

ITT 3281 AND 3283 RTC (BSC)

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11/79 FDP/TEP

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1. STRAPPING GUIDE AND COMPONENT LOCATION

1.1 Strapping Guide

Table 1 - 1

BOARD TYPE	SWITCH NO.		FUNCTION
EIA Board 1924 All Sched ON	S1	A	Baud rate selection if internal clock is used (S1-D OFF) ON ← S1 - A B Baud Rate OFF OFF 300 ON OFF 600 OFF ON 1200 ON ON 2400
	S1	B	
	S1	C	Not used
	S1	D	OFF-Internal Clock; On-External Clock
	Strap A, B		Operation of RTS signal in Half Duplex or Full Duplex Mode. See TM RTC-020. Strap - A B Operation IN OUT Half Duplex (Normal) OUT IN Full Duplex
	Strap C		IN-EBCDIC; OUT-ASCII
	Strap D		IN-2 wire (Blocks RTS when CD is true)
	Strap E		OUT-4 wire (Allow RTS anytime) Always IN-Blocks RCV Data when xmitting data
	Strap F		
	Strap G		
BSC Board 1911 All Sched ON	S1	A	Bit 1-LSB Control Unit Address
	S1	B	Bit 2 switches S1-A thru S2-A
	S1	C	Bit 3 are set for the lower
	S1	D	Bit 4 5 bits of the CU
	S2	A	Bit 5 address in EBCDIC. Bits
	S2	B	Bit 8-Select 6 & 7 are ignored. Bit
	S2	C	Bit 8-Poll 8 in the select address is set with S2-B. Bit 8 in the poll address is set with S2-C. Switch Logic: OFF=1, ON=0.
			See Table 1-2
	S2	D	Not Used

1.1 Strapping Guide (Continued)

Control Board 1907	S1	0	Not Used
	S1	1	ON enables true image copy in local print with form feed, i.e., the FF does not replace an image character. Requires 214 or later printer table firmware.
	S1	2	ON enables Escape A and B option OFF causes the Escape to be converted to a space
	S1	3	ON enables Auto Clear (Local Clear) <i>off clear with form feed</i>
	S2	4	ON enables tube to tube copy if S2-5 is OFF
	S2	5	OFF enables Local Copy/Print
	S2	6	ON=Auto form feed before Local Print OFF=Auto form feed after Local Print (See S1-1 and S2-7)
	S2	7	ON enables Auto form feed in Local Print (See S2-6)
	Strap A		Always OUT
	Strap B		Always OUT
	Strap C		Always IN
Memory Board 2378	Strap A		Normal <u>IN</u>
	Strap B		Installed as Test Memory OUT
1908 only	Strap C		Always OUT
	Strap D		Always OUT
	Strap E		Always IN
	Strap F		Always IN
	Strap G		Always OUT
Port Board 1928	Strap A		Always <u>IN</u>
Back panel (rear)	Strap		Function
	J9E		Plug strap selects adaptor A for capture
	J9F		Plug strap selects adaptor B for capture
	J9H		Plug strap selects adaptor C for capture
	J9J		Plug strap selects adaptor D for capture

