SD-73060-01

SHEET INDEX

CONTENTS	SHEET NO.
SHEET INDEX CIRCUIT NOTES EQUIPMENT NOTES OPTION INDEX SUPPORTING INFORMATION	1
FS 1 (FOR DATA SET 108D-L1) APP FIG. 1	2
CPS 1 (FOR DATA SET 108D,L1)	3A 3B 3C

CIRCUIT NOTES:

101.

DESIG	FUSE AMP	POTENTIAL	ONE PER
	.180 .180	+24 FLT -24 FLT	DATA SET DATA SET

BATTERY SYMBOL	VOLTAGE
+24	21 TO 27
-24	-21 TO-27

THE MAGNITUDE OF THE TWO VOLTAGE SOURCES SHALL TRACK WITHIN ±2 VOLTS

102.

FEATURE OR OPTION			PROVIDE APP FIG.	PROVIDE APP OR WRG	PROVIDE QUANTITY	FACTORY FURNISHED
DATA SET 108D			1		1 PER CKT	
4-WIRE SERVICE				Z		
2-WIRE SERVICE				Y		✓
DIRECTIONAL CONTROL	C.O.HUB	FDX		X		
		HDX		W		
	STATION			X		✓
TL LEAD	SPACE HOLD			V		
	MARK HOLD			U		✓
RL LEAD	SPACE HOLD			T		
	MARK HOLD			S		✓

CIRCUIT NOTES (CONT):

103.

RECORD OF CHANGES							
CHANGED ON ISS	IF MARKINGS ON SET SPECIFY CODE	IF MARKINGS ON SET SPECIFY SERIES	SEE NOTE	USE STD	USE	USE MD	USE
2B	1080	2	203	Q		R	
4B				M		N	
6D1				ZB		ZA	
7B1		4		ZE,ZG		ZD,ZF	
9B1		5		ZC		ZB	
9B1		9		ZJ		ZH	

EQUIPMENT NOTES:

201. THE CODE OF THE DATA SET IS COMPOSED OF THE BASIC CODE FOLLOWED BY THE LIST NUMBERS. EXAMPLE 108D-L1

202. APP FIG. CROSS REFERENCE TO DATA SET CODE

108D LIST	APPLICABLE APP FIG.	APP OR WRG
1	1	

203. FOR DATA SET 108D-L1
(A) SERIES 1 DATA SET, R OPTION
(T1, 28 VOLT, 24-30 MA LAMP).
(B) SERIES 2 DATA SET, Q OPTION
(52A LAMP).

SUPPORTING INFORMATION

CATEGORY	NO.
CONNECTOR ON FRAME	927A
BSP	312-805-100 591-028-100 591-028-101 591-028-102 591-028-180
MANUFACTURING TESTING REQUIREMENTS	X-17560

OPTION INDEX

APP OR WRG	LOCATION

DWG ISSUE	RECORD ISSUE	DATE ISSUED	DRAWN	APPD
1	1	8-6-68	HSW	TJD HWZ ARM
2B	1 APP 1B	2-17-70	ATD OL	MCG HWZ JS
3A	1 APP 2A	2-17-70	DS OL	TD HWZ JS
4B	1 APP 3B	2-17-70	DS OL	TD HWZ JS
5D1	1 APP 4D1	4-8-72	AEZ	LJM JZD RTR
6D1	1 APP 5B1	11-7-73	GCS AEZ	MCG JES RTR
7B1	1 APP 6B1	11-7-73	GCS AEZ	MCG JES RTR
8D1	1 APP 7D1	11-7-73	GCS AEZ	MCG JES RTR
9B1	1 APP 8B1	11-7-73	GCS AEZ	MCG JES RTR
10B1	1 APP 9B1	9-22-76	AEZ	JJC HJM RTR

