CPS-FC204

SHEET INDEX

CONTENTS	SHEET NO.	SHEET ISSUE
SHEET INDEX SYMBOL MANUFACTURING REFERENCES NOTES USED-ON TABLE	1	5
COMPONENT LIST CIRCUIT SCHEMATIC	2	5
CIRCUIT DESCRIPTION	3	5

RECORD OF CHANGES

DWG ISS	PREV FURN	STD	MFR DISC.	SEE NOTE

NOTES.

1. ⏚ GROUND RETURN
2. UNLESS OTHERWISE SPECIFIED:
   RESISTANCE VALUES ARE IN OHMS
   CAPACITANCE VALUES ARE IN MICROFARADS
   VALUES PRECEDED BY THE SYMBOL +(PLUS)
   OR -(MINUS) ARE IN VOLTS
3. BATTERY AND GROUND TERMINALS FOR THIS CIRCUIT PACK ARE AS FOLLOWS:

FUNCTION	TERMINAL
+3	000,119
+24	218,317
GRD	2G0,200

4. HORIZONTAL MOUNTING CENTERS ARE 0.5 INCH.

DWG ISSUE	EE OR CD ISSUED	DATE ISSUE	DRAWN	APPD
1		10-5-73	AS/SS NL	RWF MTS RFG
2D1		1-24-74	P/S NL	RWF MTS RFG
3D1		3-18-74	BTL NCL	RWF MTS RFG
4D1		4-3-74	BTL NCL	RWF MTS KFG
5B1		8-11-75	AS LRE	JJR MTS RFG

SYMBOL

HORIZONTAL DRIVER
ELEMENT IDENT
A

TERM. MOD.	FUNCT	TERM.	LOC
HS0	I	304	1G4
HS1	I	305	1G4
HS2	I	306	1G4
HS3	I	307	1G4
HS4	I	308	1G4
HS5	I	309	1G4
HS6	I	110	1G4
HS7	I	111	1G4
HS8	I	112	1G4
HS9	I	113	1G4
HS10	I	114	1G4
COM	Ø	106	1C5
FVERT	Ø	303	1B5
H0	Ø	204	1G4
H1	Ø	205	1G4
H2	Ø	206	1G4
H3	Ø	207	1G4
H4	Ø	208	1G4
H5	Ø	209	1G4
H6	Ø	011	1G4
H7	Ø	012	1G4
H8	Ø	013	1G4
H9	Ø	014	1G4
H10	Ø	015	1G4
+3	P	000	1F4
+3	P	119	1F4
+24	P	218	1F4
+24	P	317	1F4
GRD	G	2G0	1F4
GRD	G	200	1F4

SYSTEM USED ON	DESIGN CONTROL
NO. 2B ESS	1H

SUPPORTING INFORMATION

CATEGORY	NO.
CIRCUIT PACK CODE	FC204
CONNECTOR ON FRAME	947A OR 947C
SERIES NO. IDENT — ACCEPTABLE SERIES	2

CURRENT DRAIN: 10.5mA +3
55mA +24

SHEET INDEX NOTES

1. WHEN CHANGES ARE MADE IN THIS DRAWING ONLY THOSE SHEETS AFFECTED WILL BE REISSUED.
2. THIS SHEET INDEX WILL BE REISSUED AND BROUGHT UP TO DATE EACH TIME ANY SHEET OF THE DRAWING IS REISSUED, OR A NEW SHEET IS ADDED.
3. THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE FIRST SHEET.
4. SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER.
5. THE LAST ISSUE NUMBER OF THE FIRST SHEET INDEX IS RECOGNIZED AS THE LATEST ISSUE NUMBER OF THE DRAWING AS A WHOLE.

ISSUE 5B1

1T05

FC204 CIRCUIT PACK

HORIZONTAL DRIVER
CIRCUIT

AT&TCO
STANDARD

(2)

CPS-FC204
3 SHEETS

BELL TELEPHONE LABORATORIES
INCORPORATED

DWG SIZE 6S

PRINTED IN U.S.A.

