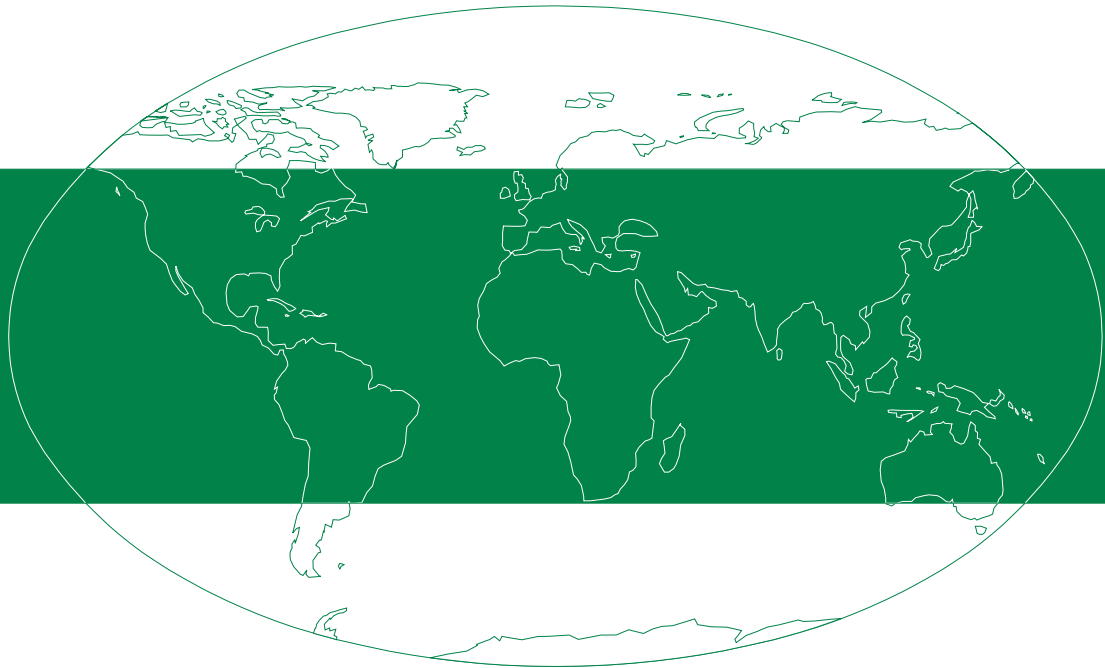


SAILOR



TECHNICAL MANUAL
FOR
SAILOR REMOTE C2140



S.P. RADIO A/S · AALBORG · DENMARK

1. INTRODUCTION

SAILOR C2140 is the remote control unit for the SAILOR Compact HF SSB Programme 2000.

SAILOR Compact HF SSB Programme 2000 is a powerful, advanced, high technology short wave communication system which is extremely easy to operate.

It has been developed on the basis of S. P. Radio's many years of experience with short wave communication equipment.

It has the same high reliability as all SAILOR equipment is known for.

It is extremely easy to operate:

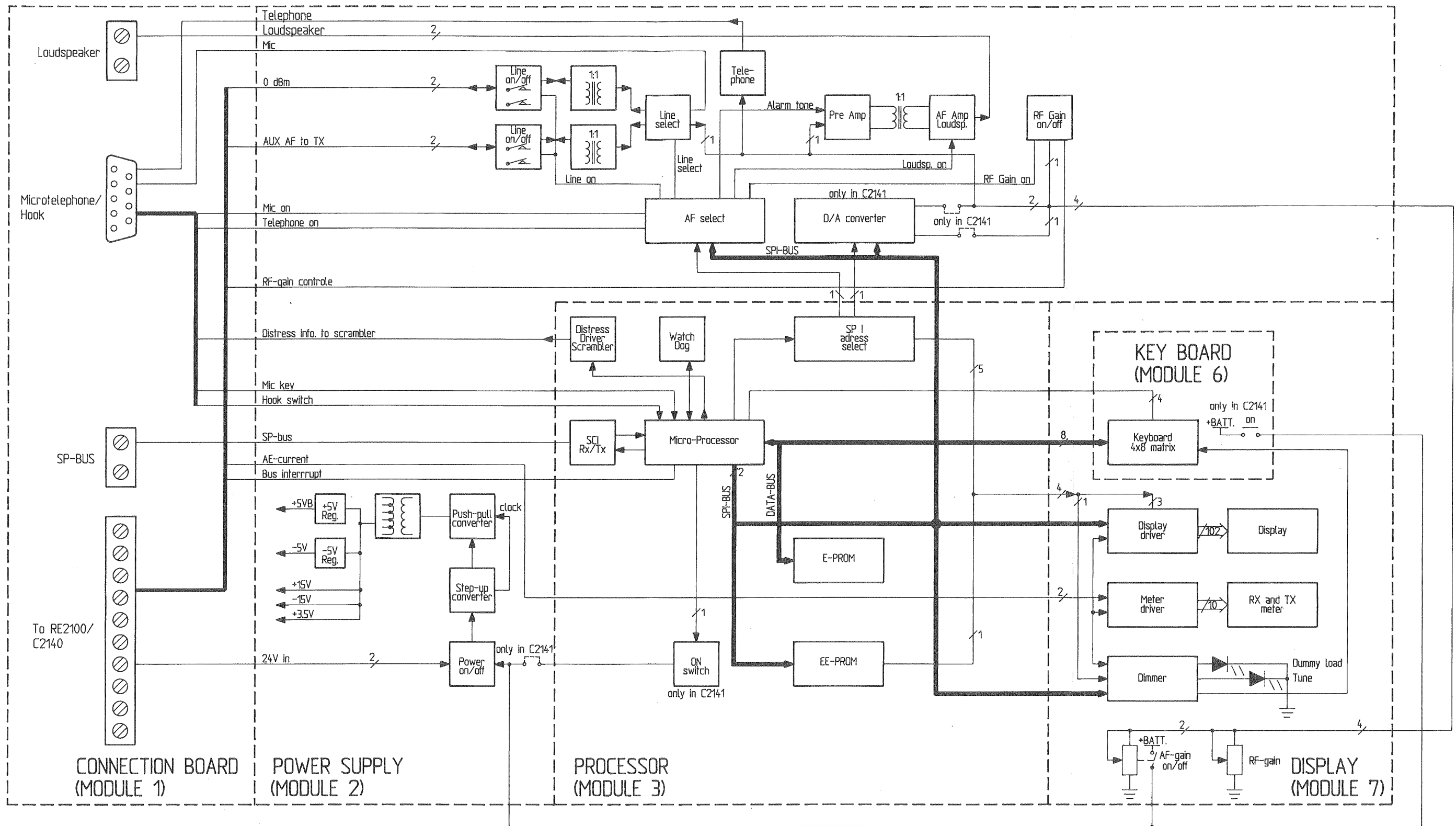
1. Select frequency
2. Make your call when the tune lamp has been extinguished.

It has been constructed so that it fits in with the other units in the SAILOR Compact Programme 2000.

The remote control unit C2140 is a part of the HF SSB Programme and can be used together with the 250W, 600W and the 1200W system.



1.4. PRINCIPLE OF OPERATION



C2140A 4-0-26578A

BLOCK DIAGRAM

2. INSTALLATION cont.:

NECESSARY PROGRAMMING WHEN INSTALLING

When installing the C2140 you have to programme in the address/priority of the various units. You can use address numbers from 2 to 6. This number is used as telephone number in intercom mode. It is also used as priority number, the lowest number has the highest priority. You have to do the programming in both RE2100 and C2140.

C2140: Select service programme SP-02-X.
Now key-in the selected address number followed by <ENT>. The number must be between 2 and 6, both incl.

RE2100: Select service programme SP-07-X.
In this service programme you have to programme which types of units you have connected, and to which address. First you key-in the number of service programme (07), then the address (2-6) and finish with the type of unit.

Type of unit:

- 0 => The address will not be supported (default setting from the factory).
- 1 => DSC modem RM2150
- 2 => Telex modem RM2151
- 3 => Remote control unit C2140.

E.g.: you want to have one C2140 connected to address 2 and one C2140 to address 3.

Then press <0> and <1> simultaneously to select the service programmes Display "SP-".