1.1 Strapping Guide (continued)

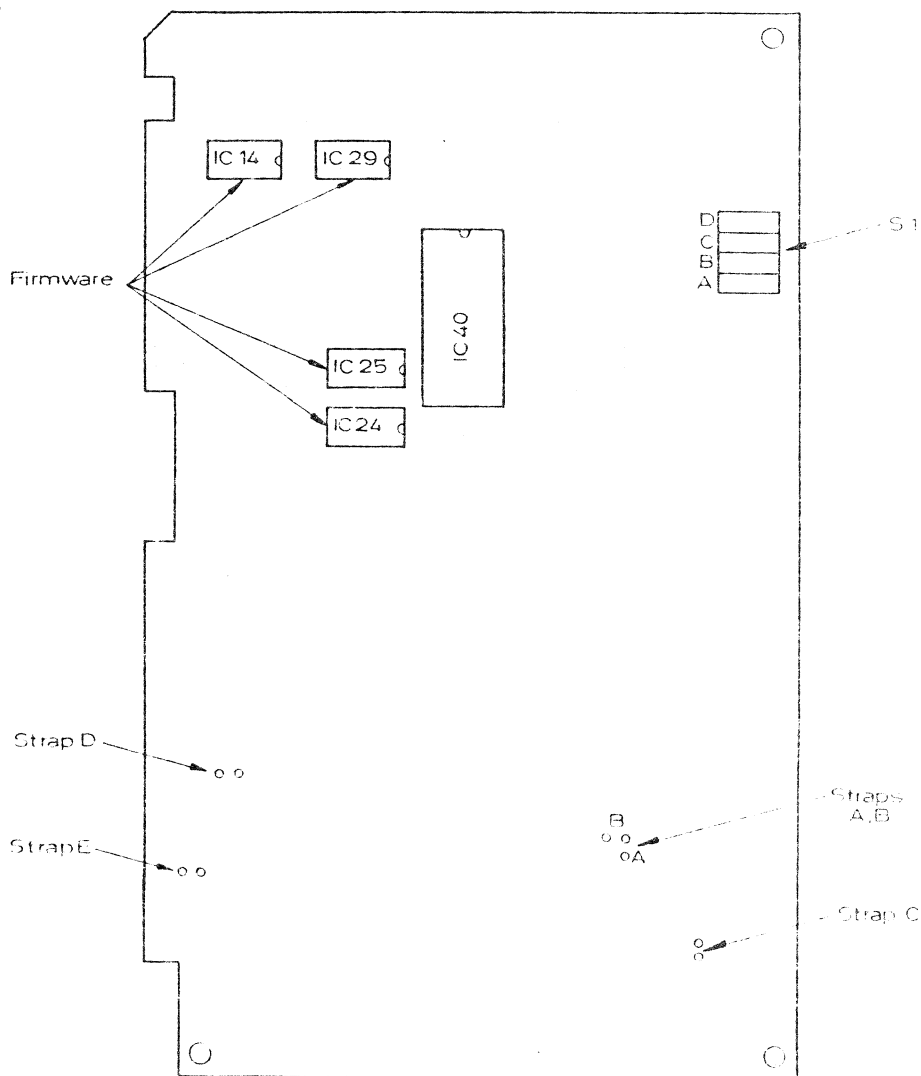
Table 1 - 2

ADDRESSES									
CONTROL UNIT	POLL/ SELECT EBCDIC	POLL/ SELECT ASCII	S2				S1		
			C	B	A	D	C	B	A
0	40/60	20/20	ON	ON	ON	ON	ON	ON	ON
1	C1/61	41/2F	OFF	ON	ON	ON	ON	ON	OFF
2	C2/E2	42/53	OFF	OFF	ON	ON	ON	OFF	ON
3	C3/E3	43/54	OFF	OFF	ON	ON	ON	OFF	OFF
4	C4/E4	44/55	OFF	OFF	ON	ON	OFF	ON	ON
5	C5/E5	45/56	OFF	OFF	ON	ON	OFF	ON	OFF
6	C6/E6	46/57	OFF	OFF	ON	ON	OFF	OFF	ON
7	C7/E7	47/58	OFF	OFF	ON	ON	OFF	OFF	OFF
8	C8/E8	48/59	OFF	OFF	ON	OFF	ON	ON	ON
9	C9/E9	49/5A	OFF	OFF	ON	OFF	ON	ON	OFF
10	4A/6A	58/7C	ON	ON	ON	OFF	ON	OFF	ON
11	4B/6B	2E/2C	ON	ON	ON	OFF	ON	OFF	OFF
12	4C/6C	3C/25	ON	ON	ON	OFF	OFF	ON	ON
13	4D/6D	28/5F	ON	ON	ON	OFF	OFF	ON	OFF
14	4E/6E	3B/3E	ON	ON	ON	OFF	OFF	OFF	ON
15	4F/6F	21/3F	ON	ON	ON	OFF	OFF	OFF	OFF
16	50/FO	26/30	ON	OFF	OFF	ON	ON	ON	ON
17	D1/F1	4A/31	OFF	OFF	OFF	ON	ON	ON	OFF
18	D2/F2	4B/32	OFF	OFF	OFF	ON	ON	OFF	ON
19	D3/F3	4C/33	OFF	OFF	OFF	ON	ON	OFF	OFF
20	D4/F4	4D/34	OFF	OFF	OFF	ON	OFF	ON	ON
21	D5/f5	4E/35	OFF	OFF	OFF	ON	OFF	ON	OFF
22	D6/F6	4F/36	OFF	OFF	OFF	ON	OFF	OFF	ON
23	D7/F7	50/37	OFF	OFF	OFF	ON	OFF	OFF	OFF
24	D8/F8	51/38	OFF	OFF	OFF	OFF	ON	ON	ON
25	D9/F9	52/39	OFF	OFF	OFF	OFF	ON	ON	OFF
26	5A/7A	5D/3A	ON	ON	OFF	OFF	ON	OFF	ON
27	5B/7B	24/23	ON	ON	OFF	OFF	ON	OFF	OFF
28	5C/7C	2A/40	ON	ON	OFF	OFF	OFF	ON	ON
29	5D/7D	29/27	ON	ON	OFF	OFF	OFF	ON	OFF
30	5E/7E	3B/3D	ON	ON	OFF	OFF	OFF	OFF	ON
31	5F/7F	5E/22	ON	ON	OFF	OFF	OFF	OFF	OFF