10B1

SD-73060-01 1L99

DATA SYSTEMS
CENTRAL OFFICE AND STATION DATA SET 108D TYPE

AT&T CO STANDARD

SD-73060-01-1
5 SHEETS

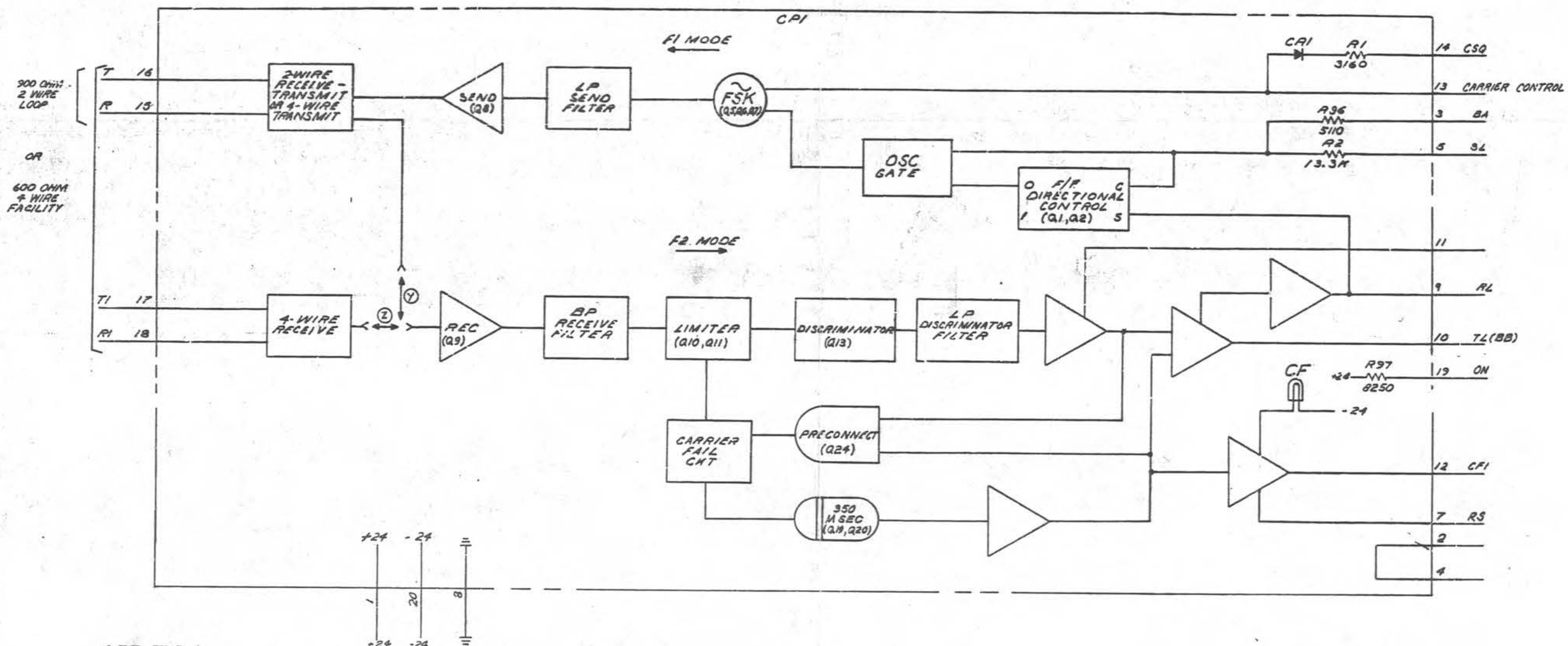
BELL TELEPHONE LABORATORIES INCORPORATED

2 6S

SD-73060-01-1

FS 1

(FOR DATA SET 108D-L1)



APP FIG. I

DATA SET

EQPT LOC		J1	
DESIG		CP1	
CODE		108D-L1	
OPTION			
ELEM IDENT		TERM.	
TERM		DESIG	FS LOC
20		-24	2E2
19		CC	2A0
18		R1	2C0
17		T1	2C0
16		T	2A0
15		R	2B0
14			2A8
13			2A8
12		CF1	2D8
11			2C8
10		TL	2C8
9		RL	2C8
8		GRD	2E2
7		CF	2E8
6			
5		SL	2B8
4			2E8
3		BA	2B8
2			2E8
1		+24	2E2

