8.1.1 INSTALLATION

Figure 8.1.1

SOP FOR TC 6811

Before fitting the SOP to the computer, ensure that:

- The appropriate text panel is screwed to the front panel.
- The connections between the SOP´s key switch and PCB are made according to Figure.
- The jumpers for selecting loading media are set according to Figure.

Then connect the "lower" flat cable from rack position 5 (CHCR) to P2, and the separate wires terminating on the PCB´s fast-on pins, see Figure.

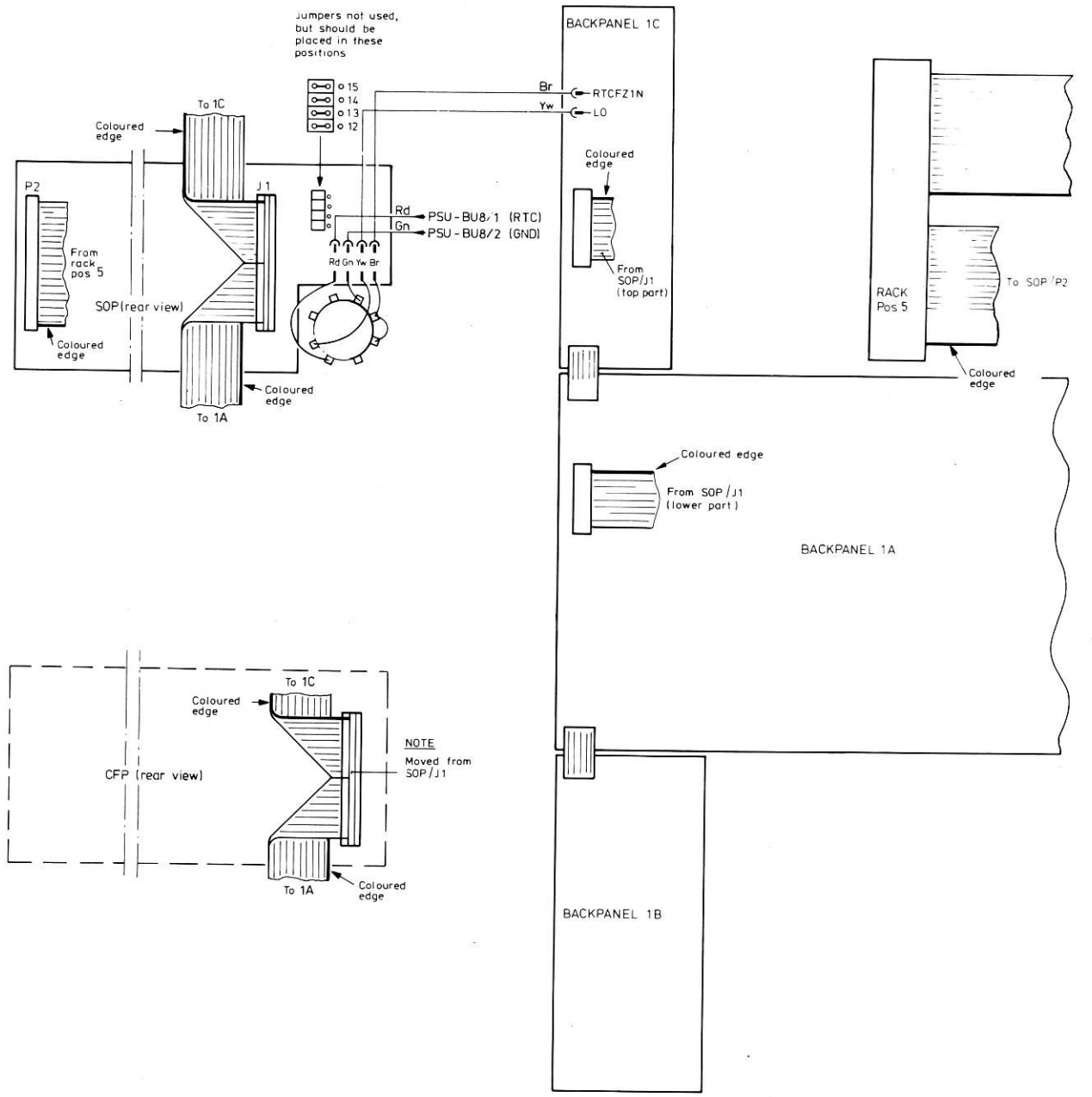


Figure 8.1.1 Installing the SOP for TC 6811

If no CFP is to be fitted, connect also the flat cable from the backpanels 1A and 1C to SOP/J1 (connected to CFP when such a panel is also fitted).

The SOP is then finally screwed to the rack below the digital cassette recorders.

SOP FOR TC 6812/6813 Figure 8.1.2

Before fitting the SOP to the computer, ensure that:

- The appropriate text strip is stuck to the front panel.
- The jumpers for selecting loading media are set according to Figure
- The jumper for selecting operation mode of the ON indicator is set in the desired position, see Figure

Then connect the "lower" flat cable from rack position 10 (CHCR) to P2, and the separate wires terminating on the key switch board and the main PCB, see Figure

If no EFP is to be fitted, connect also the flat cable from P6/P8 to SOP/J1 (connected to EFP when such a panel is also fitted).

NOTE

IF A CFP/EFP IS TO BE FITTED, ENSURE THAT THE LOWER JUMPER ON BACKPANEL 1C IS SET IN THE APPROPRIATE POSITION (FIGURE 8.1.2).

The SOP is then finally screwed to the rack below the flexible disc drives and the cassette recorders.

For SOP-CU straps see CHFD (IN) or CHCR Chapter 17 or 15

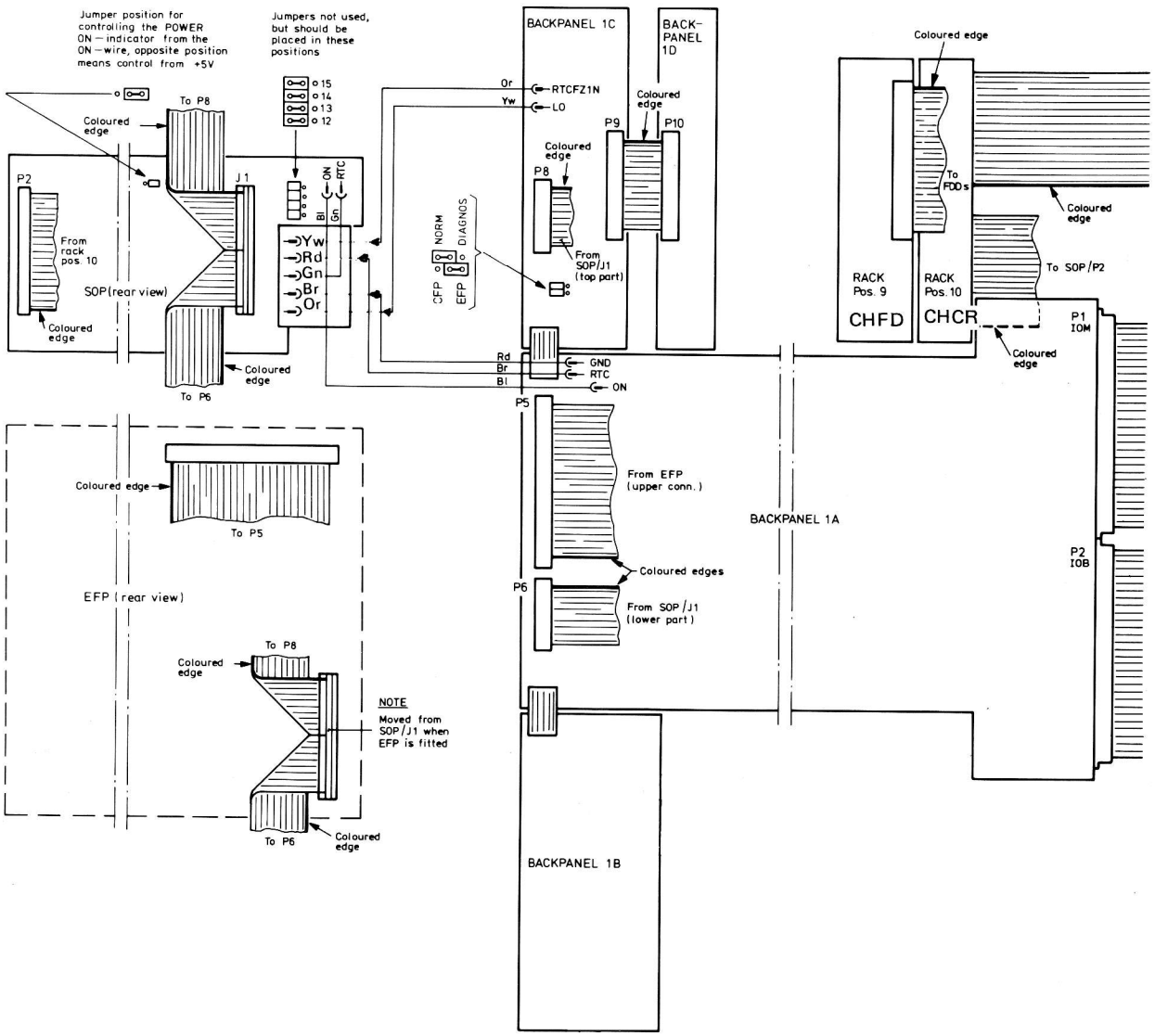


Figure 8.1.2 Installing the SOP for TC 6812/6813

EXTERNAL INTERFACES

Unique Interfaces in SOP for TC 6811

The key switch and J1 interfaces of a SOP for TC 6811 are shown in Figure 8.1.3 The key switch interface is completely unique for this panel, whilst there is a minor difference in the J1 interface, see below.

