	J474	X		X		X		X	
Input Buffer — Ext Timing	T5	AN45	CPS 29	ED-1D059-30,G1	A-835987	J475		X		X		X		X
Channel Binary Counter	T8	AN48	CPS 9	ED-1D032-30,G1	A-835990	J478	X	X	X	X	X		X	
Channel Binary Counter	T8	AN49	CPS 30	ED-1D060-30,G1	A-835991	J479						X		X

TABLE D (Cont)
CIRCUIT PACKS USED IN DATA SET 201A, B-TYPE

CIRCUIT PACK DESCRIPTION	CARD LOCATION	CPS AN CODE	CPS CODE	EQUIPMENT DESIGNATION	ASSEMBLY NUMBER	SD-1D060-01 SHEET	DATA SET 201A, B-TYPE							
							A1	A2	A3	A4	B1	B2	B3	B4
CIRCUIT PACKS USED IN SPECIFIC 201A, B-TYPE SETS														
Line Amplifier	T10	AN50	CPS 11	ED-1D034-30,G2	A-835992	J480	X	X			X	X		
Line Amplifier	T10	AN4	CPS 11	ED-1D034-30,G2	A-835291	J128			X	X			X	X
Line Transformer	T11	AN51	CPS 12	ED-1D035-30,G1	A-835993	J481	X	X			X	X		
Line Transformer	T11	AN5	CPS 12	ED-1D035-30,G1	A-835292	J129			X	X			X	X
Modulators and Filters	T12	AN52	CPS 13	ED-1D036-30,G1	A-835994	J482	X	X	X	X				
Modulators and Filters	T12	AN64	CPS 13	ED-1D036-30,G2	A-836030	J521					X	X	X	X
Line Circuits I	L2	AN53	CPS 15	ED-1D038-30,G1	A-835995	J483	X	X			X	X		
Line Circuits I	L2	AN7	CPS 15	ED-1D038-30,G1	A-835294	J131			X	X			X	X
Automatic Answer Unit	L4	—	—	ED-1D039-30,G2	—	—	X	X			X	X		
Interface Circuit	L4	AP1	—	—	A-835295	J124			X	X			X	X
844A Network	R4,R5	—	—	—	—	—	X	X	X	X				
488B Network	R4,R5	—	—	—	—	—					X	X	X	X
Output Buffer	R11	AN58	CPS 22	ED-1D020-30,G1	A-836000	J488	X	X	X	X				
Output Buffer	R11	AN65	CPS 22	ED-1D020-30,G2	A-836031	J522					X	X	X	X
604A Filter Bit Sync Mod Bit Sync Filter Bit Sync Amp	R13	—	—	—	—	—	X	X	X	X				
	R14	AN10	CPS 24	ED-1D022-30,G1	A-835647	J185	X	X	X	X				
	R15	AN11	CPS 25	ED-1D023-30,G1	A-835648	J186	X	X	X	X				
	R16	AN2	CPS 26	ED-1D024-30,G1	A-835229	J126	X	X	X	X				
604B Filter Bit Sync Mod Fit Sync Filter Bit Sync Amp	R13	—	—	—	—	—					X	X		
	R14	AN10	CPS 24	ED-1D022-30,G1	A-835647	J185					X	X		
	R15	AN12	CPS 25	ED-1D023-30,G2	A-835649	J188					X	X		
	R16	AN13	CPS 26	ED-1D024-30,G1	A-835360	J190					X	X		
604B Filter Bit Sync Mod Bit Sync Filter Bit Sync Amp	R13	—	—	—	—	—					X	X	X	X
	R14	AN10	CPS 24	ED-1D022-30,G1	A-835647	J185					X	X	X	X
	R15	AN12	CPS 25	ED-1D023-30,G2	A-835649	J188					X	X	X	X
	R16	AN66	—	—	A-836081	J581					X	X	X	X
POWER SUPPLIES USED IN 201A, B-TYPE SETS														
J87212A Rectifier	—	—	—	—	—	—	X	X			X	X		
J87212B Rectifier	—	—	—	—	—	—	X	X	X	X	X	X	X	X

Note 1: Use CPS AN Code for ordering replacement circuit packs.

Note 2: Groups BT1, BT2, BT3, and BT4 contain matched cards. When replacement of any card in the group is required, the entire group must be replaced.

Note 3: When converting from 201B1, B2 to 201B3, B4, group BT3 need not be replaced.

TABLE E
KEY FUNCTIONS

KEY NUMBER (LEFT TO RIGHT)	KEY DESIGNATION		FUNCTION
	804A1 804A3 804A5 804A7	804A2 804A4 804A6 804A8	
1	Dial Tone	—	Nonlocking key used to manually originate a call on a ground-start line when automatic calling unit requires ground-start operation.
	—	AUX*	Nonlocking key used to operate relays in external equipment when provided.
2	DD1	DD1*	Additional nonlocking keys used to operate relays in external equipment when provided.
	DD2	DD2*	
3	AUTO	AUTO	Locking key used to provide automatic answer of incoming data calls.
4	TEST	TEST	Not used with data sets 201A- and 201B-type.
5	TALK	TALK	Locking key used to connect telephone set to data line for talking.
6	DATA	DATA	Nonlocking key used to shift from talk to data mode.