Then press <0>-<7>-<2>-<3>-<ENT>

Rx-display: "SP-07-2"

Tx-display: " 3 0 "

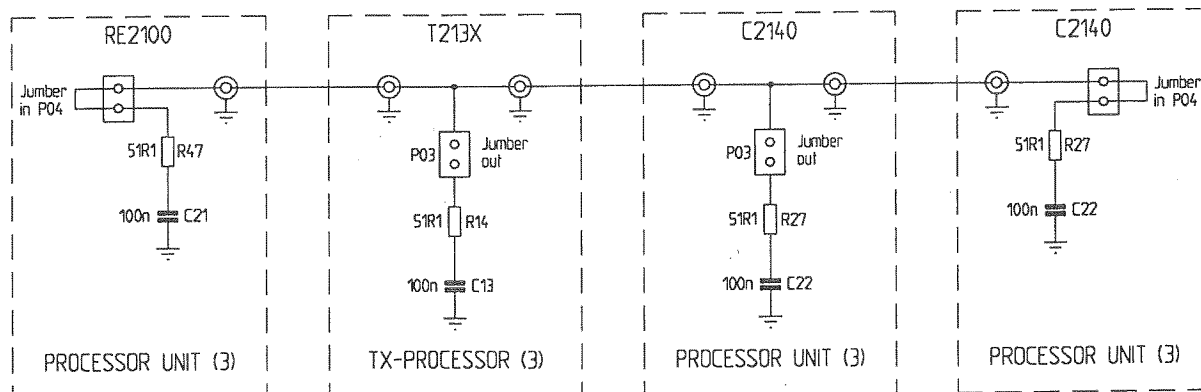
Then press <0>-<7>-<3>-<3>-<ENT>

Rx-display: "SP-07-3"

Tx-display: " 3 0 "

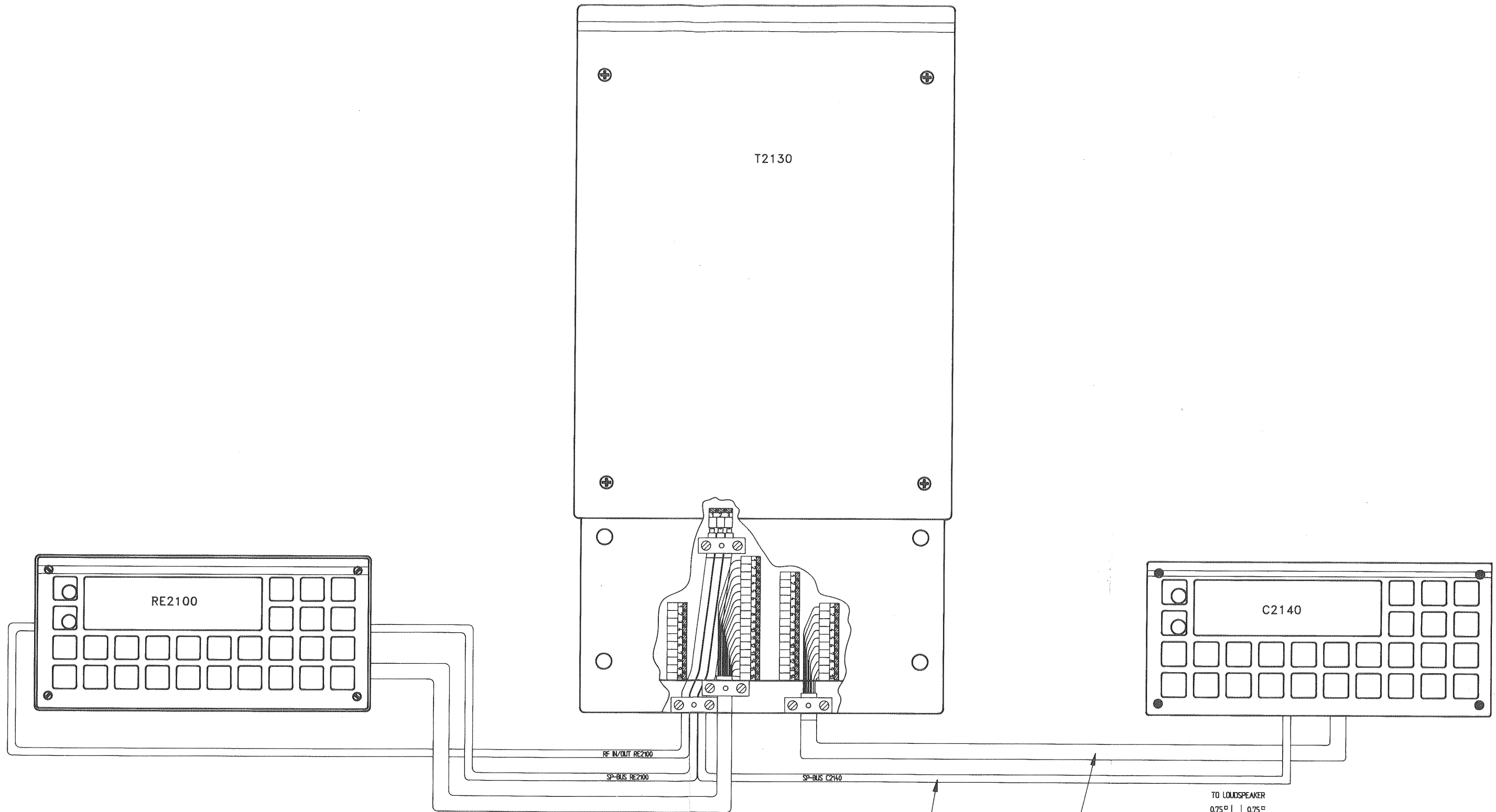
NOTE! 1. All C2140 units are connected in parallel on the SP-BUS. At each SP-BUS input there is a load, and this load must only exist at each end of the coax cable.

Thus the loads at the remaining units must be removed. This is done by removing the jumper P04 at the processor module 3 in the C2140, or by removing the jumper P03 at the TX processor module 3 in T2130. See the drawing below.



2. The cabling between RE2100 and T2130 has to be changed in accordance with the table in section 2.3.

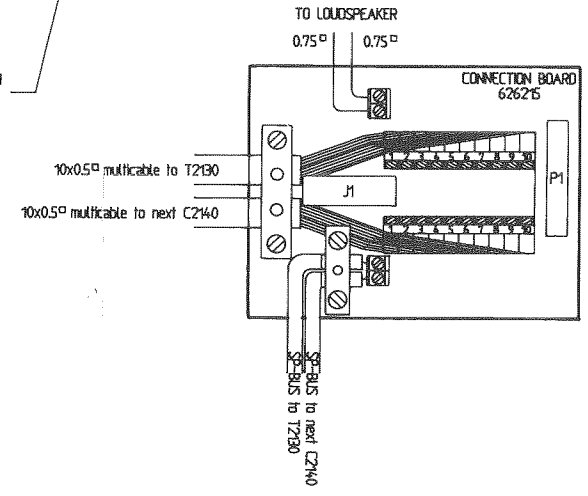
C2140 4-0-26628



T2130		AUX AF TO TX	C2140
1	BROWN	AUX AF TO TX	1
2	RED	AUX AF TO TX	2
3	PINK	0 dBm	3
4	YELLOW	0 dBm	4
5	GREEN	RF-GAIN CONTROL	5
6	BLUE	AE-CURRENT/SIGNAL	6
7	VIOLET	SP-BUS INTERRUPT	7
8	GREY	-24V DC	8
9	WHITE	+24V DC	9
10	BLACK	GND	10

50 ohm's coax RG58/U
(SP. number 77.509)

10x0.5" multicable shielded
(SP. number E62.405)



3.9 SERVICE PROGRAMMES

The remote control unit C2140 contains several service programmes in order to make service more easy.

Selection of a service programme is done by pressing the <0> and <1> buttons simultaneously. The display will then show SP-, and you can now key in the wanted service programme number.

A new service programme may be chosen after the keyboard button <ENT> has been pressed once.

SERVICE PROGRAMMES IN C2140

SP-00-0 READ-OUT OF SOFTWARE VERSION NUMBER

In the TX display a 4 digit number will be read out, possibly followed by a letter. The number indicates S. P. Radio's internal software number and the letter indicates the software release.

SP-00-1 TEST OF EEPROM

When selecting SP-00-1, the processor will run a test of the write and read functions of the EEPROM. In the TX display there will be a count-up during the test. When the test is finished the TX display will show "A" for accepted or "E" for error.