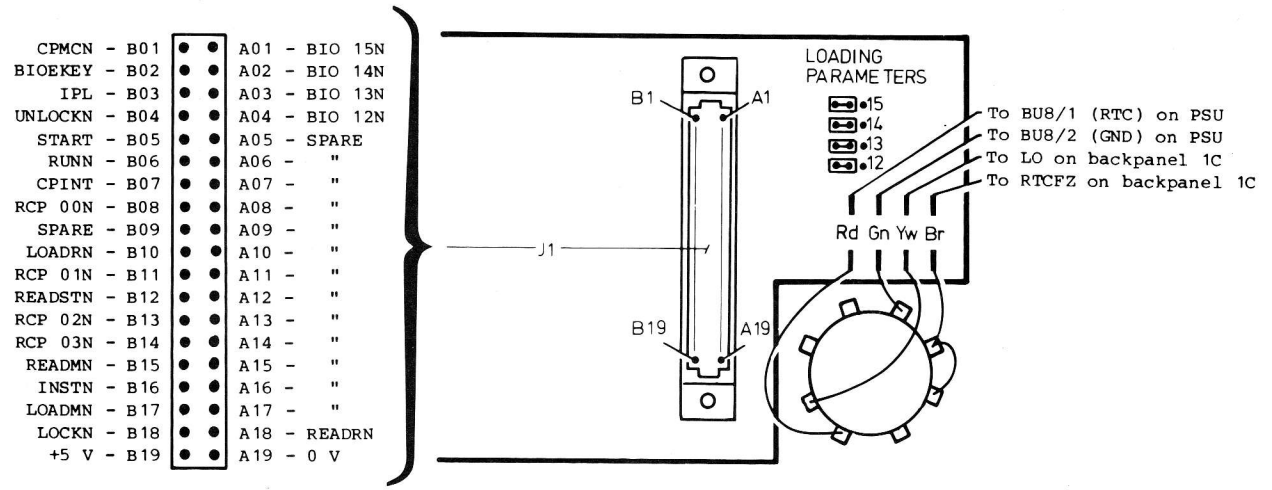


Figure 8.1-3 Interface SOP for TC 6811

Interfaces in SOP for TC 6812/6813

Figure 8.1.4

The interfaces of a SOP for TC 6812/6813 are shown in Figure. Completely unique are here the key switch interface and the connections for controlling the operation mode of the ON indicator. The J1 interface differs just on pin B09, which is here used for the RUNFA signal.

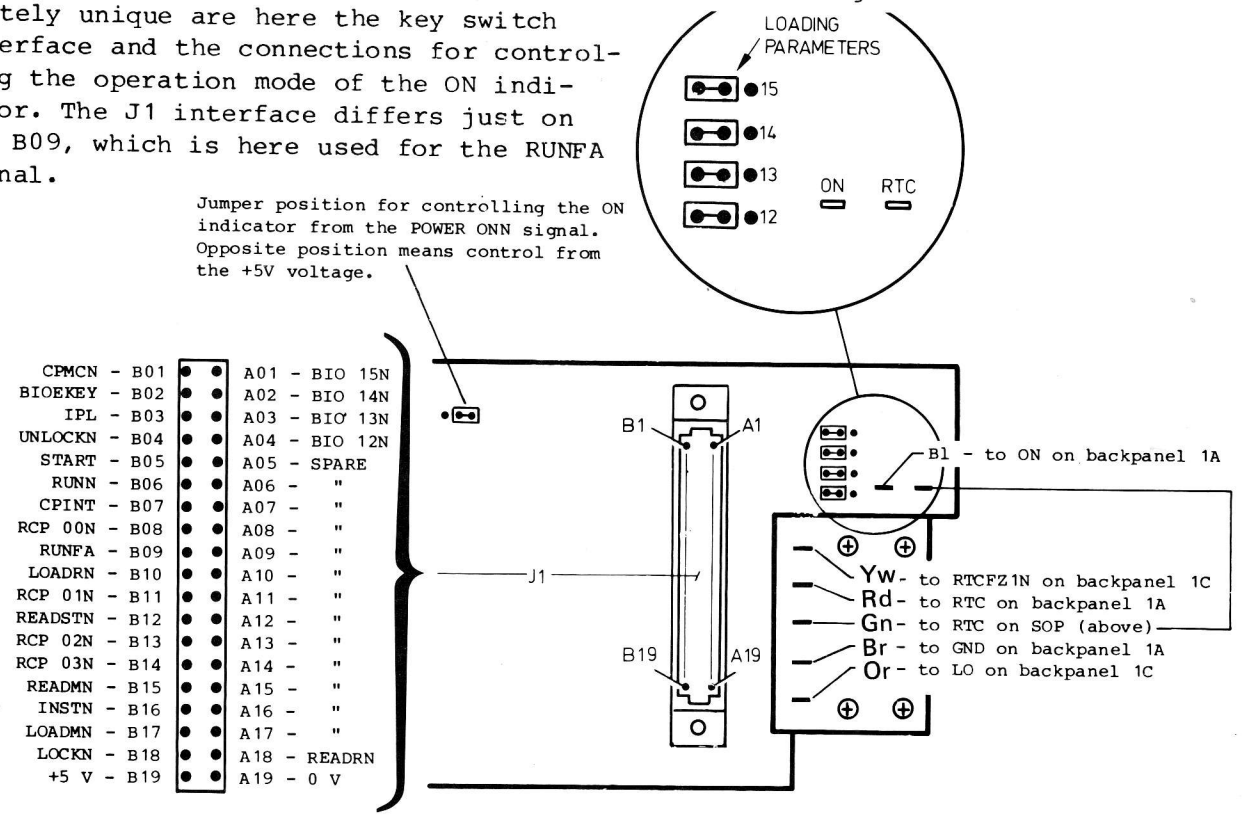


Figure 8.1.4 Interface SOP for TC 6812/6813

Indentical P2 Interfaces

The P2 interfaces of the two panels are identical, see Figure 8.1.5.