ISSUE 10B1

DATA SET 108D TYPE

SD-73060-01-2

BELL TELEPHONE LABORATORIES INCORPORATED

6S

SD-73060-01-2

PART OF CPS I

(FOR DATA SET 108D-LI)

F1 MODE

F2 MODE

TP1 TP2 TP6 TP7 TP8 TP11 TP13

T1 T2 T3 T4 T5 T6

Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24

CR1 CR2 CR3 CR4 CR5 CR6 CR7 CR8 CR9 CR10 CR11 CR12 CR13 CR15 CR16 CR17 CR18 CR19 CR20 CR21 CR22 CR23 CR24 CR25 CR26 CR27 CR28 CR29 CR30 CR31

RV1 RV2 RV3 RV4 RV5 RV6 RV7 RV8 RV9 RV10 RV11 RV12 RV13

L1 .239H; L2 .931H; L3 .144H; L4 .0398H

C1 .0047; C2 .133 (2A .133, 2B .127); C3 .133; C4 .0337; C5 .0261; C6 .0337; C7 1; C8 .187; C9 .133; C10 5; C11 2740 PF; C12 3630 PF; C13 .0453; C14 .115; C15 .0178; C16 .140; C17 1; C18 1; C19 5; C20 5; C21 1; C22 .115; C23 .133; C24 .1; C25 .1; C26 .203; C27 0.47; C28 10; C29 10; C30 7150 PF

R1 3160; R2 13.3K; R3 12,100; R4 12,100; R5 30,100; R7 5110; R8 5110; R9 1470; R10 750; R11 5110; R12 2370; R13 5110; R14 2490; R15 4640; R16 464; R17 1100; R18 CW 25K; R19 300; R20 681; R21 787; R22 953; R23 5.6; R24 5.6; R25 5.6; R26 5.6; R27 432; R28 2150; R29 10K; R30 976; R31 464; R32 215; R34 215; R35 2490; R36 2370; R37 CW 25K; R38 1.1K; R39 7.5K; R40 7.5K; R41 7.5K; R42 2370; R43 1000; R44 1780; R45 237; R46 464; R47 1.1K; R48 1.1K; R49 2370; R50 5110; R51 12.1K; R52 178; R53 7.5K; R54 7.5K; R55 5620; R56 12.1K; R57 2740; R58 23,700; R59 1960; R60 10K; R61 10K; R62 ZH 38.3K, ZJ 31.6K; R63 10K; R64 969; R65 5110; R66 969; R67 1.1K; R68 5620; R69 7.5K; R71 61.9K; R72 10K; R73 12.2K; R74 2150; R76 2370; R77 7.5K; R78 5110; R79 23,700; R80 8250; R81 10K; R82 47 R 365 Ω; R83 23,700; R84 5110; R85 2740; R86 2370; R87 10K; R88 10K; R89 10K; R90 5110; R91 1210; R92 2370; R93 4640; R94 3620; R95 5110; R96 5110; R97 8250; RG 23,700; RM 30K; RN 30K

SI(DX) SW SEE NOTE 7; SI(RL) SW SEE NOTE 7; SI(TL) SW SEE NOTE 7

D-SCREW SWITCH SEE NOTE 5; C SCREW SWITCH SEE NOTE 5; A SCREW SWITCH SEE NOTE 8; D SCREW SWITCH SEE NOTE 6

900Ω; 600Ω

CF

- 12 VOLT SUPPLY
+ 6.2 VOLT SUPPLY
- 2 VOLT SUPPLY

DRAWING ISSUE: 1 (10H); 2B; 3A; 6B

ISSUE 10B1

PART OF CPS I

DATA SET 108D TYPE (2)

SD-73060-01-3A

BELL TELEPHONE LABORATORIES INCORPORATED 6S

SD-73060-01-3A

PART OF CPS I
(FOR DATA SET 108D-L1)

COMPONENT LIST:

CAPACITOR

DESIG	CODE
C1	KS-19774,L1, .0047
C2	(ZA) 570FY (ZB) 570PP
C3	570FY
C4	570HB
C5	570LF
C6	570HB
C7	KS-19107 L4,1
C8	535DN
C9	535BK
C10	601A
C11	570NH
C12	570ES
C13	570PH
C14	570LR
C15	570PE
C16	535DE
C17	600A
C18	600A
C19	601A
C20	601A
C21	600A
C22	570LR
C23	570FY
C24	535AB
C25	535AB
C26	535B
C27	KS-19107L4, 0.47
C28	601B
C29	601B
C30	570AS

DIODE

DESIG	CODE
CR1	458C
CR2	458C
CR3	KS-16986L2 - M1
CR4	458C
CR6	446AD
CR7	~~491A~~, 512B
CR8	~~491A~~, 512B
CR9	458C
CR10	458C
CR11	KS-16986L2 - M1
CR12	KS-16986L2 - M1
CR13	446B
CR14	KS-16986L2 - M1
CR15	458C
CR16	KS-16986L2 - M1
CR17	458C
CR18	KS-16986L2 - M1
CR19	~~491A~~, 512B
CR20	KS-16986L2 - M1
CR21	KS-16986L2 - M1
CR22	458C
CR23	KS-16986L2 - M1
CR24	458C

DIODE (CONT)

DESIG	CODE
CR25	446AD
CR26	446B
CR27	449A
CR28	KS-16986L2 - M1
CR29	KS-16986L2 - M1
CR30	KS-16986L2 - M1
CR31	459J
CR32	KS-16986L2 - M1
CR33	459AA

INDUCTOR

DESIG	CODE
L1	1642A .239H
L2	1642A .931H
L3	1642A .144H
L4	1642A .0398H
L5	1642A 2.23H

LAMP

DESIG	CODE
CF	(Q) 52A (R) T1 (BULB)

POTENTIOMETER

DESIG	CODE
R18	KS-16803 L6, 25K
R37	KS-20231L2, 25K
R61	KS-20231L2, 10K

RESISTOR

DESIG	CODE
R1	~~KS-16312,L3A~~, KS-20616,L1A, 3160
R2	~~KS-16311,L3A~~, KS-20616,L1A, 13.3K
R3	~~KS-16645,L1~~, KS-20616,L1A, ~~12K~~, 12,100
R4	~~KS-16645,L1~~, KS-20616,L1A, ~~12K~~, 12,100
R5	~~KS-16645,L1~~, KS-20616,L1A, ~~30K~~, 30,100
R6	(M) ~~KS-16645,L1~~, KS-20616,L1A, ~~24K~~, 23,700 (N) KS-16645,L1,30K
R7	~~KS-16312,L3A~~, KS-20616,L1A, 5110
R8	~~KS-16645,L1~~, KS-20616,L1A, ~~5.1K~~, 5110
R9	~~KS-13490,L1~~, KS-20810,L1A, ~~1.5K~~ 1470
R10	~~KS-16312,L3A~~, KS-20616,L1A, 750
R11	~~KS-16645,L1~~, KS-20616,L1A, ~~5.1K~~, 5110
R12	~~KS-16311,L3A~~, KS-20616,L1A, 2370
R13	~~KS-16312,L3A~~, KS-20616,L1A, 5110
R14	~~KS-16311,L3A~~, KS-20616,L1A, 2490
R15	~~KS-16311,L3A~~, KS-20616,L1A, 4640
R17	~~KS-16311,L3A~~, KS-20616,L1A, 1100
R19	~~KS-16312,L3A~~, KS-20616,L1A, 3010
R20	~~KS-16311,L3A~~, KS-20616,L1A, 681
R21	~~KS-16311,L3A~~, KS-20616,L1A, 787
R22	~~KS-16311,L3A~~, KS-20616,L1A, 953
R23	KS-19151,L1, 5.6
R24	KS-19151,L1, 5.6
R25	KS-19151,L1, 5.6
R26	KS-19151,L1, 5.6
R27	~~KS-16311,L3A~~, KS-20616,L1A, 432
R28	~~KS-16311,L3A~~, KS-20616,L1A, 2150
R29	~~KS-16311,L3A~~, KS-20616,L1A, 10K
R30	~~KS-16311,L3A~~, KS-20616,L1A, 976
R31	~~KS-16645,L1~~, KS-20616,L1A, ~~470~~, 464
R32	~~KS-16311,L3A~~, KS-20616,L1A, 215