* When both DD1 and DD2 keys are used to transfer from 2- or 4-wire private lines to 2-wire direct distance dialing (DDD) backup lines, the AUX key is used to hold the first DDD line until the second line is picked up.

(b) *Automatically:* Program the originating and receiving CPE to terminate the call.

5. REFERENCES

5.01 Additional information concerning DS 201A- and 201B-type and auxiliary apparatus is contained in the following publications:

SECTION	TITLE	SECTION	TITLE
590-002-100	Data Services—2000 and 2400 BPS Provided by Data Set 201-Type—Reference Guide	590-008-102	Data Auxiliary Set 804A-Type—Reference Guide
590-008-100	Data Auxiliary Set 801A-Type—Reference Guide	592-011-151	Data Sets 201A3,A4 and 201B3,B4—Transmitter-Receiver — Supplementary Information
590-008-101	Data Auxiliary Set 801C-Type—Reference Guide	592-011-152	Data Set 201-Type—Transmitter-Receiver—Theory of Operation and Supplementary Information
		592-011-201	Data Sets 201A3,A4 and 201B3,B4—Transmitter-Receiver — Installation and Connections
		592-011-301	Data Sets 201A3,A4 and 201B3,B4—Transmitter-Receiver — Maintenance

SECTION 592-011-101

SECTION	TITLE	SECTION	TITLE
592-011-501	Data Sets 201A3,A4, and 201B3,B4— Transmitter-Receiver — Test Procedures	598-012-150	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling—Theory of Operation and Supplementary Information
598-010-100	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Description and Operation	598-012-151	Data Auxiliary Sets 801C3 and 801C4 for Automatic Calling—Theory of Operation and Supplementary Information
598-010-101	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling— Description and Operation	598-012-200	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling— Installation
598-010-151	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Theory of Operation and Supplementary Information	598-012-201	Data Auxiliary Sets 801C3 and 801C4—Installation and Connections
598-010-200	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Installation and Connections	598-012-202	Data Auxiliary Set 801C-L1/2— Installation and Connection
598-010-201	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling— Installation and Connections	598-012-300	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling— Maintenance
598-010-300	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Maintenance	598-012-301	Data Auxiliary Sets 801C3 and 801C4—Maintenance
598-010-301	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling— Maintenance	598-012-500	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling—Test Procedures
598-010-500	Data Auxiliary Sets 801A1, 801A2, 801A3, and 801A4 for Automatic Calling—Test Procedures	598-012-501	Data Auxiliary Sets 801C3 and 801C4—Test Procedures
598-010-501	Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Test Procedures	598-012-502	Data Auxiliary Set 801C-L1/2—Test Procedures
598-012-100	Data Auxiliary Sets 801C1 and 801C2 for Automatic Calling— Identification and Operation	598-030-100	Data Auxiliary Set 804A-Type— Description and Operation
598-012-101	Data Auxiliary Sets 801C3 and 801C4—Description and Operation	598-080-100	Data Auxiliary Set 828A— Description and Operation
598-012-102	Data Auxiliary Set 801C-L1/2— Description and Operation	598-080-101	Data Auxiliary Set 828C— Description and Operation
		598-080-200	Data Auxiliary Set 828A— Installation and Connections
		598-080-201	Data Auxiliary Set 828C— Installation and Connections

SECTION	TITLE	SECTION	TITLE
598-080-500	Data Auxiliary Set 828A—Maintenance and Test Procedures		Backup)—Installation and Connections
598-080-501	Data Auxiliary Set 828C—Maintenance and Test Procedures	598-082-202	Data Auxiliary Set 829-Type—Multiple Channel Arrangements—(Switched Dial Backup)—Installation and Connections
598-082-100	Data Auxiliary Set 829-Type—Channel Interface Units—Voiceband Private Line Channels—Description	598-082-500	Data Auxiliary Set 829-Type—Channel Interface Units—Voiceband Private Line Channels—Maintenance and Test Procedures
598-082-101	Data Auxiliary Set 829-Type—Supplementary Functions for Voiceband Private Line Channels—(Alternate Voice and Dial Backup)—Description	598-082-501	Data Auxiliary Set 829-Type—Supplementary Functions for Voiceband Private Line Channels—(Alternate Voice and Dial Backup)—Test Procedures
598-082-102	Data Auxiliary Set 829-Type—Multiple Channel Arrangements—(Switched Dial Backup)—Description	598-082-502	Data Auxiliary Set 829-Type—Multiple Channel Arrangements—(Switched Dial Backup)—Test Procedures
598-082-200	Data Auxiliary Set 829-Type—Channel Interface Units—Voiceband Private Line Channels—Installation and Connections	668-102-500	Data Test Center—904B- and 904D-Types—Test Procedures—Data Set 201-Type—Dynamic Test
598-082-201	Data Auxiliary Set 829-Type—Supplementary Functions for Voiceband Private Line Channels—(Alternate Voice and Dial	5.02	Detailed information concerning DS 201A- and 201B-type is contained in CD- and SD-1D186-01.