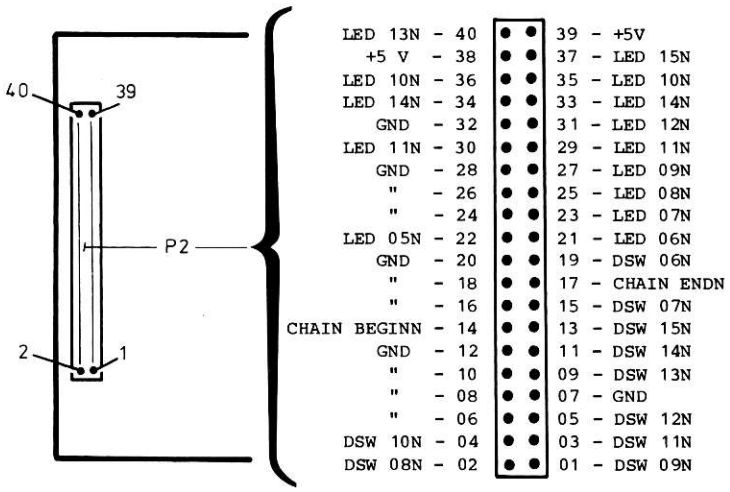


Figure 8.1.5 The P2-interface for both panels

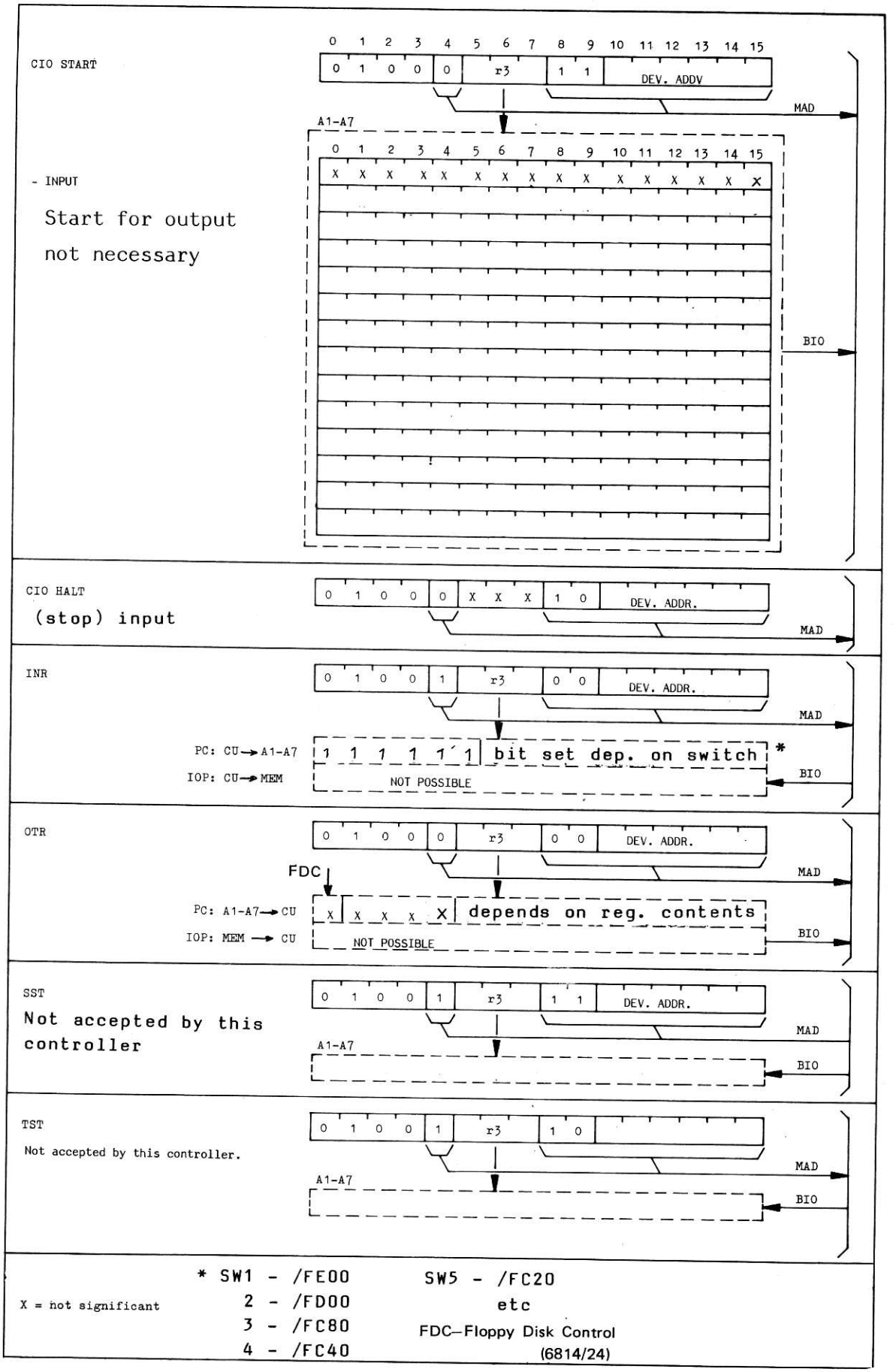


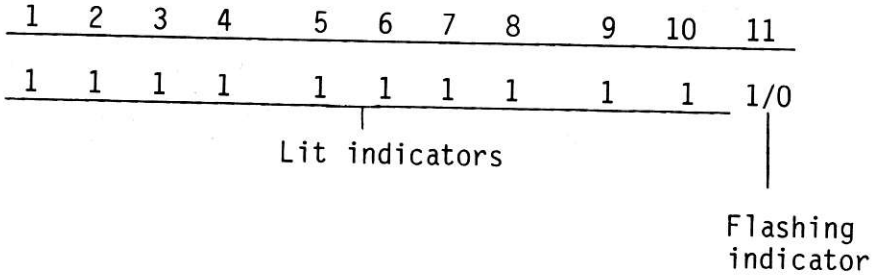
Figure 8.1.6 Instruction-/Command-word Formats

8.1.4 SHORT DESCRIPTION TESTPROGRAM

SOPTSC (rel. 2)

The test program SOPTSC Release 2 can be used for testing the SOP switches and associated indicators on the computers 6805 and 6810-6813.

After loading from cassette or diskette drive (RTC switch in position ON) the SOP indicators 1-10 are all lit and indicator 11 is flashing, indicating that the RTC is enabled.



It should be noted that the program is executed in level 3. Only PWF, RTC, LKM/STACK OVERFLOW can interrupt the program.

2 TEST PROCEDURE

Test the SOP functions as follows:

- Operate the SOP switches 1-10 in turn and check that associated indicators are switched off.
- Operate SOP which 11 and check that the indicators 1-11 are all lit.
- Set the RTC switch in position OFF and check that SOP indicator 11 stops flashing.
- Set the RTC switch in position LOCK and check that SOP indicator 11 is again flashing. Switch the power supply off/on and check that SOP indicator 11 is still flashing.
- Set the RTC switch in position ON. Switch the power supply off/on and check that the program is NOT automatically restarted.

8.1.5 SHORT ROUTINE

```
          DATE  82-05-12          IDENT    SOPTST

0000                              IDENT    SOPTST
0001                    *DATA: 82 05 12 FOR PTS
0002                    *THIS PROGRAM LIGHTS THE LAMP ABOVE THE
0003                    *DEPRESSED SOP SWITCH.  LAMP 11 IS LIT AFTER
0004                    *LOADING
0005                              AORG     /80
0006
0007
0008 0080 FFFF 0000               DATA     /FFFF,0
0009 0084 20BF          START     INH                          NO INTERRUPTS
0010 0086 0101                    LDK      A1,1                TO LIGHT SOPLAMP 11
0011 0088 412E          LIGHT     OTR      A1,0,/2E            LIGHT LAMP
0012 008A 41EE                    CIO      A1,1,/2E            START FOR INPUT
0013 008C 492E                    INR      A1,0,/2E            READ SOP SWITCH
0014 008E 5C04                    RB(NA)   *-2
0015 0090 3941                    SLL      A1,1
0016 0092 5F0C                    RB       LIGHT
0017
0018
0019
0020                              END      START
```

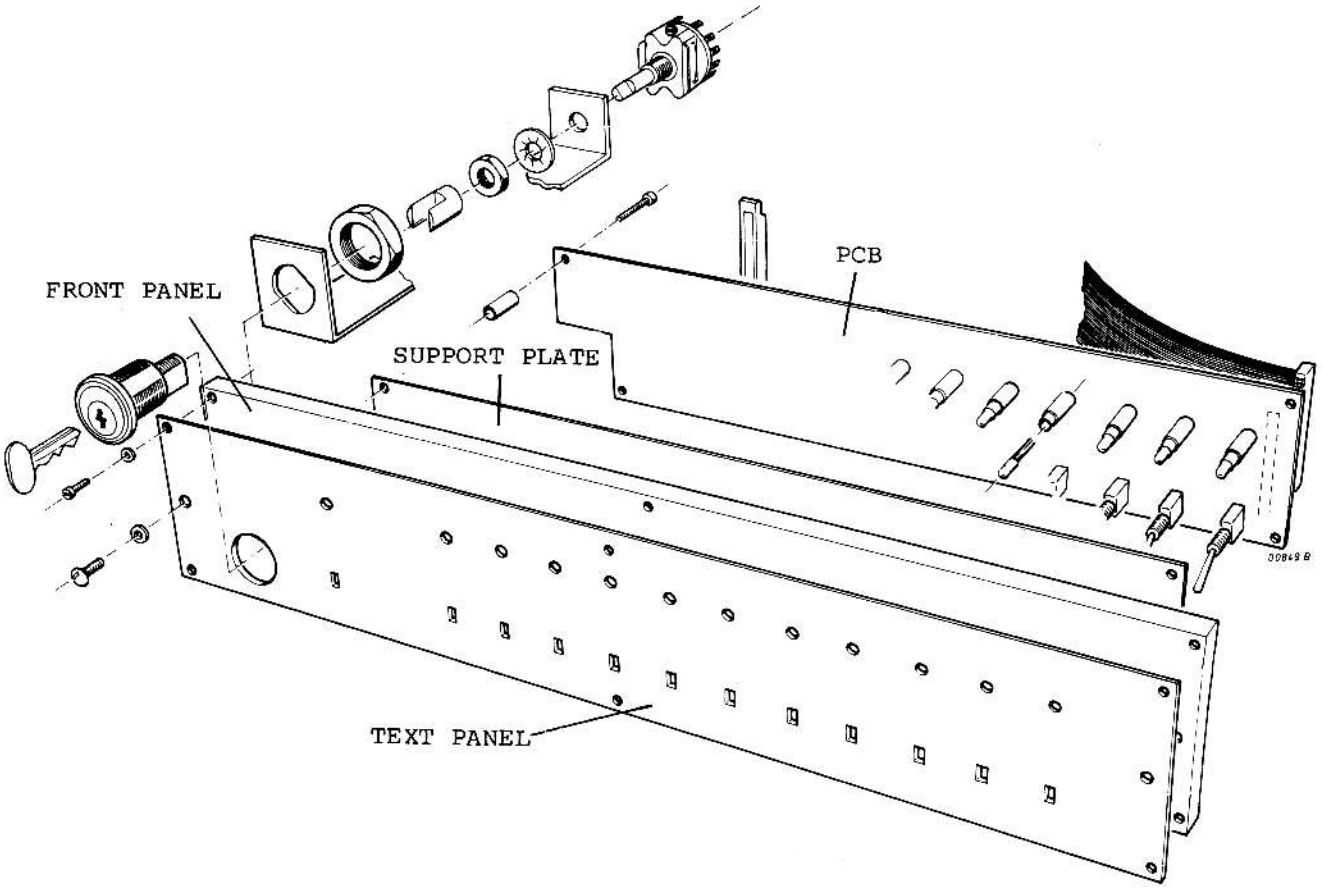


Figure 8.1.7 SOP for TC 6811, Assembly

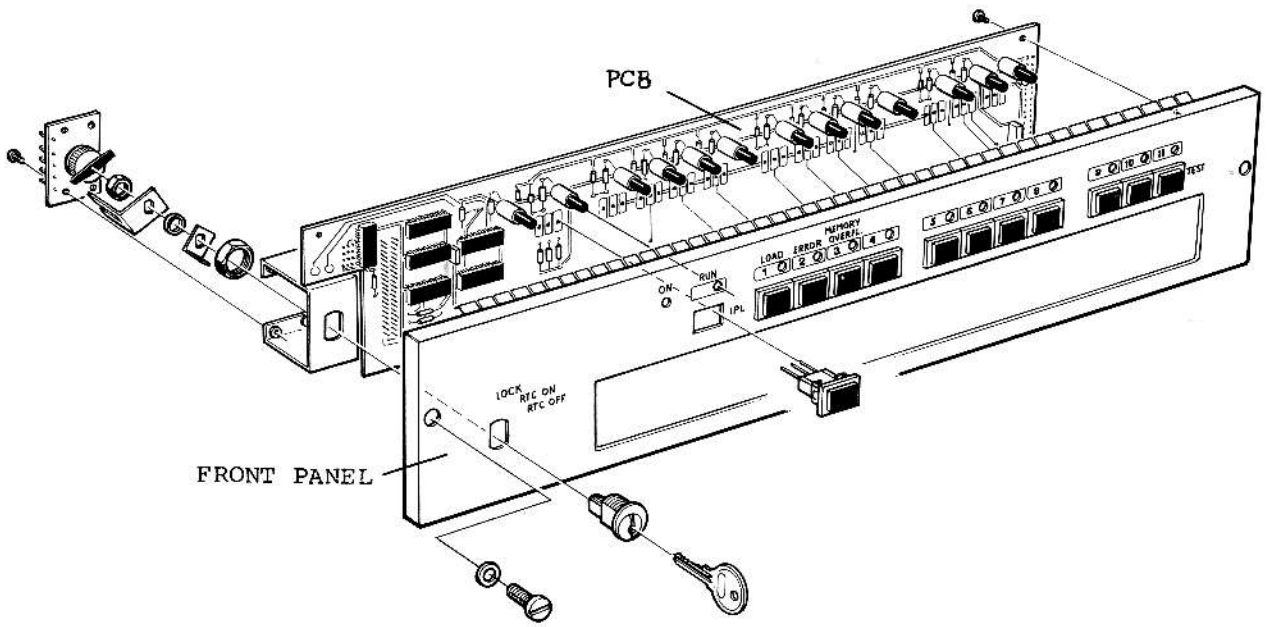


Figure 8.1.8 SOP for TC 6812/6813, assembly

8.1.6 MAINTENANCE

TOOLS

No special tools are required for maintenance actions on the SOPs.