SP-00-2 STARTS TEST OF THE DISPLAY

This programme is used in the performance check. When pressing <ENT> during the test, the test procedure stops. When pressing <ENT> again, the programme steps forward. When pressing <0>, the programme continues automatically.

SP-00-3 TEST OF SP-BUS

This test programme is used in the performance check. The processor sends a byte to itself via the serial SCI communication port. Each time an error is received, the display reads-out an "E". If there is no error, a bar "-" runs through the TX display.

SP-00-4 TEST OF MICROPHONE KEY

This test programme is used in the performance check. When pressing the mic. key the TX display will show "ON", and when the mic. key is released, the TX display will show "OFF".

SP-00-5 TEST OF HOOK SWITCH

This test programme is used in the performance check. When pressing the hook switch the TX display will show "IN", and when the hook switch is released, the TX display will show "OUT".

SP-00-6 TEST OF CALL SOUND

This test programme is used in the performance check. When the test programme starts the call sound, the call sound will be heard in the loudspeaker. The call sound will stop after 1 sec.

3.9. SERVICE PROGRAMMES cont.:

SP-00-7 TEST OF THE DISTRESS OUTPUT IN THE MICROTELEPHONE PLUG

This test programme is used in the performance check. When the programme starts, pin 7 in the microtelephone plug will toggle from 0V to 15V.

SP-01-X TEST OF AF SIGNAL PATH

This test programme is used in the performance check.

In this service programme it is possible to select 4 different set-ups of the shift register U4-2 on the power unit module (2).

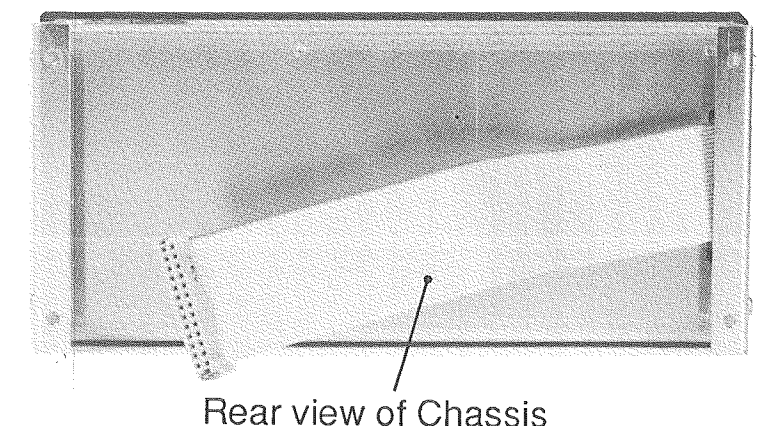
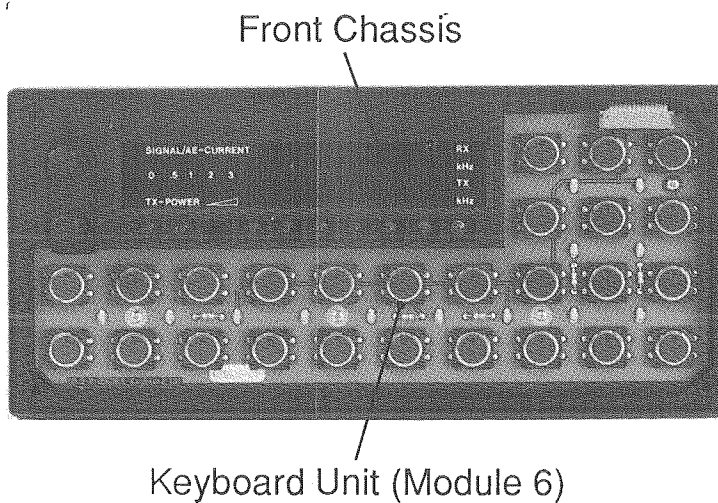
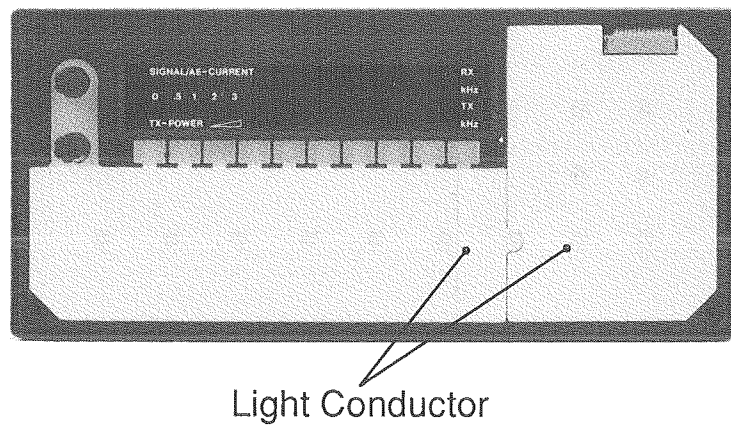
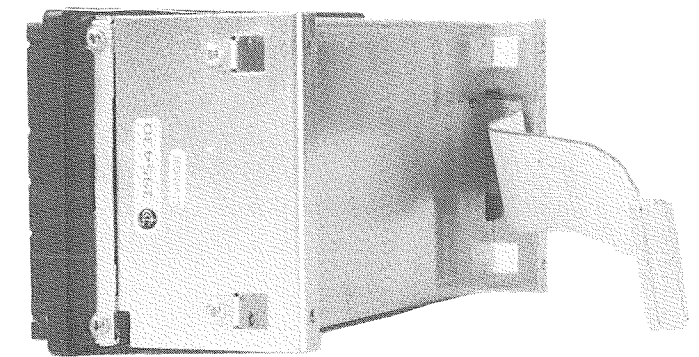
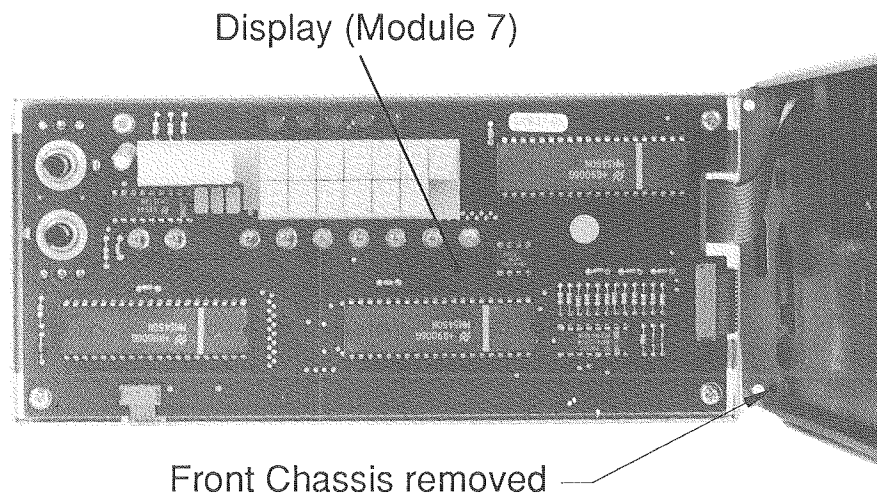
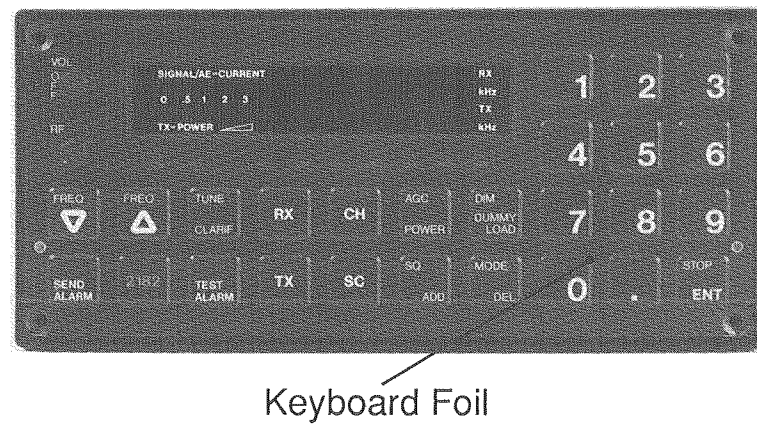
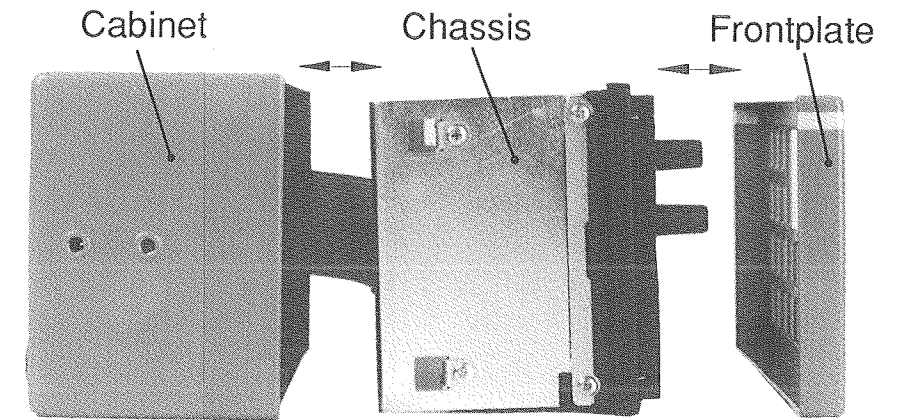
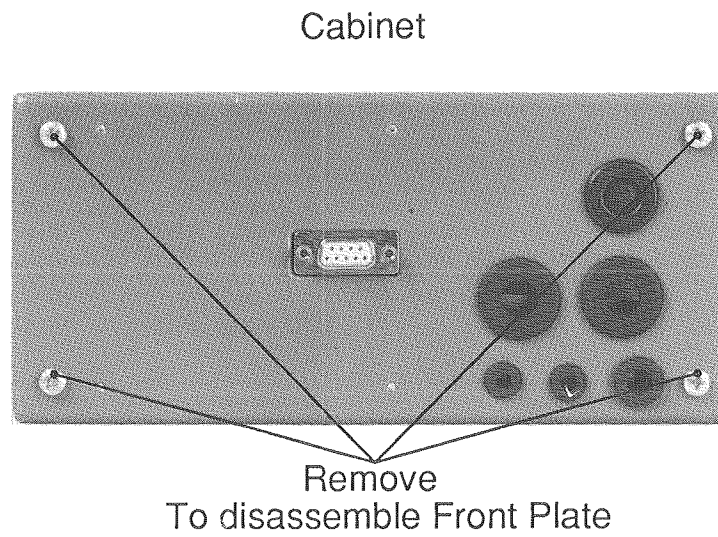
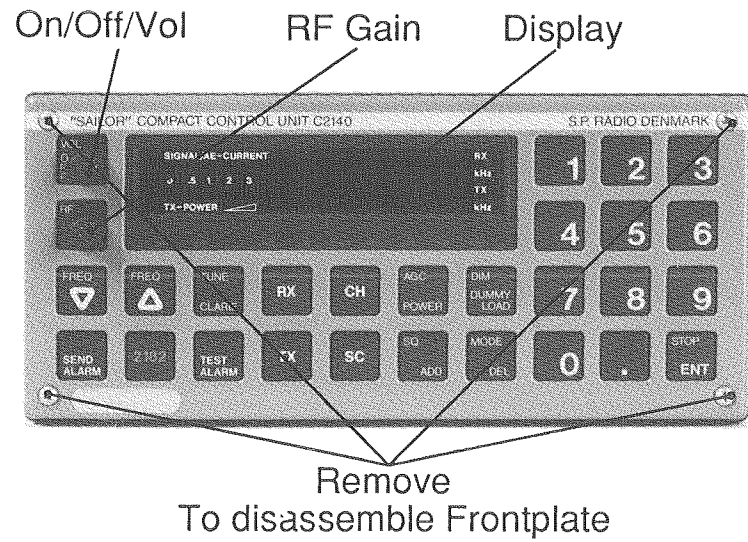
Following output combinations on the shift register can be selected:

	b7	b6	b5	b4	b3	b2	b1	b0
SP-01-1	0	0	0	1	1	1	0	1
SP-01-2	0	0	0	0	0	0	0	1
SP-01-3	0	0	0	1	1	1	0	0
SP-01-4	0	1	0	1	1	1	1	1

SP-02-X READ-OUT AND PROGRAMMING OF THE C2140's TERMINAL ADDRESS

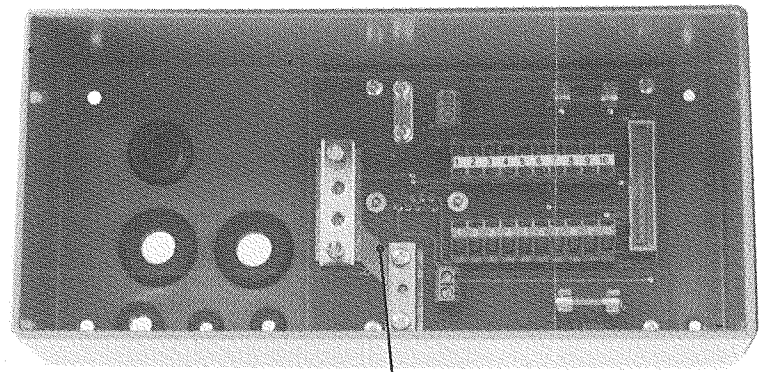
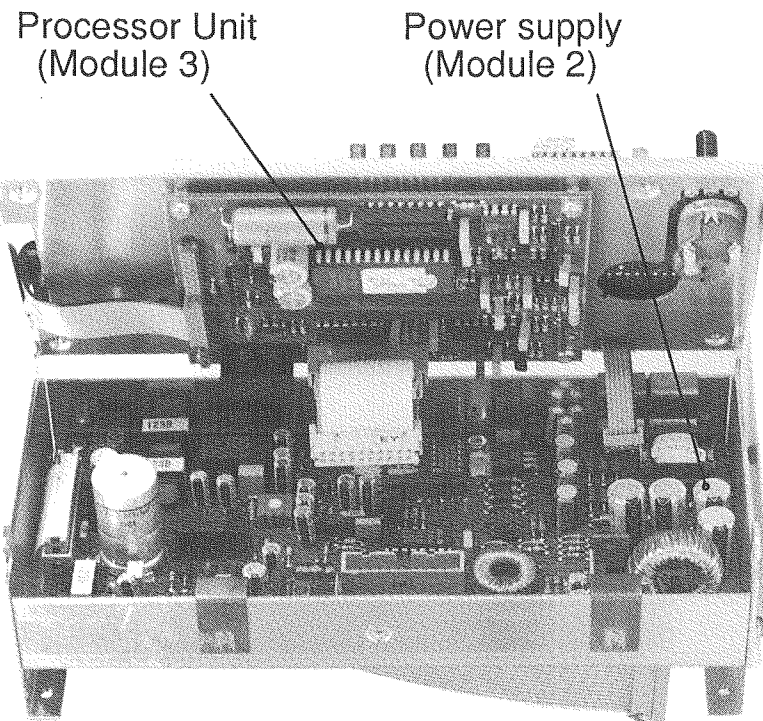
This service programme is used to view and to programme the remote terminal address in the EEPROM. The address must be different from the addresses of the other units, connected to the RE2100. When keying-in SP-02 the last digit in the RX display will be the above mentioned address. The address can be changed by keying-in the new address (a digit between 2 and 6) followed by <ENT>.