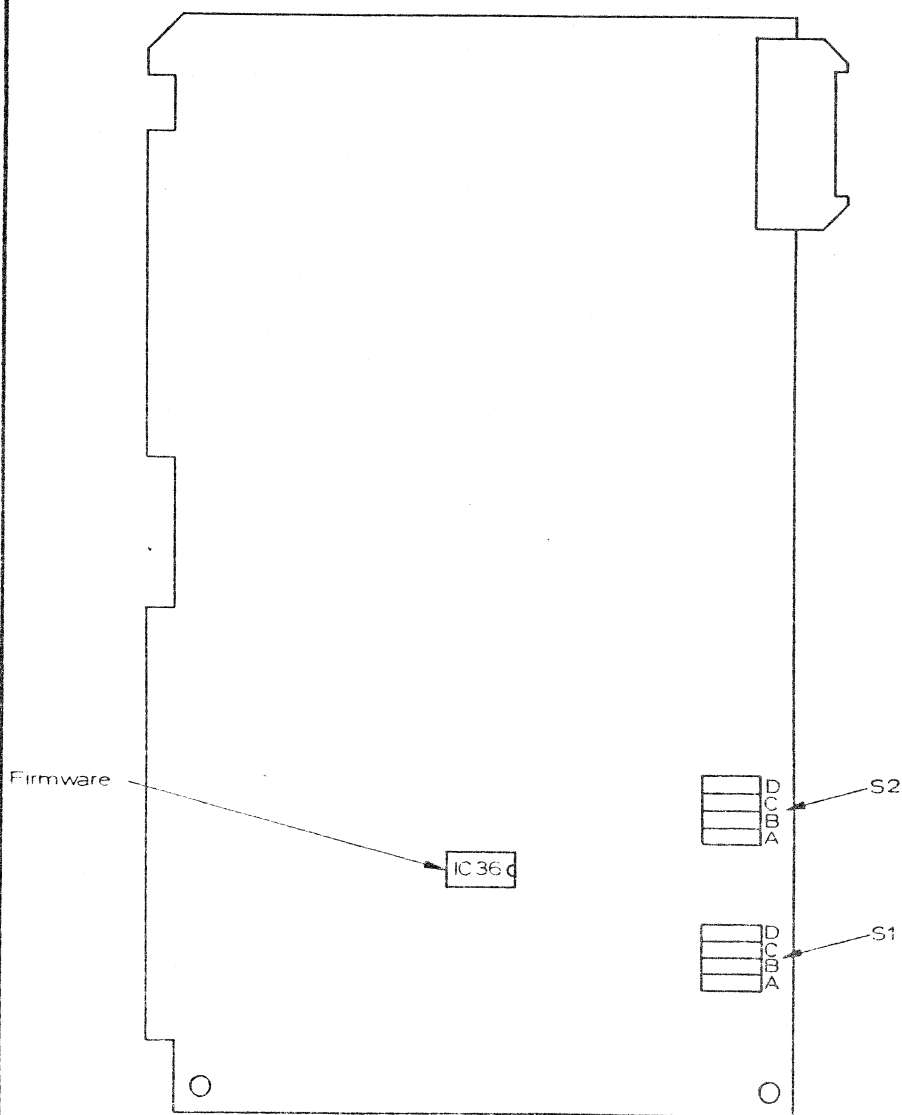
Switch Logic - OFF = 1
ON = 0

1.2 Location of Straps and Firmware

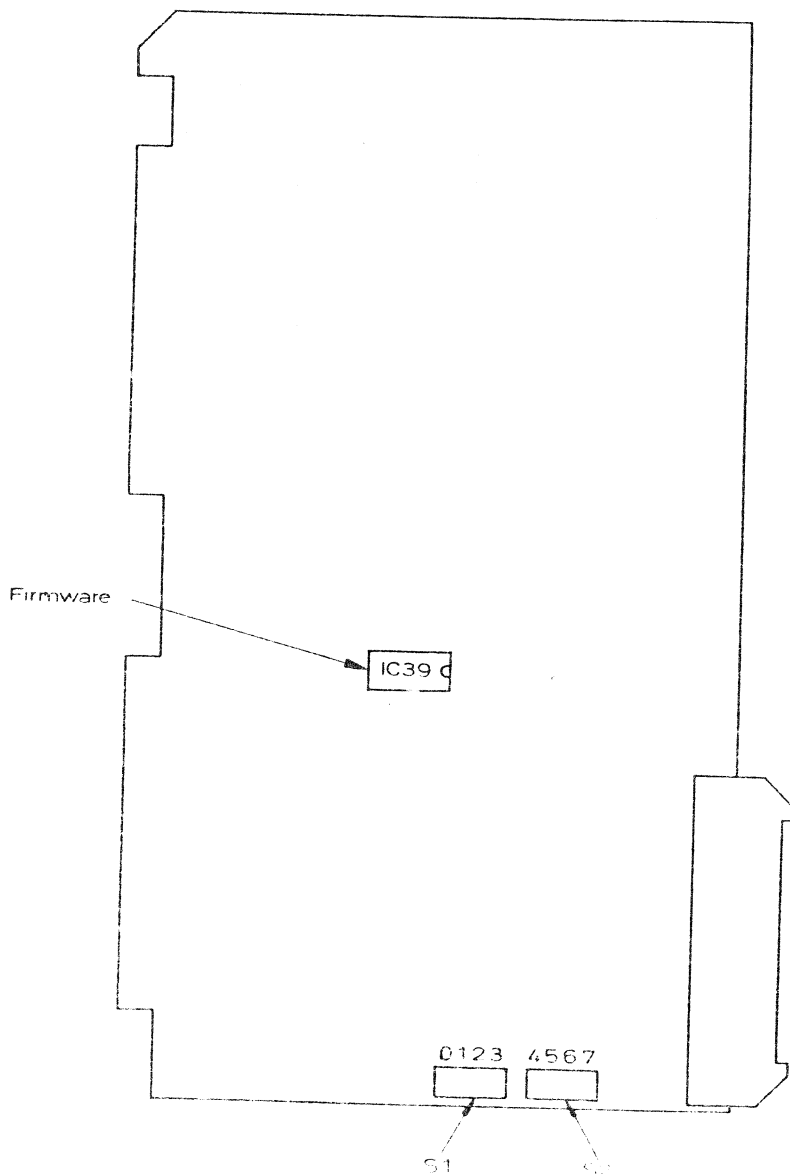
1.2.1 EIA Interface PCB 1924



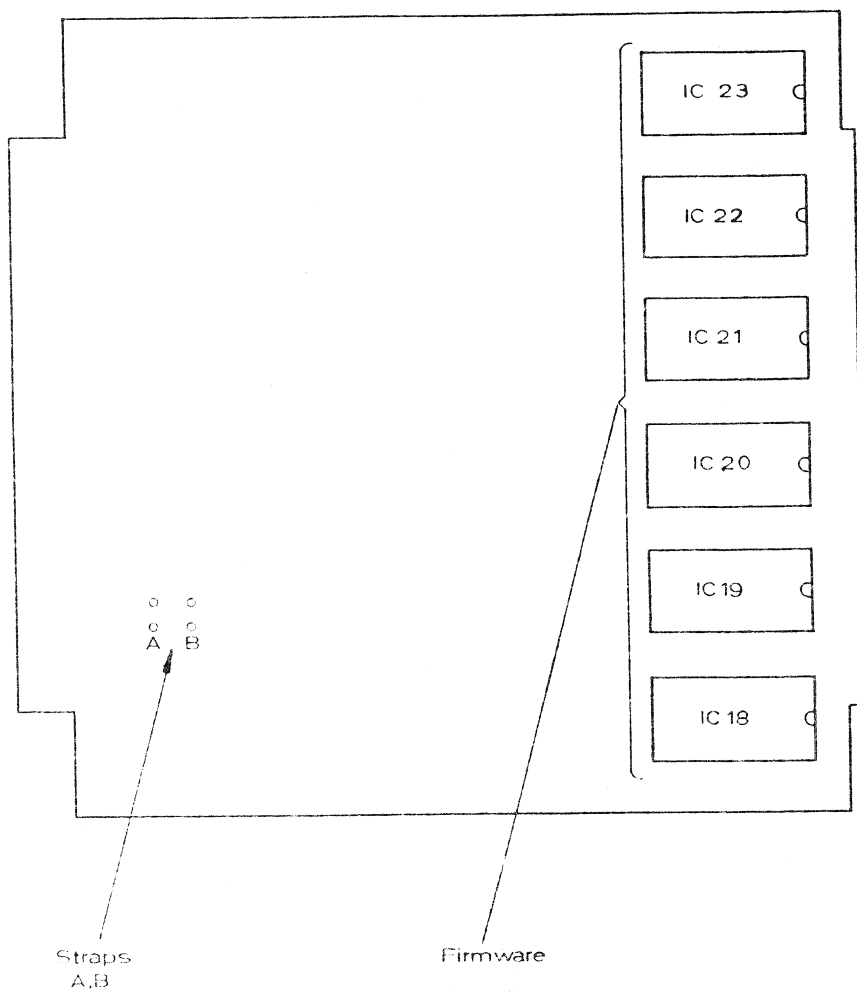
1.2.2 BSC Interface PCB 1911



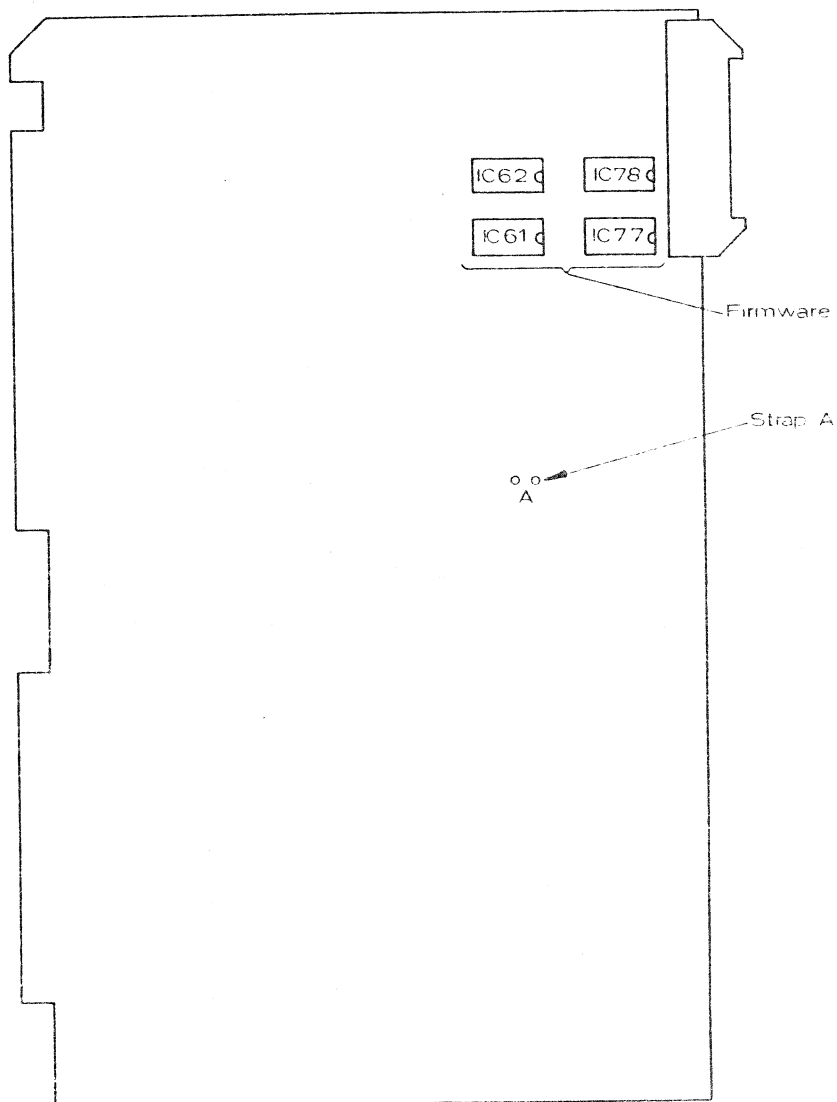
1.2.3 Control PCB 1907



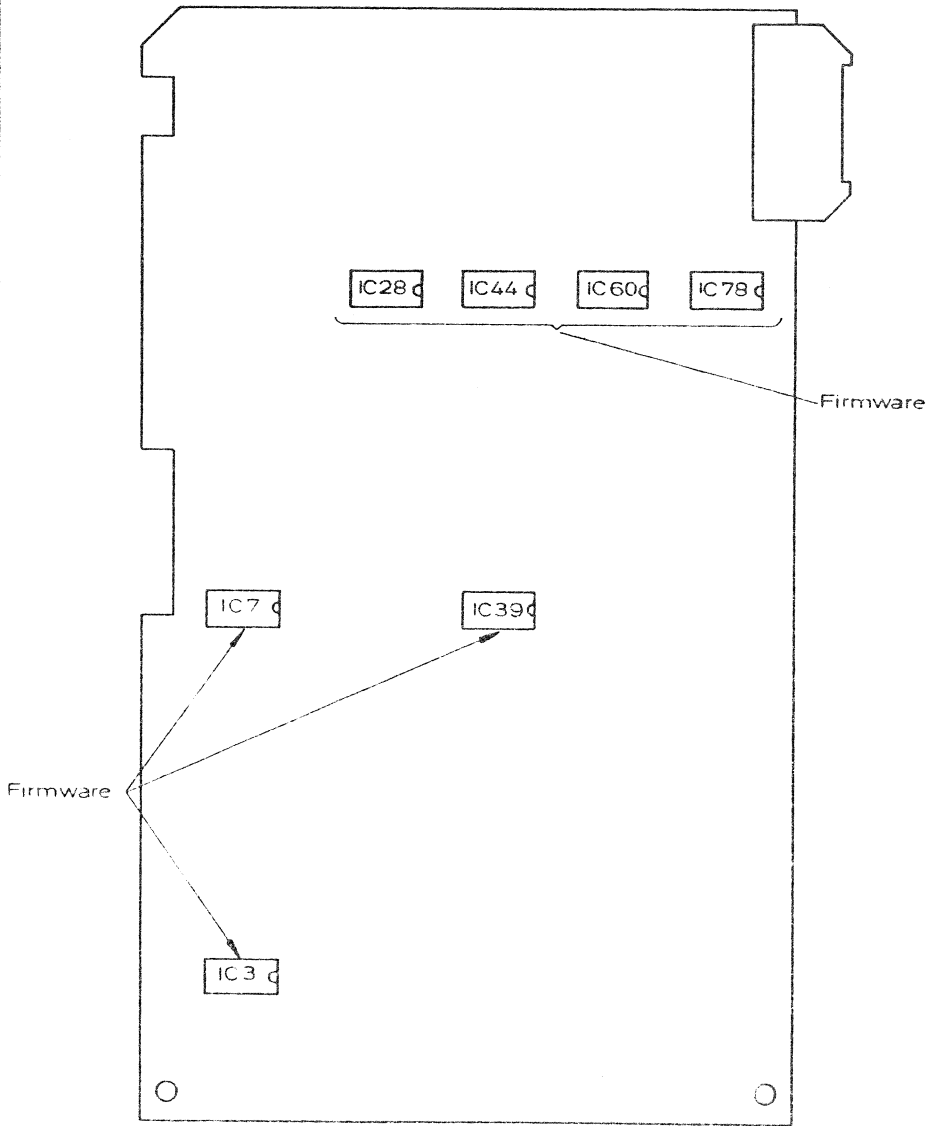
1.2.4 Memory PCB 2378



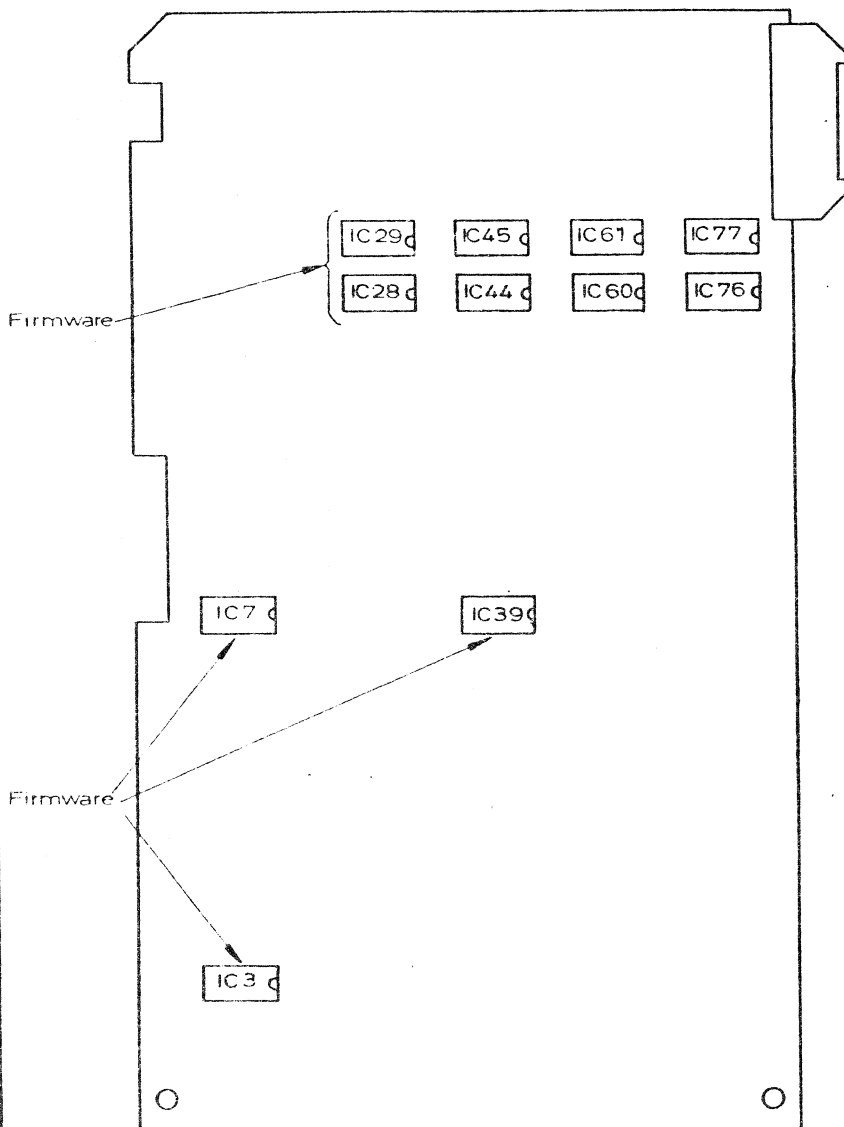
1.2.5 Port PCB 1928



1.2.6 Edit PCB 1909



1.2.7 Edit PCB 120161 (for APL)

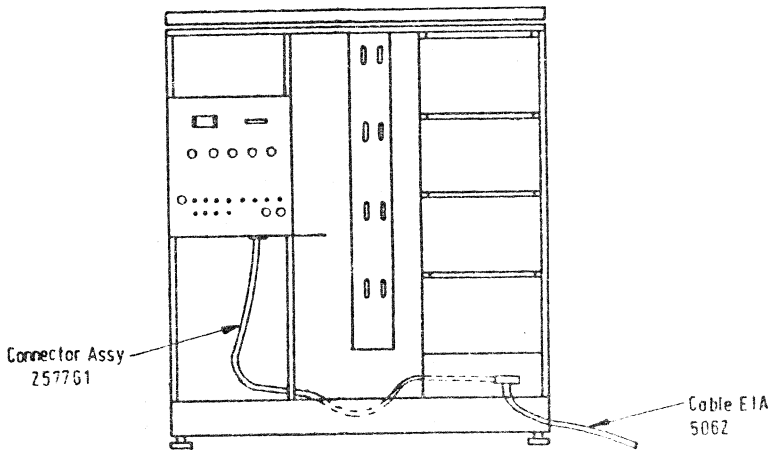
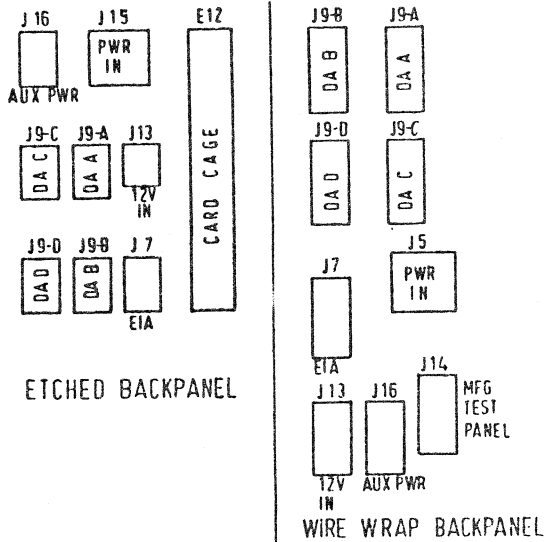


1.3 Component Location

1.3.1 Board Location

E04		TEST MEM BD. 2378