PREVENTIVE MAINTENANCE

Every time a SOP is used, the indicators should be checked by operating the TEST switch.

TROUBLESHOOTING PROCEDURES

The logic circuits of a SOP are of a comparatively low complexity and should not cause any great problems at troubleshooting. No special troubleshooting procedure is therefore advised.

REMOVALS AND REPLACEMENTS

SOP for TC 6811

Figure 8.1.7

The PCB components, including the indicators and toggle switches, are made accessible in the following way:

- Remove connections between PCB and key switch.
- Loosen the four screws at the rear of the PCB, and remove the front panel with attached key switch.
- Unscrew the support plate from the toggle switches and remove it.

Assembling is then made in the opposite order.

SOP for TC 6812/6813

Figure 8.1.8

The PCB components and the push button switches are made accessible by unscrewing and removing the PCB from the front panel.

A push button switch can then be easily pressed out of the front panel from the rear.

When assembling the unit; lay the front panel upside-down and carefully press the PCB on the pins of the switches.

CUSOP Interfaces

P1

SPARE - 01*	●	●	02 - GND
SW3N - 03	●	●	04 - "
OPCN - 05	●	●	06 - "
FDCN - 07	●	●	08 - "
SW2N - 09	●	●	10 - "
SPARE - 11	●	●	12 - "
" - 13	●	●	14 - "
" - 15	●	●	16 - "
MAD04 - 17	●	●	18 - "
SPARE - 19	●	●	20 - "
MAD08 - 21	●	●	22 - "
MAD09 - 23	●	●	24 - "
MAD10 - 25	●	●	26 - "
MAD11 - 27	●	●	28 - "
MAD12 - 29	●	●	30 - "
MAD13 - 31	●	●	32 - "
MAD14 - 33	●	●	34 - "
MAD15 - 35	●	●	36 - "
ACN - 37	●	●	38 - "
SPARE - 39	●	●	40 - "
" - 41	●	●	42 - "
CLEARN - 43	●	●	44 - "
TPMN - 45	●	●	46 - "
TMPN - 47	●	●	48 - "
SPARE - 49	●	●	50 - "

*Top right

P2

SPARE - 01*	●	●	02 - GND
BIO 15N - 03	●	●	04 - "
BIO 14N - 05	●	●	06 - "
BIO 13N - 07	●	●	08 - "
BIO 12N - 09	●	●	10 - "
BIO 11N - 11	●	●	12 - "
BIO 10N - 13	●	●	14 - "
BIO 09N - 15	●	●	16 - "
BIO 08N - 17	●	●	18 - "
BIO 07N - 19	●	●	20 - "
BIO 06N - 21	●	●	22 - "
BIO 05N - 23	●	●	24 - "
SPARE - 25	●	●	26 - "
BIO 03N - 27	●	●	28 - "
BIO 02N - 29	●	●	30 - "
BIO 01N - 31	●	●	32 - "
BIO 00N - 33	●	●	34 - "
BIEC 05 - 35	●	●	36 - "
SCEI - 37	●	●	38 - "
BIEC 03 - 39	●	●	40 - "
BIEC 04 - 41	●	●	42 - "
BIEC 01 - 43	●	●	44 - "
BIEC 02 - 45	●	●	46 - "
BIEC 00 - 47	●	●	48 - "
SPARE - 49	●	●	50 - "

*Top right

P3

LED 13N - 40	●	●	39 - +5V
+5V - 38	●	●	37 - LED 15N
LED 10N - 36	●	●	35 - LED 10N
LED 14N - 34	●	●	33 - LED 14N
GND - 32	●	●	31 - LED 12N
LED 11N - 30	●	●	29 - LED 11N
GND - 28	●	●	27 - LED 09N
" - 26	●	●	25 - LED 08N
" - 24	●	●	23 - LED 07N
LED 05N - 22	●	●	21 - LED 06N
GND - 20	●	●	19 - DSW 06N
" - 18	●	●	17 - CHAIN ENDN
" - 16	●	●	15 - DSW 07N
CHAIN BEGINN - 14	●	●	13 - DSW 15N
GND - 12	●	●	11 - DSW 14N
" - 10	●	●	09 - DSW 13N
" - 08	●	●	07 - GND
" - 06	●	●	05 - DSW 12N
DSW 10N - 04	●	●	03 - DSW 11N
DSW 08N - 02	●	●	01* - DSW 09N

*Bottom right

P4

- ● 1* - +5V
- ● 2 - KEY
- ● 3 - SPARE
- ● 4 - GND

*Right

PANEL Interfaces

P2

(equal to CUSOP/P3)

P3

KEY - 01*	●	●	02 - RTCE
GND - 03	●	●	04 - IPLRMTN
" - 05	●	●	06 - LOCK
" - 07	●	●	08 - GFETCH
" - 09	●	●	10 - ONN

*Top left

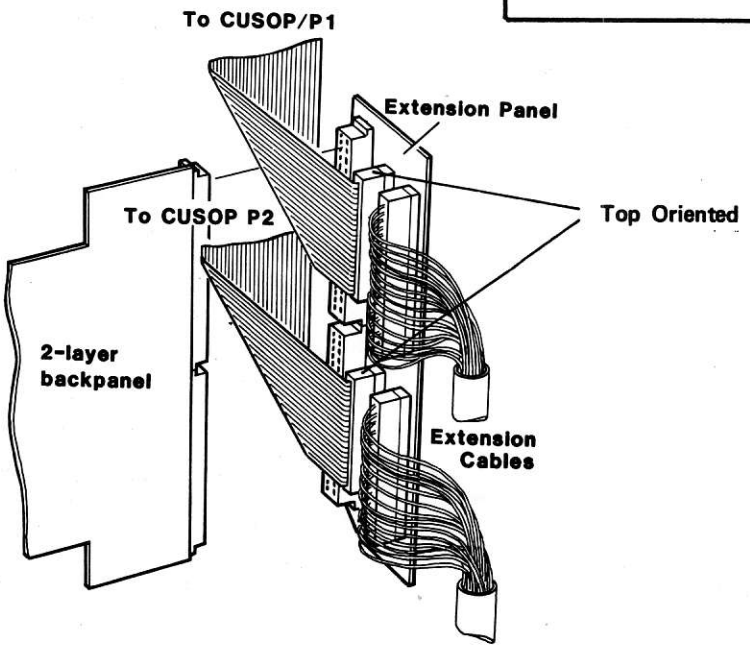
P4

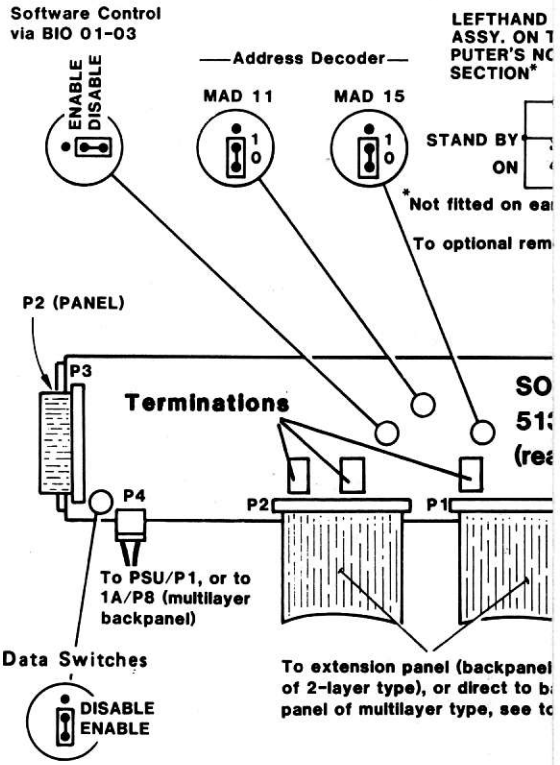
GND - 01*	●	●	02 - BONN
" - 03	●	●	04 - KEY
" - 05	●	●	06 - PSONN
" - 07	●	●	08 - PSOFFN
SPARE - 09	●	●	10 - SPARE

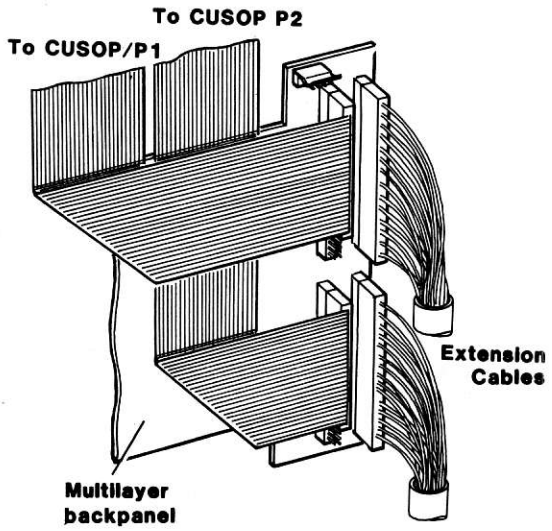
*Top left

IMPORTANT!