4.1. MECHANICAL DISASSEMBLING AND MODULE LOCATION

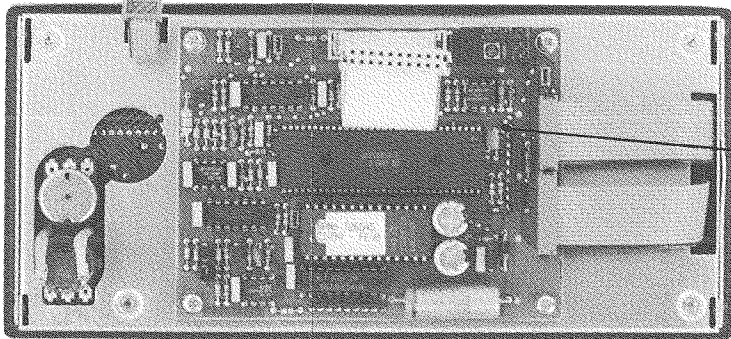


C2140 FOTO NR. 501095,
 501096, 501098 - 501101,
 501104 - 501106

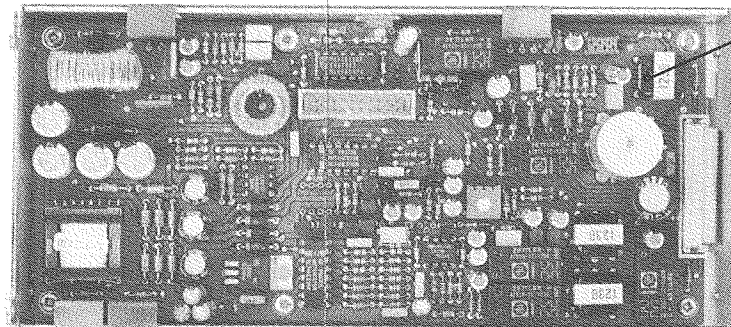
4.1. MECHANICAL DISASSEMBLING AND MODULE LOCATION



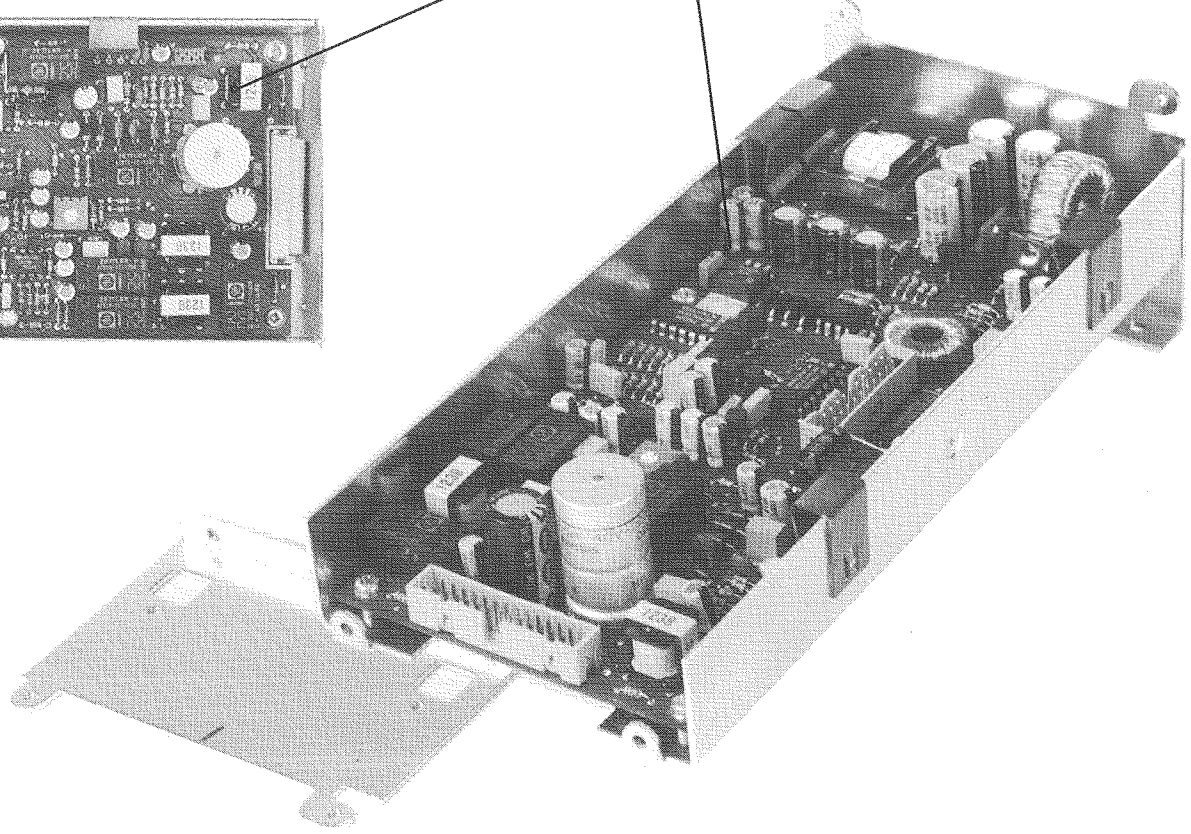
Connection Board (Module 1)



Processor Unit (Module 3)

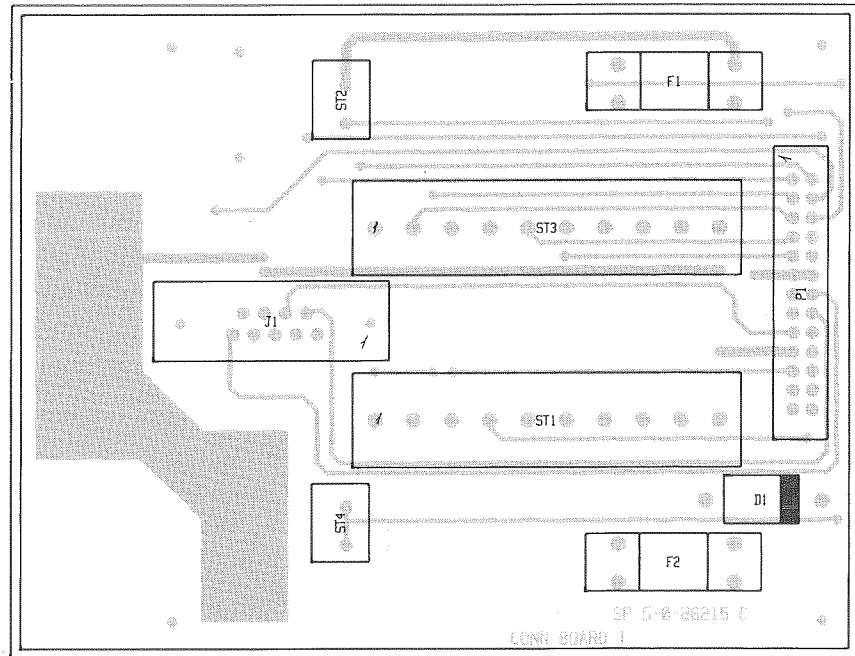


Power supply (Module 2)