E05	BUFFER BD. 1925	MEM BD. 2378
E06	CONTROL BD.	1907
E07	EDIT BD.	1909 or 120161 for APL
E08	270 PORT BD.	1910 or 1928
E09		ECC BD. 1927
E10	BSC INTERFACE BD.	1911
E11	EIA INTEPFACE BD.	1924
E12	CAPTURE BD.	1919

1.3.2 Connector Location



2. STANDARD VERSIONS

2.1 Verfügbare Ausführungen

Table 2-1

Bezeichnung	Beschreibung	Anzahl der Dev. Adapter	Anzahl der Koaxanschl.	SEL-Nr. *
3281/1	Einfach	1	8	70590 1XX10
		2	16	1XX20
		3	24	1XX30
		4	32	1XX40
3281/2	Dupliziert	1	8	70590 2XX10
		2	16	2XX20
		3	24	2XX30
		4	32	2XX40
3283/1	Einfach, kleines Gehäuse	1	4	70590 5XX00
3283/2	Einfach, großes Gehäuse	1	4	70590 8XX00
3283/3	Einfach, großes Gehäuse	1	8	70590 9XX00

* Note: Für Hinweise bzgl. der 2 Ziffern "XX", siehe Tabelle 2-2.

2.1

Table 2-2

Funktion	XX (See Table 2-1)
APL	1X
ASCII ALT	2X
EBCDIC ALT	4X
EBCDIC 1976	6X
1200/2400 Bit/sec internal clock	X1
4800/9600 Bit/sec internal clock	X2

2.2 Duplizierte Ausführung: Gegenüberstellung der
duplizierten und nicht duplizierten Baugruppen.

Table 2-3

Dupliziert	Nicht dupliziert
+ 5 Volt and + 12 Volt Powersupplies	AC line voltage cable and current - trip fuse
Status Panel PCB	Indikatoren (LED's) an Status Panel
Card Cage	
Device Adapter PCB's	Koaxanschlüsse EIA Kabel und Anschluß für Modem-Kabel

2.3 Nachrüstsatz für zusätzliche Device Adapter

BEZEICHNUNG	CTS No.	SEL Sachnr.	ANZAHL			
Device Adapter, dual	5055 G1	57059 00104	-	-	1	1
Device Adapter, single	5055 G2	00103	1	1	-	-
Cable, 25 inch	2202 G1	70098 34500	-	-	1	-
Cable, 31 inch	2202 G2	34501	1	-	2	1
Cable, 34 inch	2202 G3	34502	-	1	-	1
Cable, 40 inch	2202 G4	34503	-	1	-	1
Relay	1308 P1	57059 00397	-	-	2	2
Clamp	1341 P3	70098 35712	1	1	1	1
Pressure Pad	2218 P1	35713	1	1	1	1
Push Nut	0474 P4	35714	2	2	2	2
Screw, pan head	99901 P06 C06	35126	2	2	2	2
Screw, hex washer head	99905 P08 C08	35715	2	2	2	2
Nachrüstsatz Device Adapter						
B einfach		57059 00638	X			
C einfach		57059 00639		X		
D einfach		57059 00640		X		
B dupliziert		57059 00641			X	
C dupliziert		57059 00642				X
D dupliziert		57059 00643				X