When installing this SOP Assembly in an extended system (TC with one or two EXUs) - remove the terminations fitted on CUSOP, positions 8B, 10B and 14B!







NOTE

Early deliveries of TC 6814 may have:

a) a key-operated SOP without CUSOP (513
connected to P1 of a modified CHFD 684

b) a key-operated SOP with CUSOP (5131 1

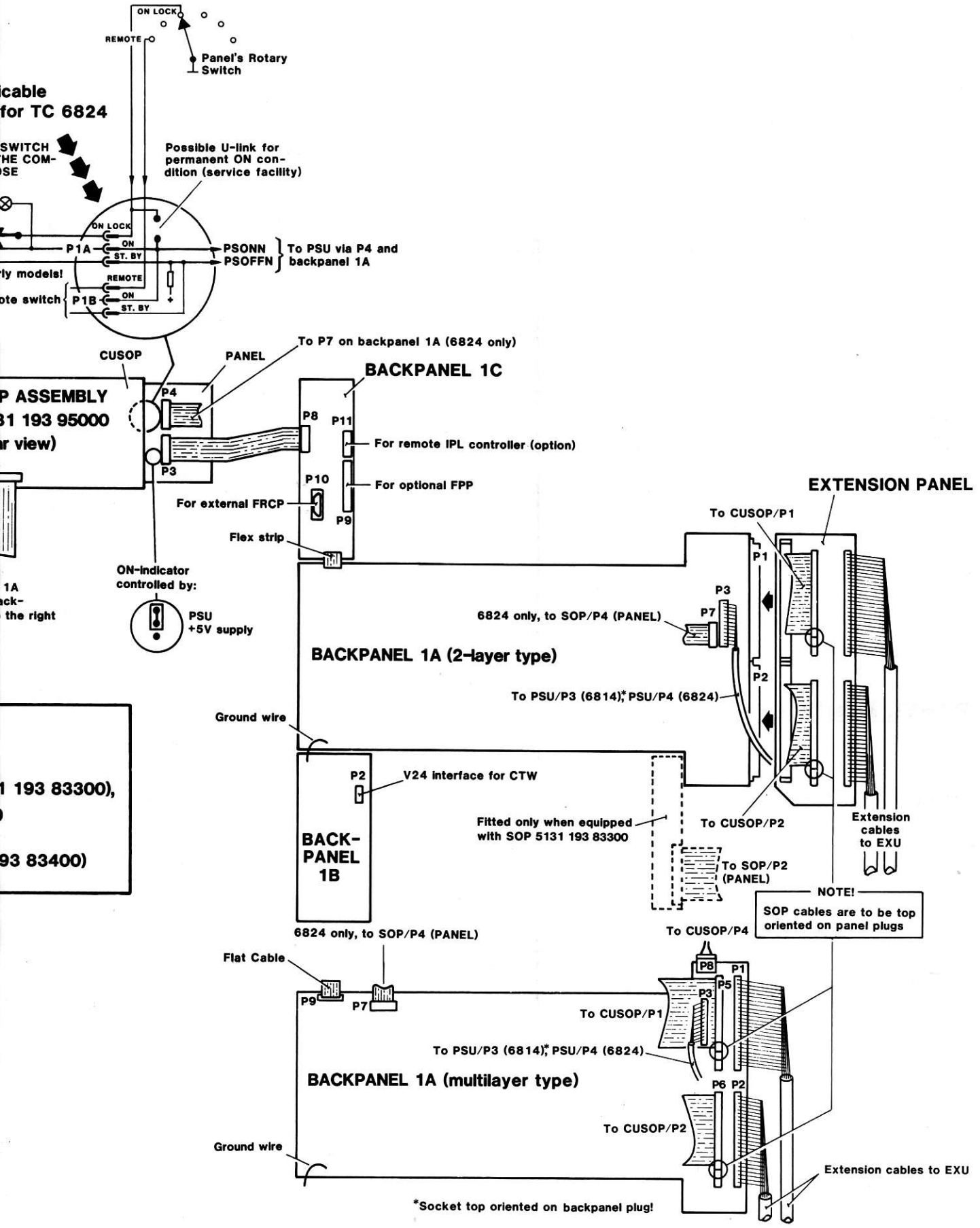
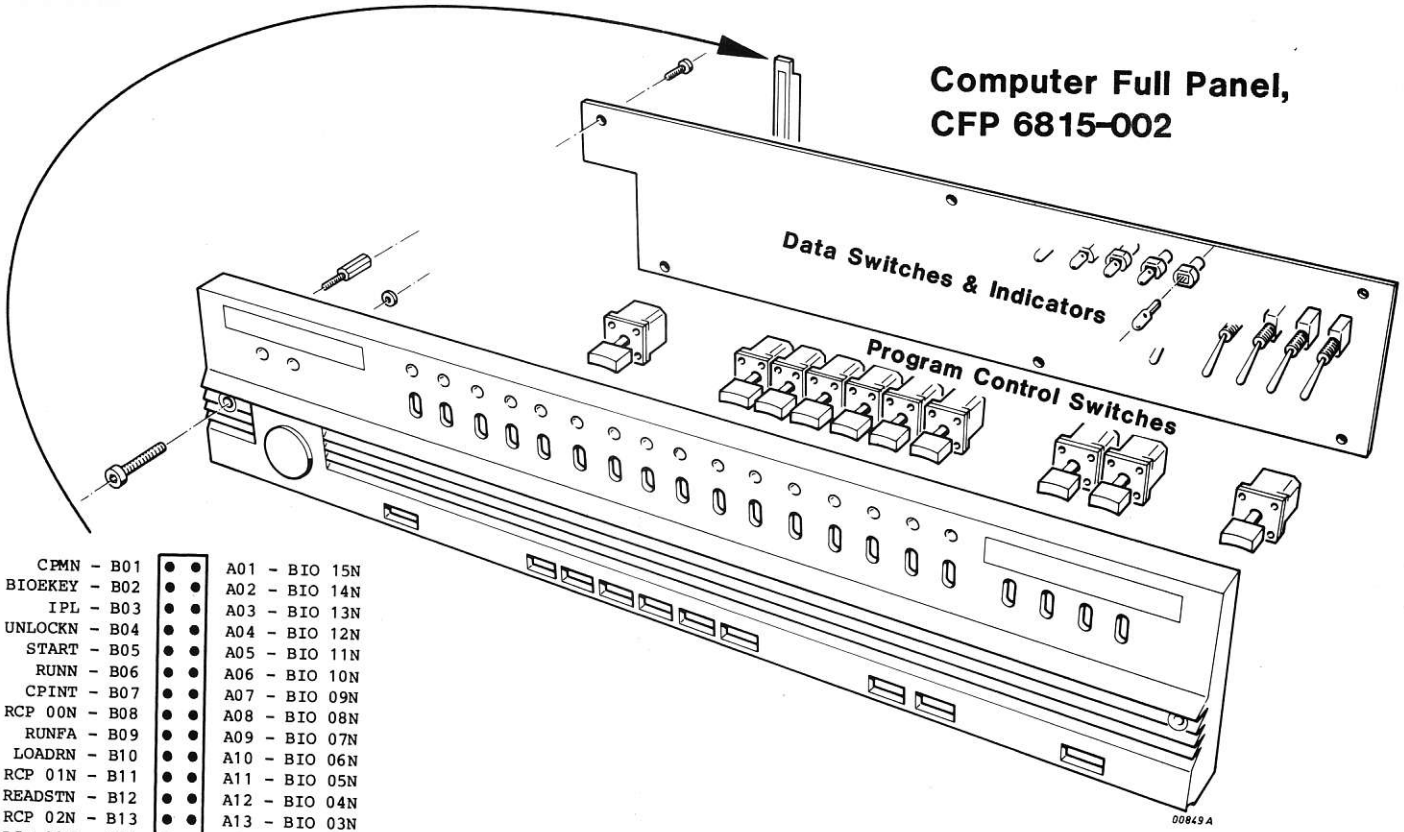