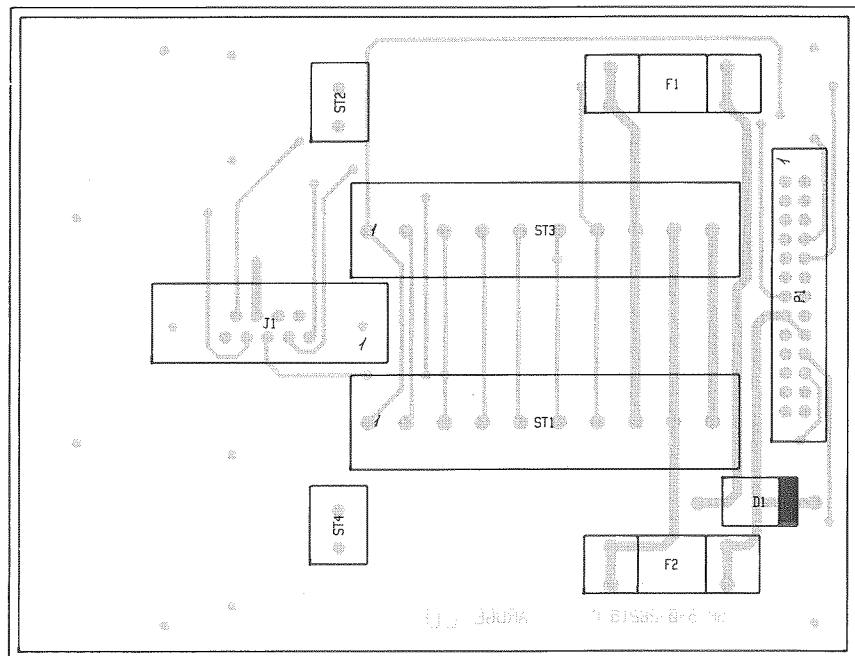


5. CIRCUIT DESCRIPTION AND SCHEMATIC DIAGRAMS

5.1. CONNECTION BOARD (MODULE 1)

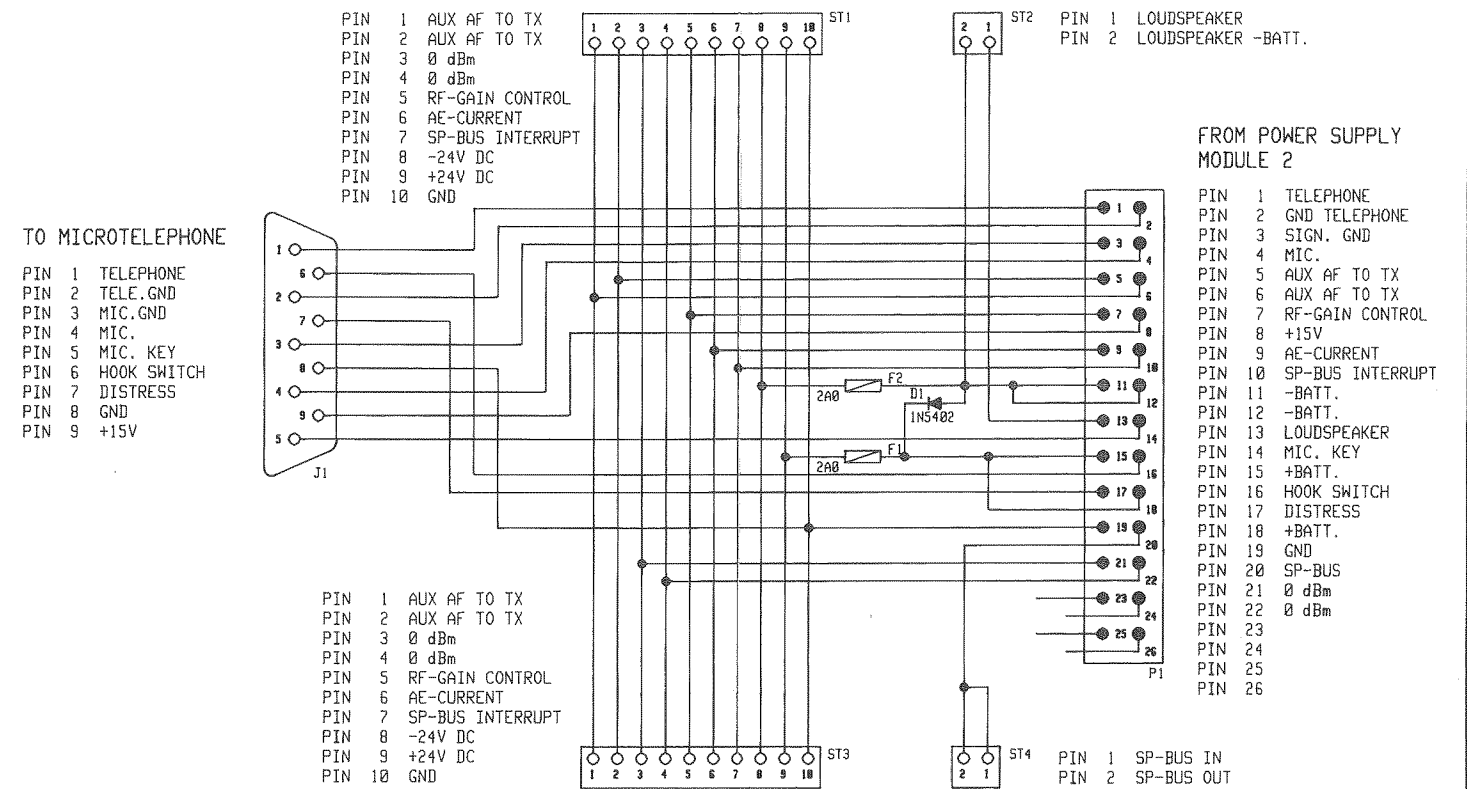


View from component side with upper side tracks.



View from component side with lower side tracks.

Connection Board (1)