ED

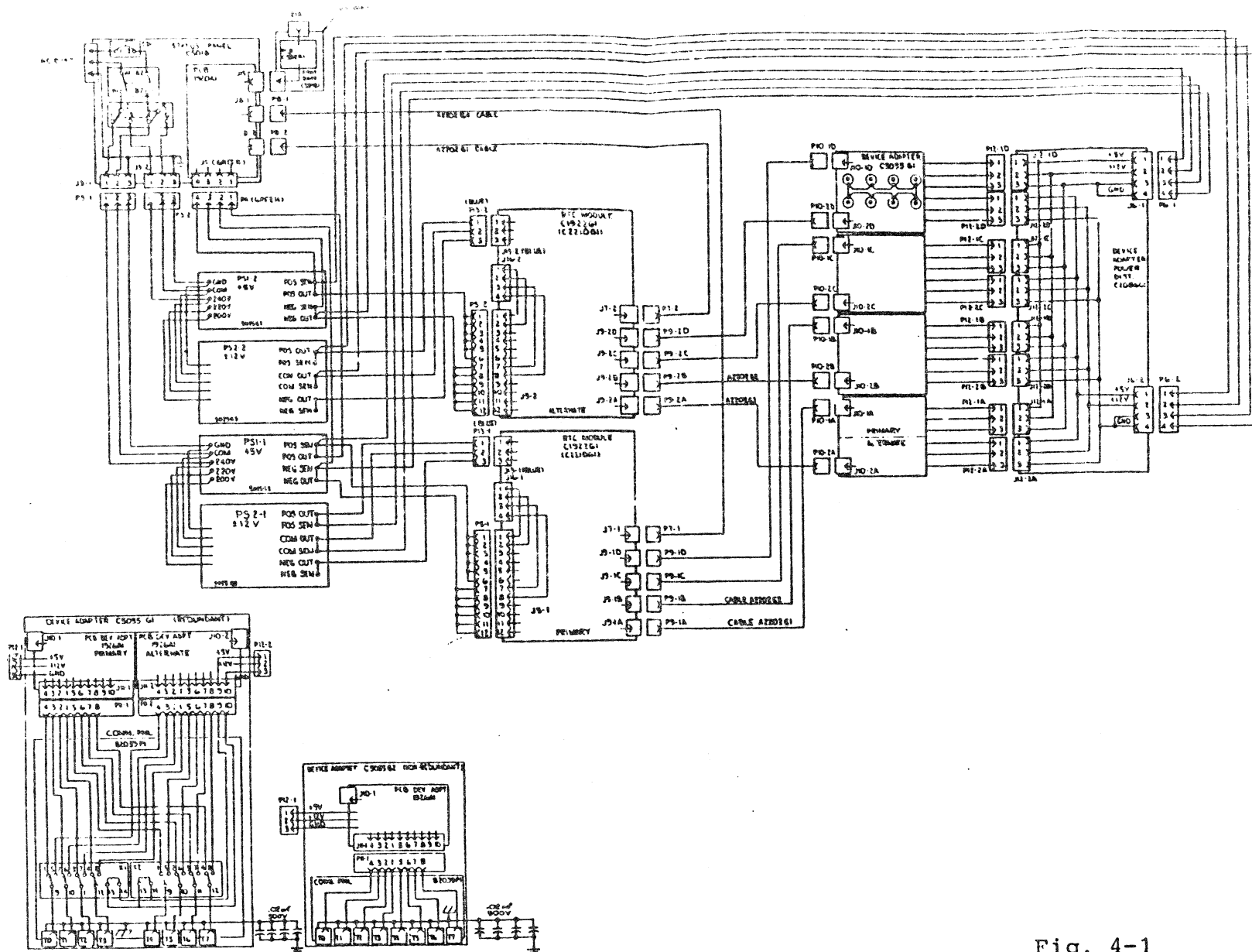


Fig. 4-1
Power Distribution

ED 1

ITT 3280 REFERENCE MANUAL

RTC (BSC)

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4.2 Straps on LVPS

Die Straps sind der Netzspannung entsprechend zu legen. Die Strapping Instructions Label befindet sich am LVPS. Netzspannungen von 100 bis 240 Volt sind vorgesehen.

4.3 Fuses

Table 4-1

Power Supply	CTS No.	Fuses
ACDC 2101 P2 (+ 5 V)	5025 G2	Current limit (CL) and overvoltage protection (OVP). See Section 5.
	5025 G4 (3283/1 only)	
ACDC 1493 P4 (+ 12 V)	5025 G3	
	5025 G5 (3283/1 only)	
ACDC 97551 (+ 5V, + 12V)	2442 P1	
XENTEK 2756 (+ 5V, + 12V)	2442 P4	
North Electric No. PEC 3785 (+ 5V, + 12V)	2442 P3	+ 12 Volt: 2,5 Amp (AGC 2 1/2) 5 Volt: 35 Amp (35 AGU)

Additionally, on the Operator Panel there is a circuit breaker labelled :WR RESET rated at 3 Amp.

5. ADJUSTMENTS

5.1 Einstellung der Spannungen

An manchen Netzgeräten lassen sich die ± 12 Volt und die 5 Volt einstellen. An anderen sind nur die ± 12 Volt einzustellen. Die zuständigen Potentiometer sind gekennzeichnet.
Siehe auch Abschnitt 4.1.

5.2 Einstellung der Strombegrenzung (C-L Adj)
Information noch nicht vorhanden

5.3 Einstellung der Überspannungsschutz (OVP)
Information noch nicht vorhanden.

6. DIAGNOSTICS AND TESTS

6.1 RTC / 3287 Operations

OPERATION	DESCRIPTION
<u>Format Test</u> FE-ON; PROC-ON Test Req	The following format displays P V PH VH PB VB PN UN S MDT Definition of fields: P = Protected, alphameric, normal intensity V = Unprotected, alphameric, normal intensity PH = Protected, alphameric, high intensity VH = Unprotected, alphameric, high intensity PB = Protected, alphameric, blink VB = Unprotected, alphameric, blink PN = Protected, numeric UN = Unprotected, numeric S = Unprotected, alphameric, Light Pen detectable (Selector Pen) MDT = Unprotected, alphameric, with modified data tag set
In Reveal Mode	<u>P</u> <u>V</u> (PH(VH)PB(VB)PN(UN) <u>U</u> > S <u>!</u> MDT

<u>Light Pen Test</u> FE-ON; PROC-ON Test Req	The Format Test will display. Perform the following: A. Selection Field - Depress the tip of the Light Pen to the screen until a bright segment appears in the S and the > . - Move the Light Pen across the S or the > . The designator character will change to a question mark (?) when proper detection is made. If in Reveal Mode, the first detection will not cause a change in the attribute character. Subsequent detections cause the attribute and designator character to change in the following combinations: <u>U</u> ? <u>8</u> > B. Attention Field - Change the > or ? character to a space via the keyboard and then press the RESET CURSOR key. The attribute character will change to <u>8</u> character.
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6.1 RTC / 3287 Operations (Continued)

OPERATION

DESCRIPTION

Light Pen Test
(Continued)

2. Depress the tip of the LP to the screen until a bright segment appears in the S.
3. Move the LP across the S. The INPUT LOCKED LED should momentarily illuminate when detection is made. The attribute character will not change.
4. Remove the LP. The ERROR LED should turn on.