Figure 8.2.2 Interconnections

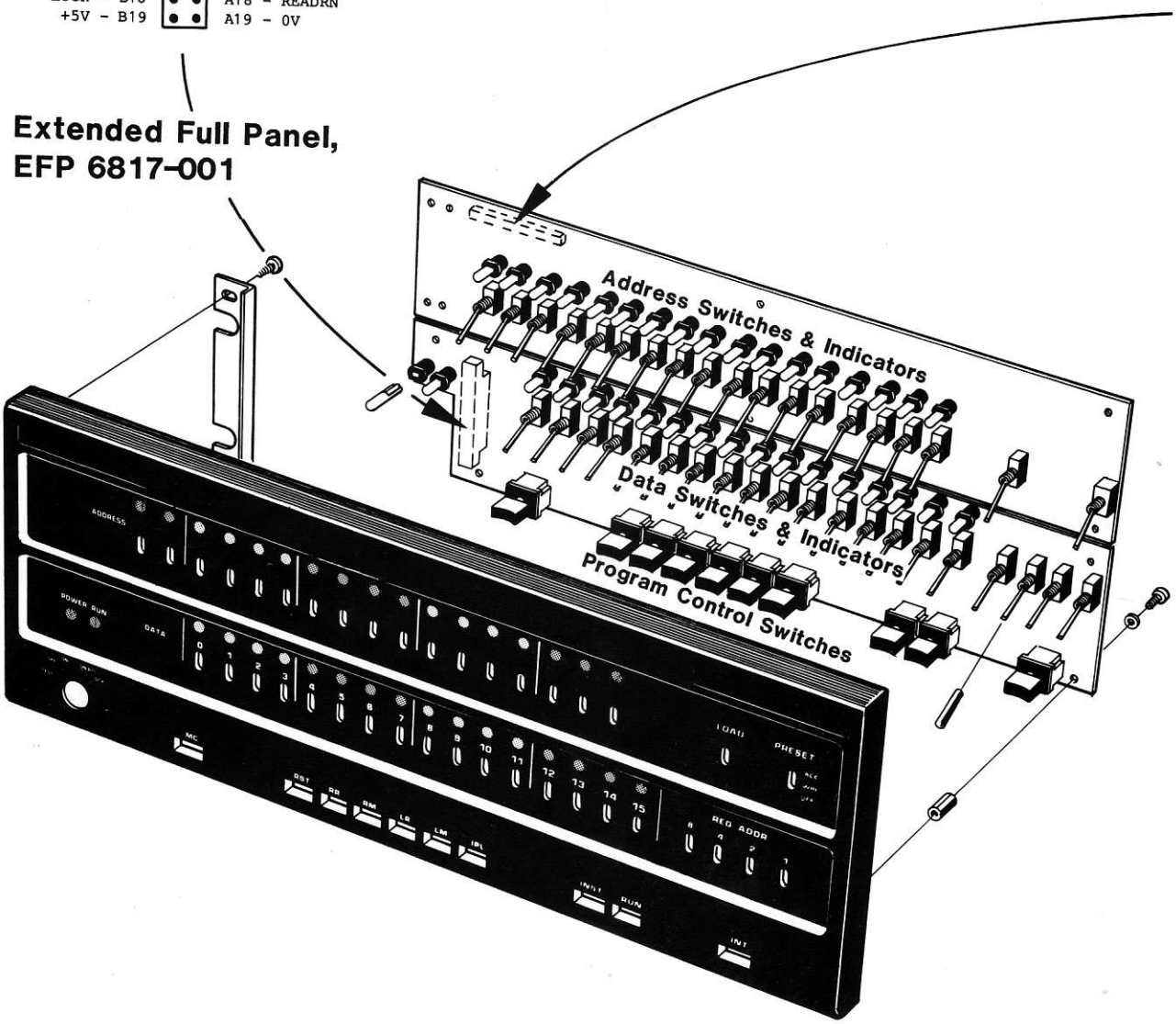
Computer Full Panel, CFP 6815-002



CPMN - B01		A01 - BIO 15N
BIOEKEY - B02		A02 - BIO 14N
IPL - B03		A03 - BIO 13N
UNLOCKN - B04		A04 - BIO 12N
START - B05		A05 - BIO 11N
RUNN - B06		A06 - BIO 10N
CPINT - B07		A07 - BIO 09N
RCP 00N - B08		A08 - BIO 08N
RUNFA - B09		A09 - BIO 07N
LOADRN - B10		A10 - BIO 06N
RCP 01N - B11		A11 - BIO 05N
READSTN - B12		A12 - BIO 04N
RCP 02N - B13		A13 - BIO 03N
RCP 03N - B14		A14 - BIO 02N
READMN - B15		A15 - BIO 01N
INSTN - B16		A16 - BIO 00N
LOADMN - B17		A17 - SPARE
LOCK - B18		A18 - READRN
+5V - B19		A19 - 0V

SPARE - 01	
" - 03	
" - 05	
" - 07	
+5 V - 09	
+5 V - 11	
+5 V - 13	
SPARE - 15	
" - 17	
" - 19	
" - 21	
" - 23	
" - 25	
" - 27	
" - 29	
" - 31	
" - 33	
" - 35	
" - 37	
" - 39	
" - 41	
" - 43	
" - 45	
" - 47	
0 V - 49	

Extended Full Panel, EFP 6817-001



SERVICE CONTROL PANELS–TC 6811/12/13

CFP/EFP, assemblies & interconnections

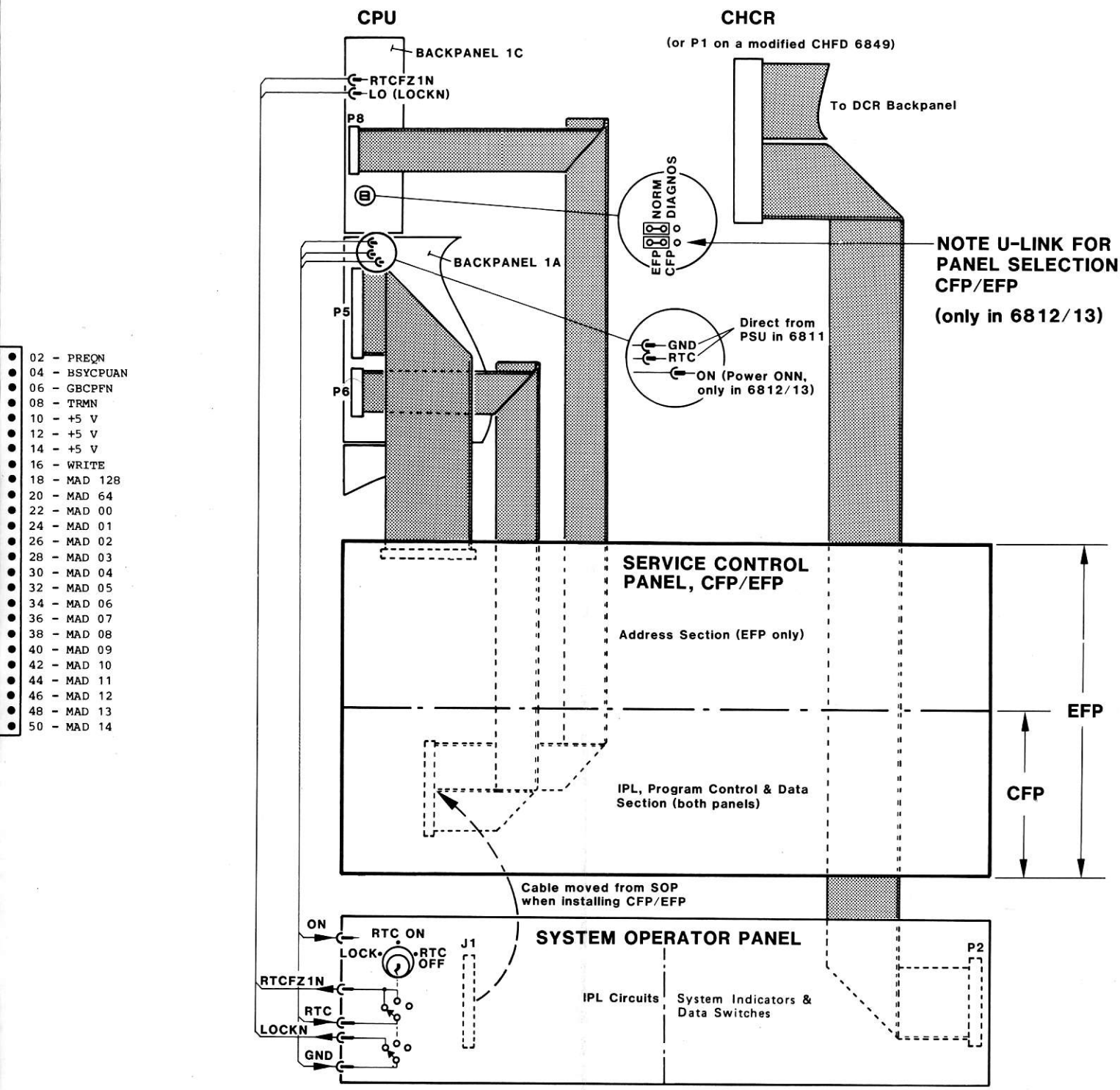


Figure 8.3.1 CFP/EFP, Assembly & Interconnections

8.4 SERVICE CONTROL PANEL - TC 6814/24

The FRCP provides the controls and indicators that enable a user to operate and monitor the system. The pushbuttons are in two groups: the left-side group is used to select system functions; the right-side group to select hexadecimal address and data digits. The left-side indicator is mainly used to display memory and register addresses, the right-side indicator to display memory and register data.

PHYSICAL DESCRIPTION

The FRCP is housed in a box and which can be used up to 10 metres away from the connecting panel.

Note: Before the FRCP is disconnected from the system, the LOCK button must be set rightward to the lock position also for when it has to be connected.