CPS-FC204

PART OF CPS FC204

HORIZONTAL DRIVER

COMPONENT LIST

CAPACITOR

DESIG	CODE
[2] C1,C2	6004,1.0

DIODE

DESIG	CODE
[11] CR1.0-CR1.10	458H
[11] LR2.0-CR2.10	458H

RESISTOR

DESIG	CODE	
[11] R1.0-RT.10	~~257A, 2.15KΩ~~	KS-20616 L1A, 2.15KΩ
[11] R2.0-R2.10	~~KS-16645 L1, 5.6KΩ~~	, 5.56KΩ
[11] R3.0-R3.10	~~257A, 10KΩ~~	, 10KΩ
[11] R4.0-R4.10	~~257A, 590~~	KS-20616 L1A, 590

TRANSISTOR

DESIG	CODE
[11] Q1.0-Q1 10	66W
[11] Q2.0-Q2.10	66W

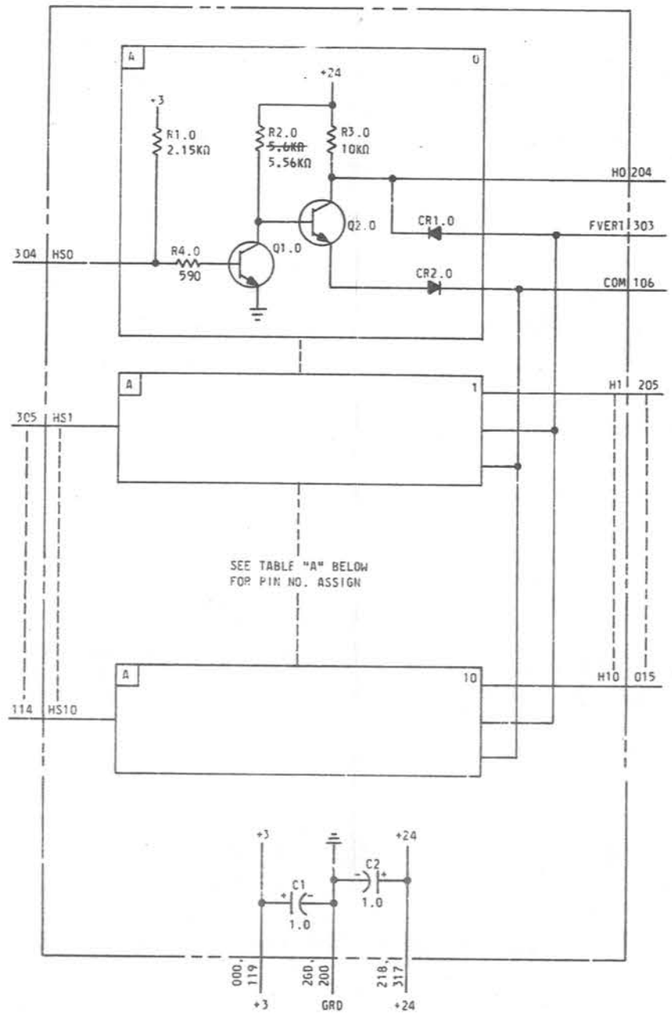

TABLE "A"

GROUP	HS	H
0	304	204
1	305	205
2	306	206
3	307	207
4	308	208
5	309	209
6	110	011
7	111	012
8	112	013
9	113	014
10	114	015

ISSUE 5B1

FC204 CIRCUIT PACK

BELL TELEPHONE LABORATORIES INCORPORATED

6S

CPS-FC204
SHEET 2

CPS-FC204

PART OF CPS FC 204

HORIZONTAL DRIVER CIRCUIT

CIRCUIT DESCRIPTION

A. FUNCTION

THIS CIRCUIT PACK DRIVES THE HORIZONTAL LEADS OF THE CENTRAL PULSE DISTRIBUTOR (CPD) MATRIX OF THE NO. 28 I/O CONTROL CIRCUIT.

B. DETAILED DESCRIPTION

RESISTORS R1 AND R4 AND TRANSISTOR Q1 ARE CONNECTED IN AN INPUT BUFFER CONFIGURATION SO THAT THE INPUTS (HS0 THROUGH HS10) CAN BE DRIVEN BY 1A LOW-POWER GATES. THE OUTPUT LEADS (H0 THROUGH H10) ARE DESIGNED TO DRIVE A 200 TO 268 OHM LOAD CONNECTED TO APPROXIMATELY 15 VOLTS. THE COM LEAD, WHICH IS COMMON TO EACH ONE OF THE 11 CIRCUITS, RETURNS TO THE LEVEL-CONTROL BOARD (FC 207). WHEN A CPD PULSE IS NOT TO BE PRODUCED EACH ONE OF THE INPUTS (HS0 THROUGH HS10) IS HIGH (INPUT VOLTAGE GREATER THAN 1.05 VOLTS). THIS RESULTS IN TRANSISTOR Q1 BEING SATURATED AND TRANSISTOR Q2 BEING CUT OFF. WHEN A CPD PULSE IS TO BE PRODUCED, ONE OF THE 11 CIRCUITS ON THIS PACK WILL BE SELECTED. A SELECTION IS MADE BY GROUNDING ONE OF THE INPUT LEADS (DRIVING THE INPUT LEAD LOW), WHICH RESULTS IN A LOW-IMPEDANCE PATH BETWEEN ONE OF THE OUTPUT LEADS AND THE COM LEAD.