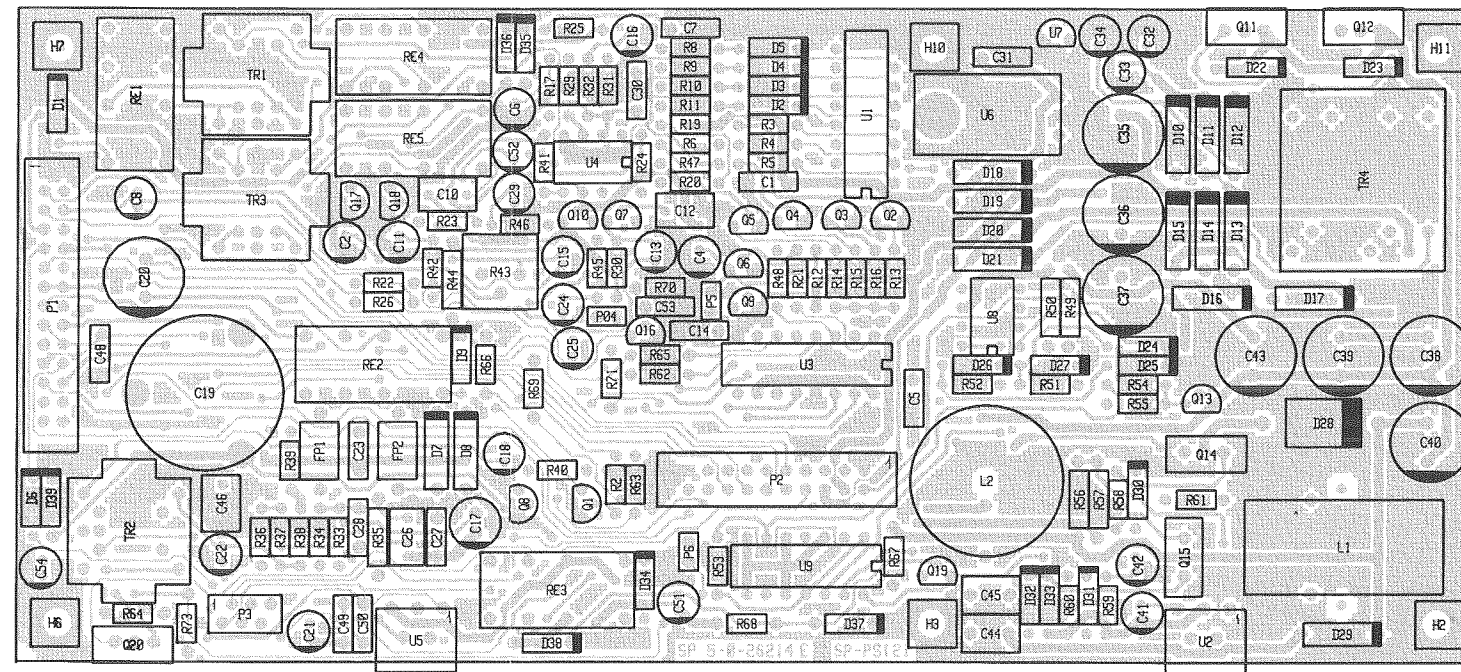


4-0-26215A

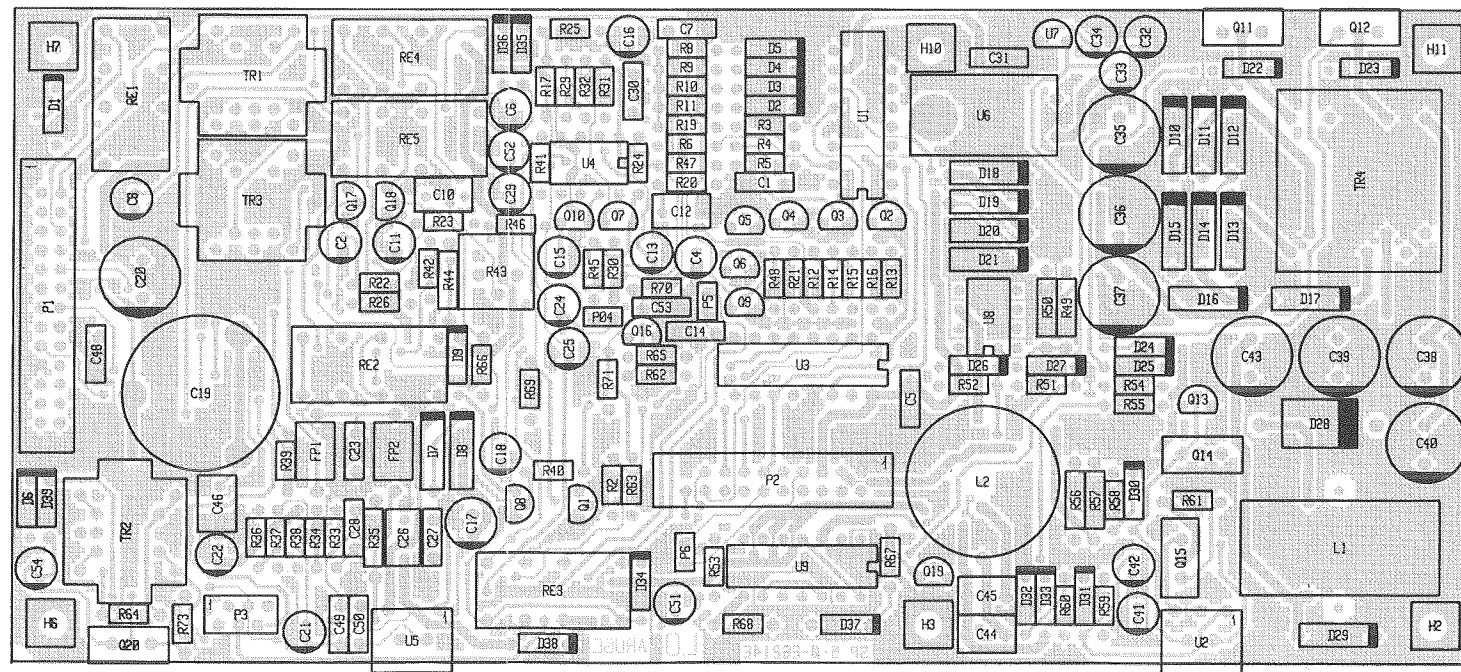
C2140A 4-6-26215C 4-0-26215A

5.2. POWER SUPPLY (MODULE 2) cont.:

COMPONENT LOCATION POWER SUPPLY MODULE 2.

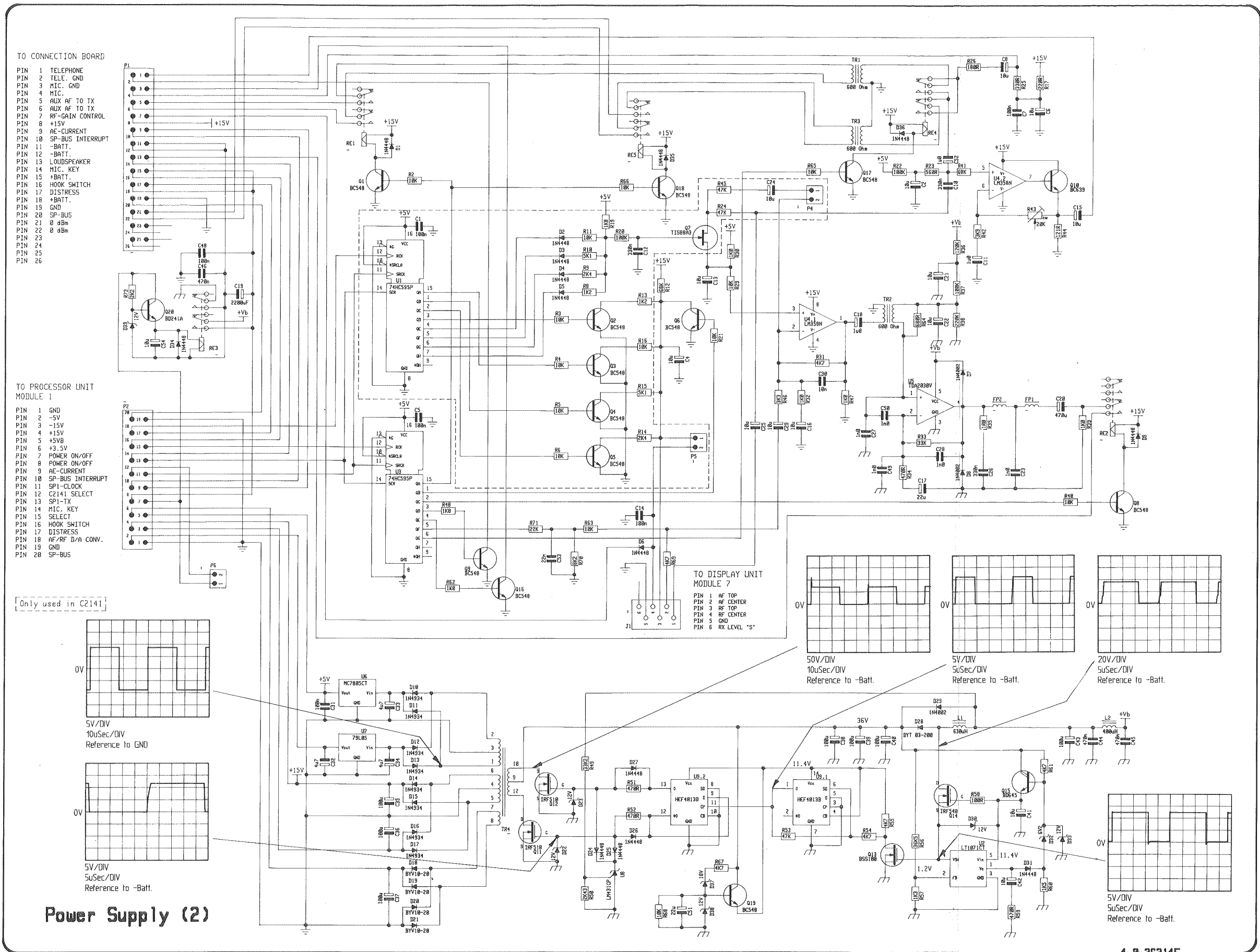


View from component side with upper side tracks.



View from component side with lower side tracks.

5.2. POWER SUPPLY (MODULE 2) cont.:

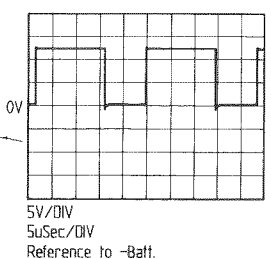
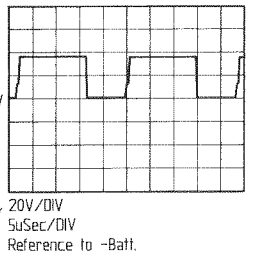
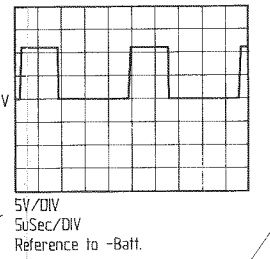
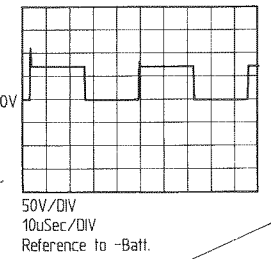
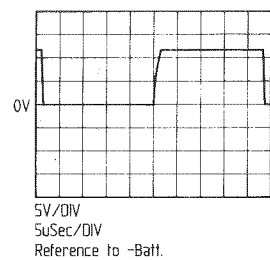
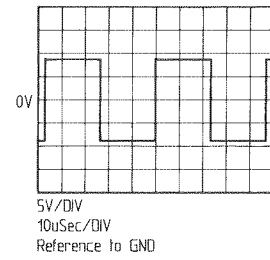


- TO CONNECTION BOARD
- PIN 1 TELEPHONE
 - PIN 2 TELE. GND
 - PIN 3 MIC. GND
 - PIN 4 MIC.
 - PIN 5 AUX AF TO TX
 - PIN 6 AUX AF TO TX
 - PIN 7 RF-GAIN CONTROL
 - PIN 8 +15V
 - PIN 9 AE-CURRENT
 - PIN 10 SP-BUS INTERRUPT
 - PIN 11 -BATT.
 - PIN 12 -BATT.
 - PIN 13 LOUDSPEAKER
 - PIN 14 MIC. KEY
 - PIN 15 +BATT.
 - PIN 16 HOOK SWITCH
 - PIN 17 DISTRESS
 - PIN 18 +BATT.
 - PIN 19 GND
 - PIN 20 SP-BUS
 - PIN 21 0 dBm
 - PIN 22 0 dBm
 - PIN 23
 - PIN 24
 - PIN 25
 - PIN 26

- TO PROCESSOR UNIT
MODULE 1
- PIN 1 GND
 - PIN 2 -5V
 - PIN 3 -15V
 - PIN 4 +15V
 - PIN 5 +5VB
 - PIN 6 +3.5V
 - PIN 7 POWER ON/OFF
 - PIN 8 POWER ON/OFF
 - PIN 9 AE-CURRENT
 - PIN 10 SP-BUS INTERRUPT
 - PIN 11 SPI-CLOCK
 - PIN 12 C2141 SELECT
 - PIN 13 SPI-TX
 - PIN 14 MIC. KEY
 - PIN 15 SELECT
 - PIN 16 HOOK SWITCH
 - PIN 17 DISTRESS
 - PIN 18 AF/RF D/A CONV.
 - PIN 19 GND
 - PIN 20 SP-BUS