TECHNICAL DATA

PERFORMANCE DATA

Serial Data Interface: V24/28: Transmission Rate = 4.8K baud
Logic Levels : logical 0 = +12V
: logical 1 = -12V

POWER REQUIREMENTS

Voltage	: +5V ± 0.25V	+12V ± 1.2V	-12V ±1.2V
Current (max.)	: 800mA	150mA	20mA

INTERFACE

Pin No.	Signal	Function
J1-1	LOCK	When LOCK = 1, FRCP is inhibited except for INT
2	SDMP	Serial Data Master to Panel
3	OV(GND)	
4	+5V	(for remote version, down to +4V (V_{LINE})
5	+12V	Logic level 0 of serial data
6	SDPM	Serial Data Panel to Master
7	RTCE	Real Time Clock Enable (active at "1")
8	RESETN	Reset Not
9	-12V	Logic level 1 of serial data

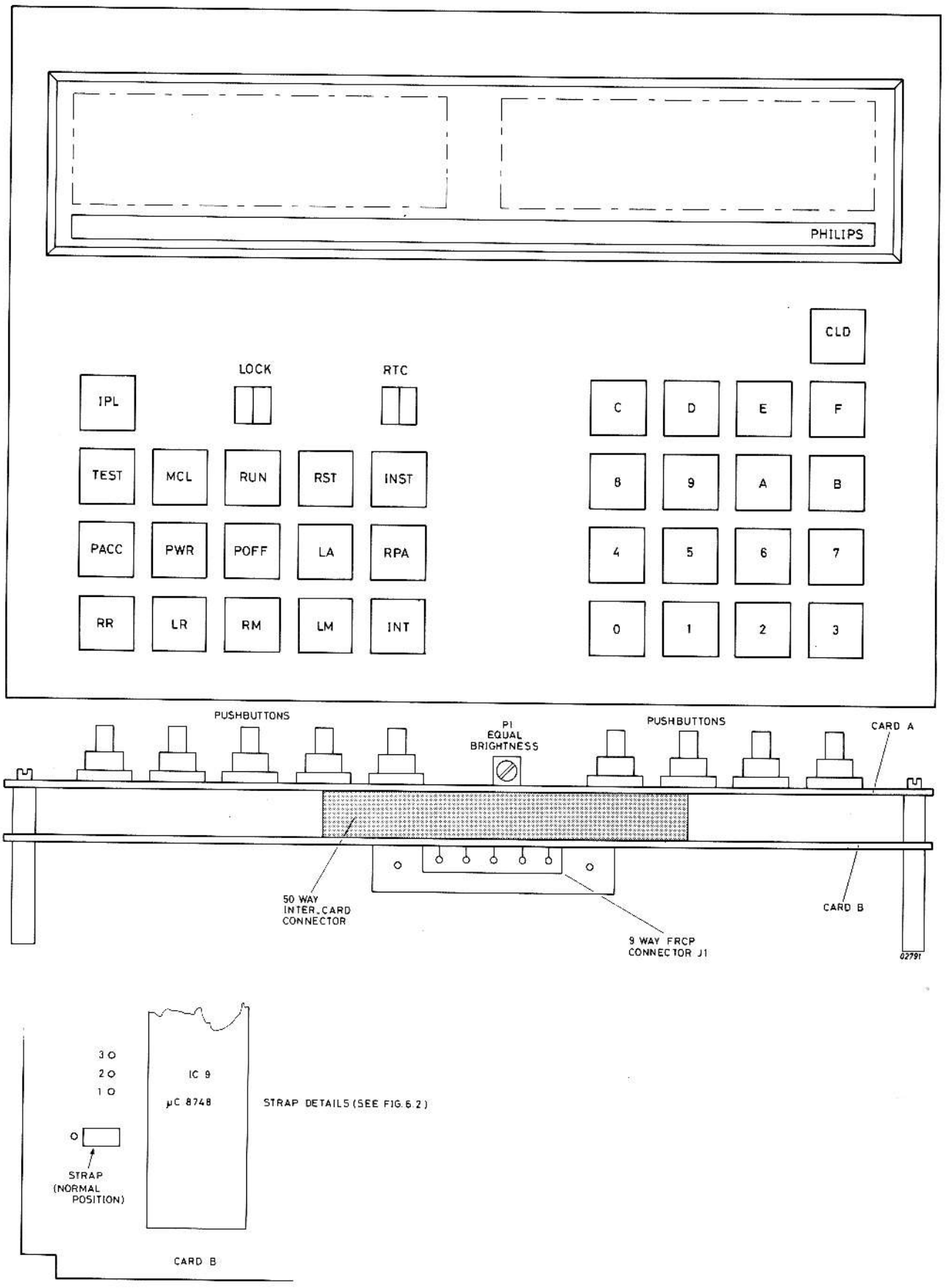


Figure 8.4.1 FRCP Details

SWITCH SELECTION:	HEXADECIMAL CODE:
0 to F	Address: / Bx Bx Bx Bx Bx Bx (leading zeros are not keyed in) Red Addr. / 3x Data: / 3x 3x 3x 3x (leading zeros are not keyed in) where x is the selected hex. digit in the range 0 to F.
MCL	/40
LR	/41
RR	/42
RST	/43
IPL	/44
LM(1)	/45
LM(2)	/55
INT	/46
RM(1)	/47
RM(2)	/57
LA	/48
INST	/49
RPA	/4A
RUN	/4B
PACC	/4C
PWR	/4D
POFF	/4F
TEST	/4E

Serial Data Panel-to-Master Codes

SDPM CODES

FUNCTION NAME	FUNCTION	HEXADECIMAL CODE
RUNZO	CPU mode changed from RUN to IDLE	/40
RUNZ1	CPU mode changed from IDLE to RUN	/41
TEST	Production testing only	/42

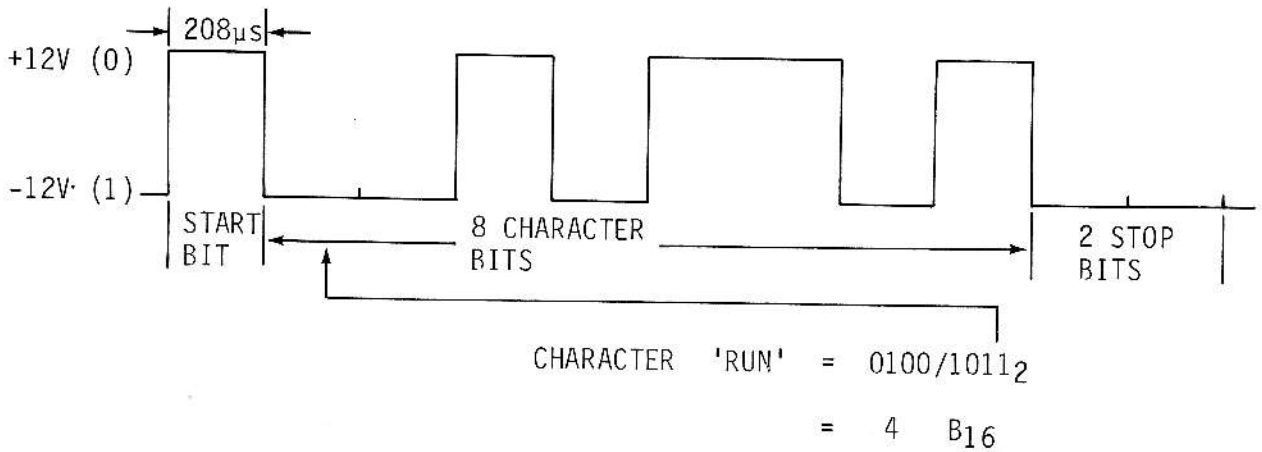
Serial Data Master-to-Panel Codes

Note: To distinguish between master-to-panel data and hand-entered data, the display of master -to-panel data is preceded by two small zeros e.g.: □□ 1625.
When the preset stop-on-address function is operative, the display of master-to-panel data is preceded by 'P' and one small zero e.g.: P□1625.

HEXADECIMAL CODE FORMAT

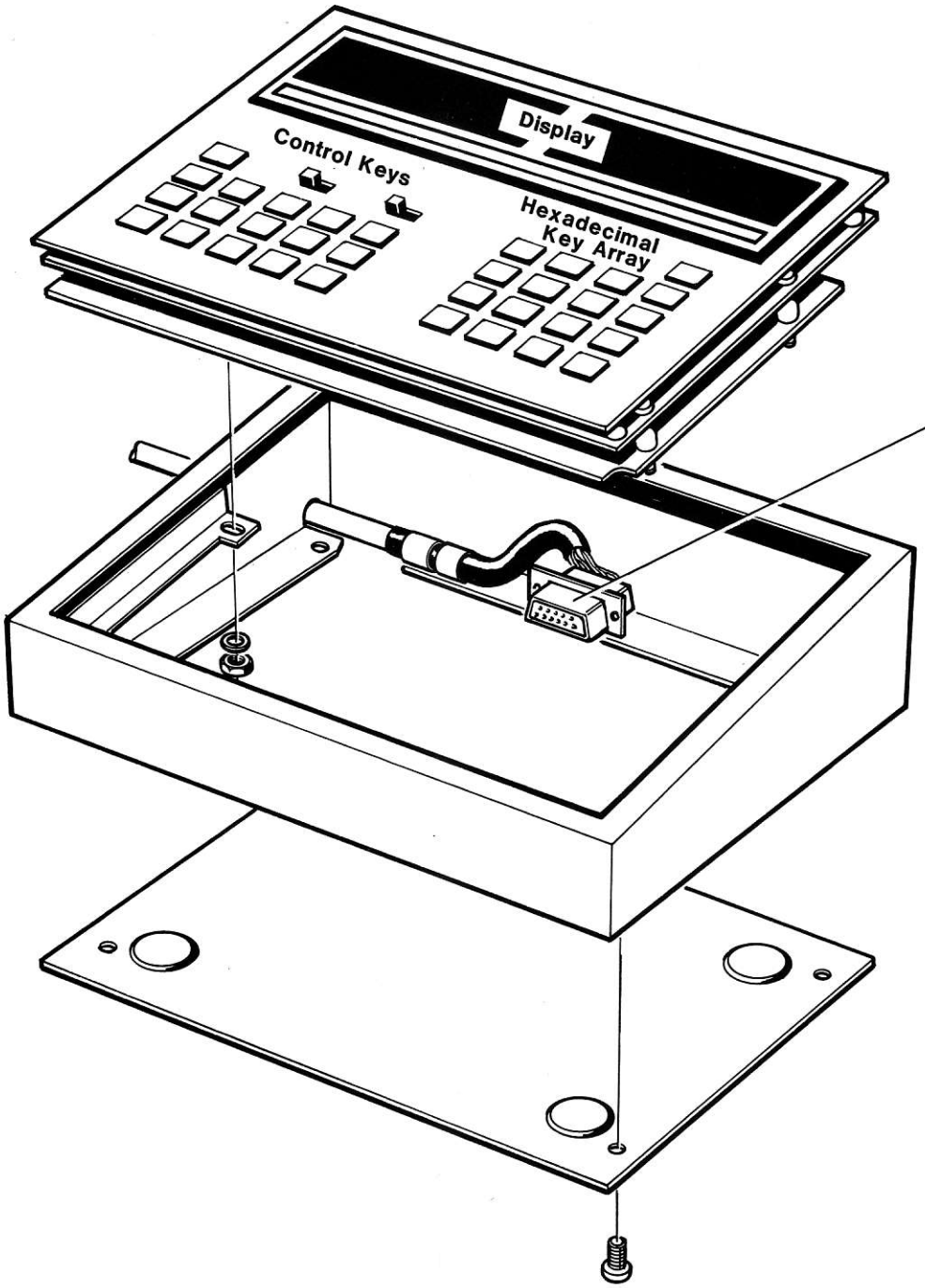
1 start bit, 8 character bits, 2 stop bits

EXAMPLE:



Note that the least significant bit is transmitted first.