RESISTOR (CONT)

DESIG	CODE
R34	~~KS-16311,L3A~~, KS-20616,L1A, 215
R35	~~KS-16312,L3A~~, KS-20616,L1A, 2490
R36	~~KS-16311,L3A~~, KS-20616,L1A, 2370
R38	~~KS-13490,L1~~, KS-20810,L1A, 1.1K
R39	~~KS-16311,L3A~~, KS-20616,L1A, 7.5K
R40	~~KS-16645,L1~~, KS-20616,L1A, 7.5K
R41	~~KS-16311,L3A~~, KS-20616,L1A, 7.5K
R42	~~KS-16311,L3A~~, KS-20616,L1A, 2370
R43	~~KS-16311,L3A~~, KS-20616,L1A, 1000
R44	~~KS-16311,L3A~~, KS-20616,L1A, 1780
R45	~~KS-16311,L3A~~, KS-20616,L1A, 237
R46	~~KS-16645,L1~~, KS-20616,L1A, ~~470~~, 464
R47	~~KS-13490,L1~~, KS-20810,L1A, 1.1K
R48	~~KS-13491,L1~~, KS-20289,L6C, 1.1K
R49	~~221A~~, KS-20810,L1A, 2370
R50	~~KS-16311,L3A~~, KS-20616,L1A, 5110
R51	~~KS-16311,L3A~~, KS-20616,L1A, 12.1K
R52	~~KS-16311,L3A~~, KS-20616,L1A, 178
R53	~~KS-16311,L3A~~, KS-20616,L1A, 7.5K
R54	~~KS-16311,L3A~~, KS-20616,L1A, 7.5K
R55	~~KS-16311,L3A~~, KS-20616,L1A, 5620
R56	~~KS-16311,L3A~~, KS-20616,L1A, 12.1K
R57	~~KS-13490,L1~~, KS-20810,L1A, ~~2.7K~~, 2740
R58	~~KS-16645,L1~~, KS-20616,L1A, ~~24K~~, 23,700
R59	~~KS-16311,L3A~~, KS-20616,L1A, 1960
R60	~~KS-16311,L3A~~ KS-20616,L1A, 10K
R62	~~KS-16311,L3A~~, KS-20616,L1A, (ZH) 38.3K, (ZJ) 31.6K
R63	~~KS-16645,L1~~, KS-20616,L1A, 10K
R64	~~KS-16645,L1~~, KS-20616,L1A, ~~5.1K~~, 5110
R65	~~KS-16645,L1~~, KS-20616,L1A, ~~5.1K~~, 5110
R66	~~KS-16312,L3A~~, KS-20616,L1A, 464
R67	~~KS-16312,L3A~~, KS-20616,L1A, 1K
R68	~~KS-16311,L3A~~, KS-20616,L1A, 5620
R69	~~KS-16311,L3A~~, KS-20616,L1A, 7.5K
R70	~~KS-16311,L3A~~, KS-20616,L1A, 19.6K
R71	~~KS-16311,L3A~~, KS-20616,L1A, 61.9K
R72	~~KS-16645,L1~~, KS-20616,L1A, 10K
R73	~~KS-16311,L3A~~, KS-20616,L1A, 42.2K
R74	~~KS-16311,L3A~~, KS-20616,L1A, 2150
R76	~~KS-13490,L1~~, KS-20810,L1A, ~~2.4K~~, 2370
R77	~~KS-16311,L3A~~, KS-20616,L1A, 7.5K
R78	~~KS-16645,L1~~, KS-20616,L1A, ~~5.1K~~, 5110
R79	~~KS-16645,L1~~, KS-20616,L1A, ~~24K~~, 23,700
R80	~~KS-16312,L3A~~, KS-20616,L1A, 8250
R81	~~KS-16311,L3A~~, KS-20616,L1A, 10K
R82	(Q) ~~KS-16645,L1~~, KS-20616,L1A, ~~360~~, 365 (R) KS-16645,L1,47
R83	~~KS-16645,L1~~ KS-20616,L1A, ~~24K~~, 23,700
R84	~~KS-16645,L1~~, KS-20616,L1A, ~~5.1K~~, 5110
R85	~~KS-13490,L1~~, KS-20810,L1A, ~~2.7K~~, 2740
R86	~~KS-13490,L1~~, KS-20810,L1A, ~~2.4K~~, 2370
R87	~~KS-16645,L1~~, KS-20616,L1A, 10K
R88	~~KS-16645,L1~~, KS-20616,L1A, 10K
R89	~~KS-16645,L1~~, KS-20616,L1A, 10K
R90	~~KS-16645,L1~~, KS-20616,L1A, ~~5.1K~~, 5110
R91	~~KS-13491,L1~~, KS-20289,L6C, ~~1.2K~~, 1210
R92	~~KS-16312,L3A~~, KS-20616,L1A, 2370
R93	~~KS-13490,L1~~, KS-20810,L1A, ~~4.7K~~, 4640
R94	~~KS-16311,L3A~~, KS-20616,L1A, 5620
R95	~~KS-16645,L1~~, KS-20616,L1A, ~~5.1K~~, 5110
R96	~~KS-16645,L1~~, KS-20616,L1A, ~~5.1K~~, 5110
R97	~~KS-16312,L3A~~, KS-20616,L1A, 8250
R98	~~KS-16311,L3A~~, KS-20616,L1A, 13.3K