Device ID

FE-ON; PROC-OFF

This operation will display the device adapter number (0 - 3) and the coax connector number (0 - 7) to which the C270 is connected. As an example, a C270 connected to the first coax of the second device adapter will display:

PORT = 1 TUBE = 0

Local Clear

FE-ON; PROC-OFF
Clear

or

FE-OFF; PROC-ON
Clear

The screen will be cleared without sending a CLEAR AID message to the host. This operation is independent of the "AUTO CLEAR" function enabled by S1-3 on the 1907 Control board. This operation also turns the ERROR LED on since it was not defined as a specific function in the firmware. (See NO OPERATION later in this table).

Write, Read, Compare Test

FE-ON; PROC-ON
PF1

(Only on 311 ROMs and later)

The RTC writes a screen U*U-U*etc. It then reads the screen and compares the data read to the data written. This test repeats until an error occurs or the test is terminated. If an error occurs, the RTC will attempt to write "ERROR" to the C270. To terminate the test, depress the keyboard RESET key or take the C270 out of PROC or FE mode.

Local Copy/Print

FE-OFF; PROC-ON
PA1, PF1 - PF12

Allows tube to tube copy or tube to printer copy (print). The terminal to be copied/printed to is determined by pressing PA1, PF1 - PF12 to select one of the first thirteen device adapter ports respectively. This operation requires proper strapping on the 1907 Control board.

Read, Write Test

FE-ON; PROC-ON
PA2

Reads the terminal and writes the same data to the terminal one time.

6.2 RTC / Printer Operations

OPERATION	DESCRIPTION
<u>Device ID</u> FE-ON; Hold down Test Req.	The format described in Sec. 6.1 -Device ID, will be printed. Refer to Sec. 6.1 for a complete description.
<u>I/O Test</u> FE-ON; Momentarily Press Test Req.	A rotating 80 column test pattern will be printed for one full buffer using the characters shown below. A "." will be the first character printed and will be inserted every 132 characters. This test demonstrates the ability of the LTC and Printer Controller to exchange I/O. I _ _ _ _ _ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
<u>Local Print</u> FE-OFF; PROC-ON PA1, PF1-PF12	There are three basic local print functions that can be performed; 1.) Print with no Form Feed, 2.) Print preceded by a Form Feed and 3.) Print followed by a Form Feed. These features are switch selectable on the 1907 Control Board. Complete description of this operation is in Sec. 6.1 - Local Copy/Print.
<u>Capture Mode</u> FE-ON; PROC-ON Clear or PA1	Sets Capture mode as follows: Clear - Capture one page PA1 - Continuous capture Capture may be set from any display, if the capture display terminal is in PROC and FE mode. When capture has been set, the cursor will move 16 columns to the right of home position and remain there. Capture mode may be momentarily stopped by turning PROC-OFF. The symbol > will display marking the point at which capture was stopped. Turn PROC-ON to continue Capture mode may be terminated by turning FE-OFF.
<u>No Operation</u>	Only the combinations of FE, PROC and AID keys listed in this table are meaningful. All other combinations result in the ERROR LED being turned on.

6.3 Capture

The RTC has the capability of capturing comm line sequences and displaying them on a 3287 connected to port 0 of any Device Adapter. A 1919 Capture board installed in slot E12 is required to perform capture and the jumper plug on the back panel must be on the proper Device Adapter jack. See Strapping Guide.

On the 3287 capture display, proceed as follows:

- (1) Set FE and PROC mode on.
- (2) Press PA1 for continuous capture or CLEAR for a single screen of capture data.
- (3) The capture display will be selected with the keyboard inhibited.
- (4) Clearing PROC mode will halt the display of data and >> (blinking) will be displayed at the halt point. Setting PROC mode back on will resume the display of data.
- (5) To exit from capture mode switch FE off.

6.3 Capture (Continued)

Examples - capture

1. General poll with EOT Response:

55 32 32 37 32 32 40 40 7F 7F 2D FF 55 32 32 37 FF
 PAD SYN EOT SYN GEN POLL PAD PAD SYN EOT PAD

2. Specific Poll with DE Status Response:

55 32 32 37 32 32 40 40 40 40 2D FF 55 32 32 01 6C D9 02 40 C2
 SPECIFIC POLL DE STATUS MESSAGE
C2 40 03 8B 60 FF 55 32 32 10 7C FF 55 32 32 37 FF
 BCC RVI EOT

3. General Poll with Positive Response:

55 32 32 37 32 32 40 40 7F 7F 2D FF 55 32 32 02 40 C2 6D
 GEN POLL CLEAR KEY
03 D8 AD FF 55 32 32 10 7C FF 55 32 32 37 FF

4. Write Command Chained to a Select Sequence:

55 32 32 37 32 32 60 60 C2 C2 2D FF 55 32 32 10 70 FF
 SELECTION SEQUENCE ACK 0
55 32 32 02 27 F5 C3 0A 77 FF 55 32 32 10 61 FF 55 32 32 37
 ERASE WRITE COMMAND ACK 1

NOTES: Intensified data (RTC transmit data) is denoted by the underline.

Leading and trailing pad characters (55 and FF) are shown as actually seen at the modem. Disregard these pad characters since they are not always displayed or intensified correctly in capture.