Figure 8.4.2 SDMP Codes and Code Formats


Display
Control Keys
Hexadecimal
Key Array
-12V - 09
RESETN - 08
RTCE - 07
SDPM - 06

Connection to Backplane of TC 6814/24

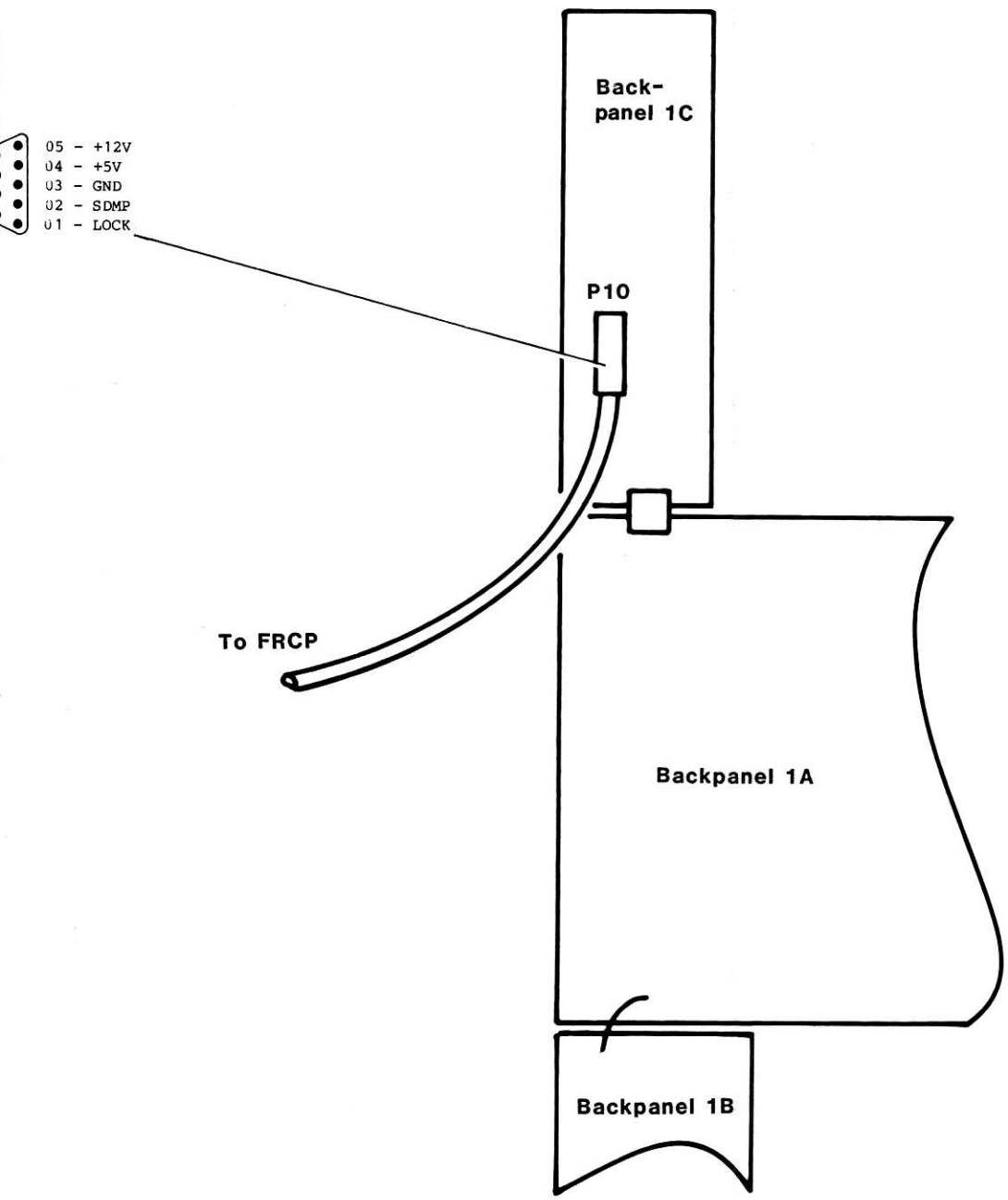
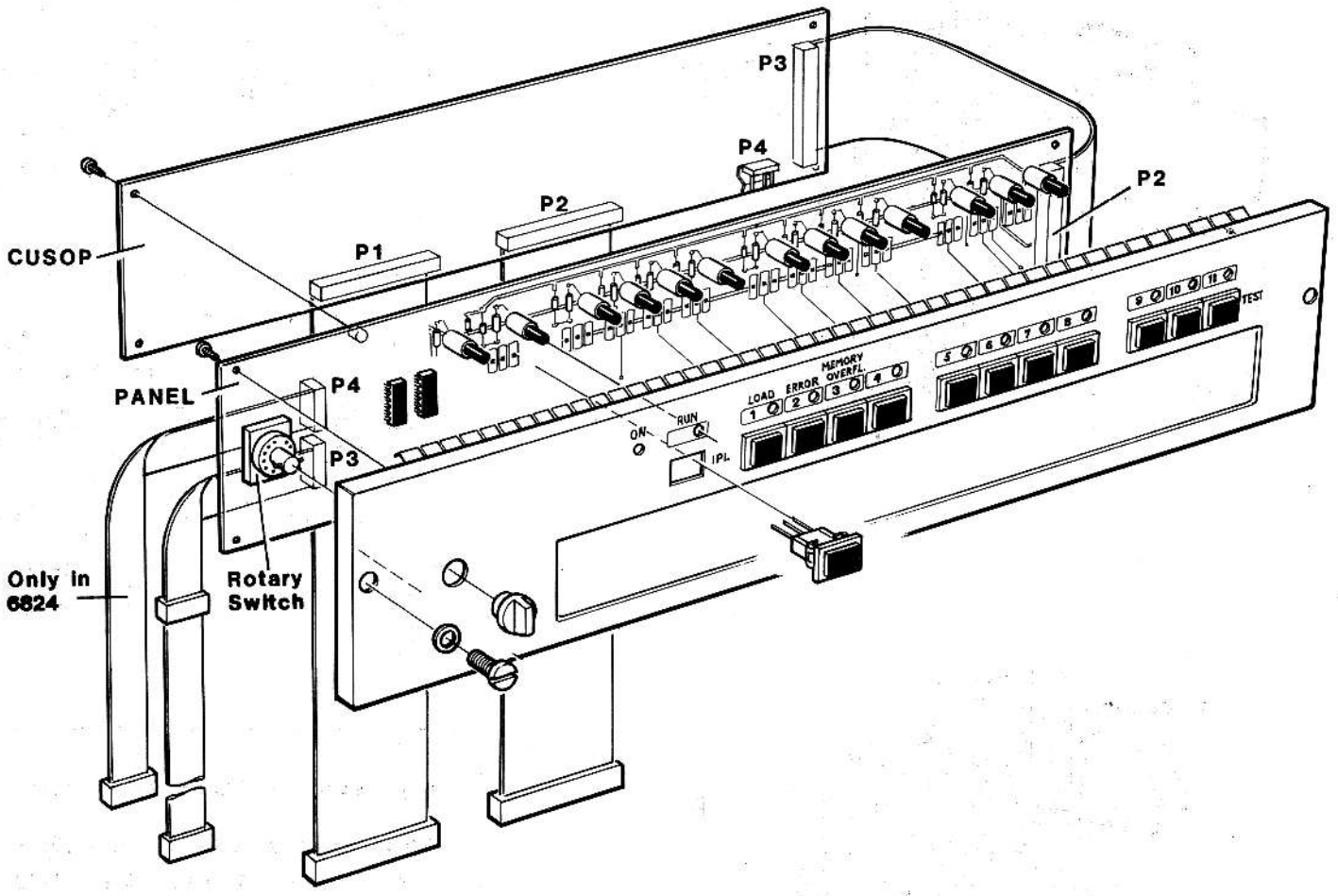


Figure 8.4.3 FRCP, Assembly & Interconnection

SYSTEM OPERATOR PANEL-TC 6814/24

Assembly & Interfaces

SOP Assembly 5131 193 95000 with integrated Control Unit (CUSOP)



NOTE

Early deliveries of TC 6814 may have:

a) a key-operated SOP without CUSOP (5131 193 83300), connected to P1 of a modified CHFD 6849

b) a key-operated SOP with CUSOP (5131 193 83400)

Figure 8.2.1 Assembly & Interfaces