TRANSFORMER

DESIG	CODE
T1	2597AN
T2	(ZD) 2564AM (ZE) 2564BH
T3	(ZF) 2564AN (ZG) 2564BJ
T4	2564L
T5	2597AL
T6	2597AM

TRANSISTOR

DESIG	CODE
Q1	~~183~~, 66J
Q2	~~183~~, 66J
Q3	~~166~~, 66G
Q4	51A
Q5	~~170~~, 51C
Q6	~~88~~, 66G
Q7	(ZA) 170, (ZB) 51A, (ZC) 51C
Q8	51A
Q9	~~166~~, 66G
Q10	51A
Q11	51A
Q12	~~166~~, 66G
Q13	~~166~~, 66G
Q14	~~166~~, 66G
Q15	~~183~~, 66J
Q16	~~166~~, 66G
Q17	51A
Q18	51A
Q19	~~183~~, 66J
Q20	~~183~~, 66J
Q21	51A
Q22	51A
Q23	~~166~~, 66G
Q24	~~183~~, 66J

VARISTOR

DESIG	CODE
RV1	100D
RV2	100D
RV3	100D
RV4	100E
RV5	100E
RV6	100E
RV7	100E
RV8	100E
RV9	100D
RV10	100D
RV11	100D
RV12	100D
RV13	100D

SWITCH

DESIG	CODE
S1	KS-20983,L1

CIRCUIT DESCRIPTION

SEE CD-73060-01

DRAWING ISSUE
1
2B
3A
4E

ISSUE 10B1

PART OF CPS I

DATA SET 108D TYPE ②

SD-73060-01-3B

BELL TELEPHONE LABORATORIES INCORPORATED 6S

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   RESISTANCE VALUES ARE IN OHMS.
   CAPACITANCE VALUES ARE IN MICROFARADS.
   VALUES PRECEDED BY THE SYMBOL + (PLUS)
   OR - (MINUS) ARE IN VOLTS.
2. ⏚ GROUND RETURN.
3. ~~THE KS-19151,L1, 5.6 OHMS CURRENT LIMITING RESISTORS DESIGNATED R25-R26 ARE ALLEN BRADLEY RESISTORS PER KS-11404,L1.~~
4. THE SECTIONS OF THE SCREW SWITCHES ARE NOT INTERLOCKED. EACH SECTION WORKS INDEPENDENTLY OF ONE ANOTHER.
5. ADJUST SCREW SWITCH (D)3-4 AND SCREW SWITCH (C) AS PER BSP ON INSTALLATION TO MAXIMIZE TRANSHYBRID LOSS. UNUSED SCREWS SHOULD BE STORED ON PLASTIC BLOCK.