MAINTENANCE TESTING

THE FVERT LEAD IS USED FOR MAINTENANCE TESTING. IT CAN SIMULATE THE EFFECT OF GENERATING A CPD PULSE ON THE HORIZONTAL DRIVE CIRCUITS WITHOUT ALLOWING CURRENT THROUGH THE CPD MATRIX. UNDER NORMAL OPERATION (NON-MAINTENANCE MODE) DIODE CR1 PREVENTS THIS LEAD FROM PROVIDING A LOW-IMPEDANCE PATH TO GROUND. SHORT CIRCUITS OR OPEN CIRCUITS IN ANY ONE OF THE TRANSISTORS OR DIODES SHOULD BE DETECTED DURING NORMAL ERROR CHECKING OR PERIODIC MAINTENANCE TESTING.

FILTERING

CAPACITORS C1 AND C2 PROVIDE FILTERING FOR THE +3 AND +24 VOLT POWER SUPPLIES USED ON THIS CIRCUIT PACK.

C. SYMBOL/LEAD MNEMONICS

MNEMONIC	TYPE*	DEFINITION
COM	BU	COMMON-CONNECTS TO THE COM(-) LEAD OF THE LEVEL-CONTROL BOARD WHICH PROVIDES POWER FOR THE HORIZONTAL MATRIX SELECTION.
FVERT	I	FALSE VERTICAL-PROVIDES A VERTICAL SELECTION PATH FOR MAINTENANCE WHICH DOES NOT ACCESS A CPD TRANSFORMER. THIS ALLOWS TESTING OF HORIZONTAL DRIVERS WITHOUT ALLOWING CURRENT TO FLOW IN THE MATRIX.
H0	Ø	HORIZONTAL DRIVER 0 +
HS0	I	HORIZONTAL SELECT 0 **
H1	Ø	HORIZONTAL DRIVER 1 +
HS1	I	HORIZONTAL SELECT 1 **
H2	Ø	HORIZONTAL DRIVER 2 +
HS2	I	HORIZONTAL SELECT 2 **
H3	Ø	HORIZONTAL DRIVER 3 +
HS3	I	HORIZONTAL SELECT 3 **
H4	Ø	HORIZONTAL DRIVER 4 +
HS4	I	HORIZONTAL SELECT 4 **
H5	Ø	HORIZONTAL DRIVER 5 +
HS5	I	HORIZONTAL SELECT 5 **
H6	Ø	HORIZONTAL DRIVER 6 +
HS6	I	HORIZONTAL SELECT 6 **
H7	Ø	HORIZONTAL DRIVER 7 +
HS7	I	HORIZONTAL SELECT 7 **
H8	Ø	HORIZONTAL DRIVER 8 +
HS8	I	HORIZONTAL SELECT 8 **
H9	Ø	HORIZONTAL DRIVER 9 +
HS9	I	HORIZONTAL SELECT 9 **
H10	Ø	HORIZONTAL DRIVER 10 +
HS10	I	HORIZONTAL SELECT 10 **

* BU - BUS
I - INPUT
Ø - OUTPUT

\+ THE SELECTED DRIVER OUTPUT IS CONNECTED THROUGH A LOW IMPEDANCE TO THE COM LEAD. THE UNSELECTED LEADS WILL BE HELD HIGH BY A HIGH-IMPEDANCE PATH TO +24 VOLTS.

** SELECTED WHEN LOW

CPS-FC 204

ISSUE 5B1

FC204 CIRCUIT PACK
HORIZONTAL DRIVER CIRCUIT (2)

CPS - FC 204
SHEET 3

BELL TELEPHONE LABORATORIES INCORPORATED

SIZE 6C