HYBRID NETWORK SETTINGS FOR 2-WIRE APPLICATION

FACTORY FURNISHED OPTION	OPTION	TYPICAL LOOP FACILITY	TYPICAL 2-WIRE LOOP IMPEDANCE MEASURED AT 2125 HZ	SCREW SWITCH C		SCREW SWITCH D	
				OPEN	CLOSE	OPEN	CLOSE
✓	H	26NL(HC)	※900	1-2,3-4	2-3		3-4
	G	24NL(HC)	700	1-2,2-3	3-4	3-4	
	F	22NL(HC)	550	2-3	1-2,3-4	3-4	
	E	19NL(HC)	400	1-2,2-3	3-4		3-4
	B	16NL(HC)	280	2-3	1-2,3-4		3-4
	A	26H88(HC)	1180	1-2,3-4	2-3	3-4	
	A	24H88(HC)	1080	1-2,3-4	2-3	3-4	
	A	22H88(HC)	1060	1-2,3-4	2-3	3-4	
	A	19H98(HC)	1030	1-2,3-4	2-3	3-4	
	A	16H88(HC)	1130	1-2,3-4	2-3	3-4	

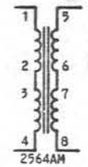
NL — NONLOADED (HC) — HIGH CAPACITY
※ COMPROMISE HYBRID NETWORK SWITCHING

NOTES: (CONT)

8. SOME OPTIONS ARE OBTAINED BY TIGHTENING AND OR LOOSENING OPTION SCREWS ON THE DATA SET. THESE OPTIONS ARE SHOWN BELOW. UNUSED SCREWS SHOULD BE STORED IN PLASTIC BLOCK.

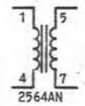
FACTORY FURNISHED OPTIONS	OPTION	A SCREW SWITCH	
		CLOSE	OPEN
	Z	1-2,3-4	2-3
✓	Y	2-3	1-2,3-4

9. OPTION (ZD) (MFR DISC)



2564AM

10. OPTION (ZF) (MFR DISC)



2564AN

5.

FACTORY FURNISHED OPTION	OPTION	RECEIVER DB REDUCTION IN GAIN	D SCREW SWITCH	
			CLOSE	OPEN
✓	K	6	-	1-2
	J	0	1-2	-

7. SOME OPTIONS ARE OBTAINED BY OPENING OR CLOSING METAL SLIDE SWITCHES ON THE DATA SET 108D (SERIES 3). DATA SET 108D (SERIES 4 AND HIGHER) USES A THREE PART ROTARY SCREW SWITCH S1 IN PLACE OF THE THREE SLIDE SWITCHES USED PREVIOUSLY. THE OPTIONS ARE SHOWN BELOW.

FACTORY FURNISHED OPTION	OPTION DESIG-NATION	FACE PLATE DESIGNATION	SERIES 1,2,3		SERIES 4 OR HIGHER	
			SWITCH	SWITCH POSITION	SWITCH	FACE PLATE POSITION DESIGNATION
✓	X	DX-F	S1(DX)	CLOSE	S1(DX)	F
	W	DX-H	S1(DX)	OPEN	S1(DX)	H
	V	TL-S	S2(TL)	CLOSE	S1(TL)	S
✓	U	TL-M	S2(TL)	OPEN	S1(TL)	M
	T	RL-S	S3(RL)	CLOSE	S1(RL)	S
✓	S	RL-M	S3(RL)	OPEN	S1(RL)	M

MANUFACTURING REFERENCES

CATEGORY	NO.
CONNECTOR ON FRAME	927A

SYMBOL
SHOWN IN DETAIL ON FS

SD-73060-01-3C

ISSUE 1081

DATA SET 108D TYPE

SD-73060-01-3C

BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6S