- TO DISPLAY UNIT
MODULE 7
- PIN 1 AF TOP
 - PIN 2 AF CENTER
 - PIN 3 RF TOP
 - PIN 4 RF CENTER
 - PIN 5 GND
 - PIN 6 RX LEVEL "5"

Only used in C2141

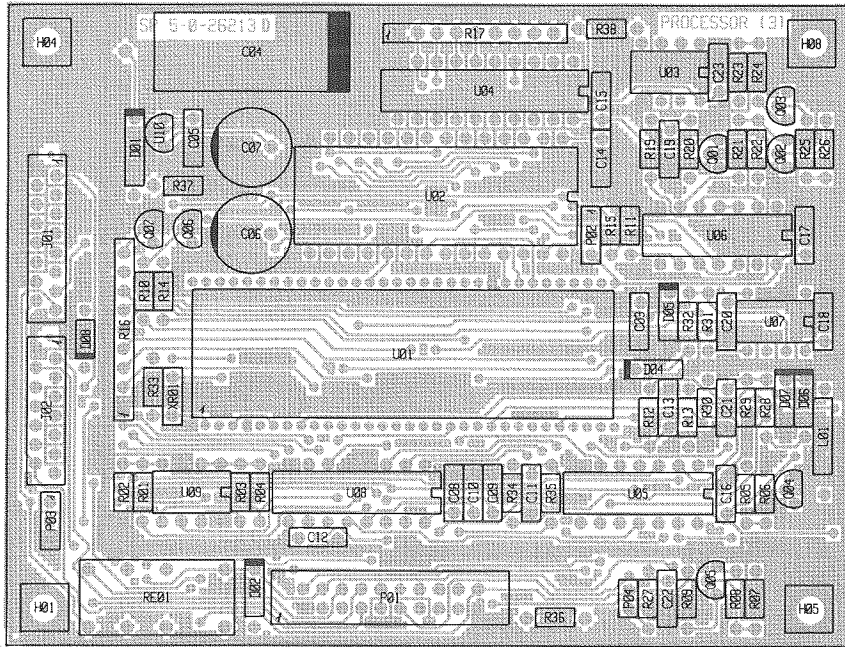


Power Supply (2)

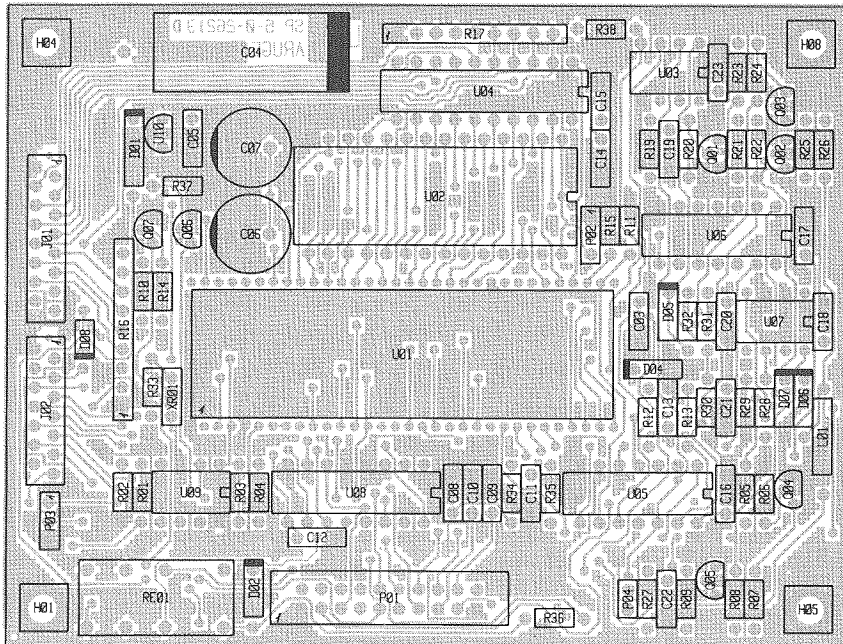
C2140A 4-0-26214E

5.3. PROCESSOR UNIT (MODULE 3) cont.:

COMPONENT LOCATION PROCESSOR UNIT MODULE 3.

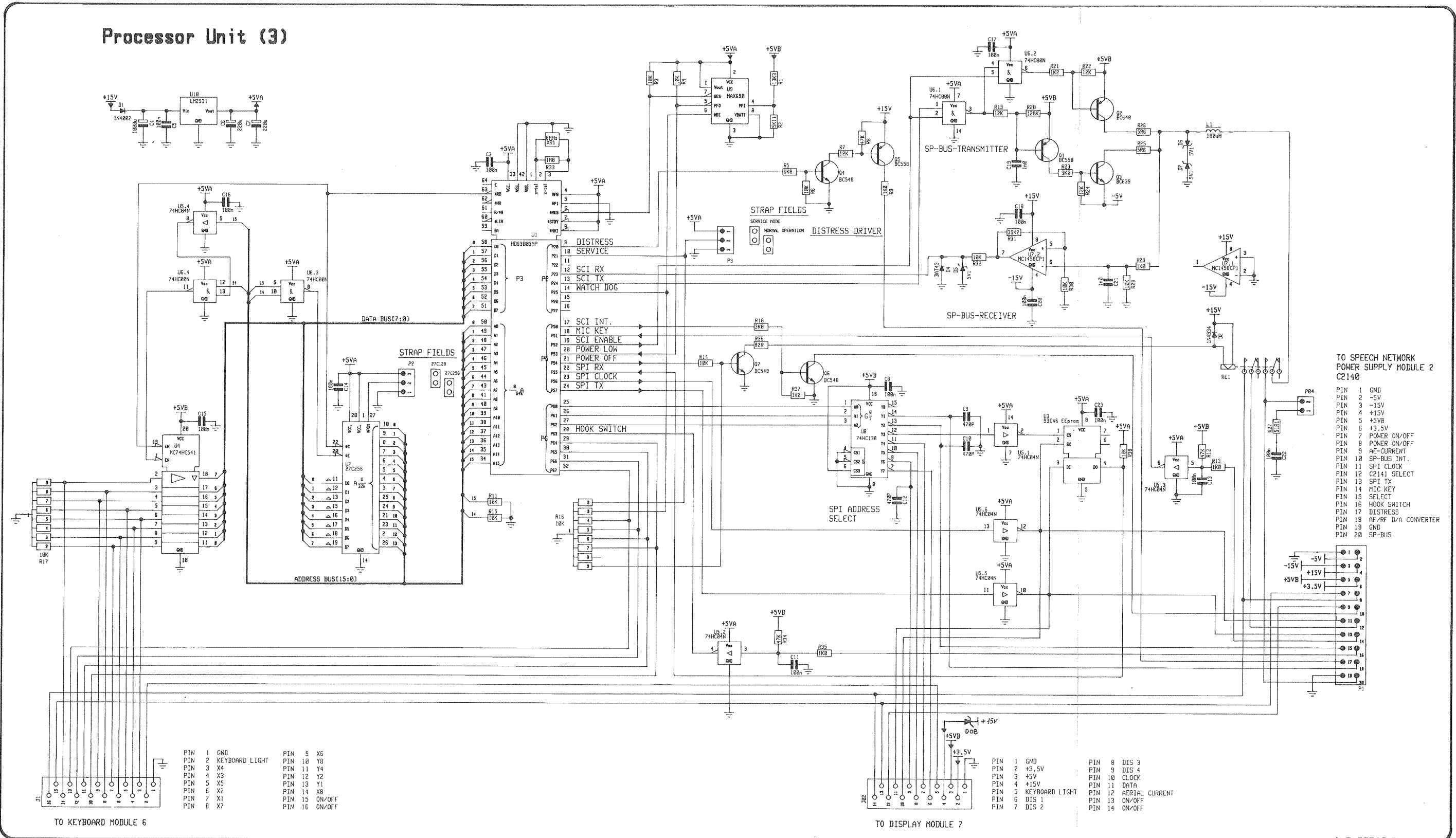


View from component side with upper side tracks.



View from component side with lower side tracks.

5.3. PROCESSOR UNIT (MODULE 3) cont.:



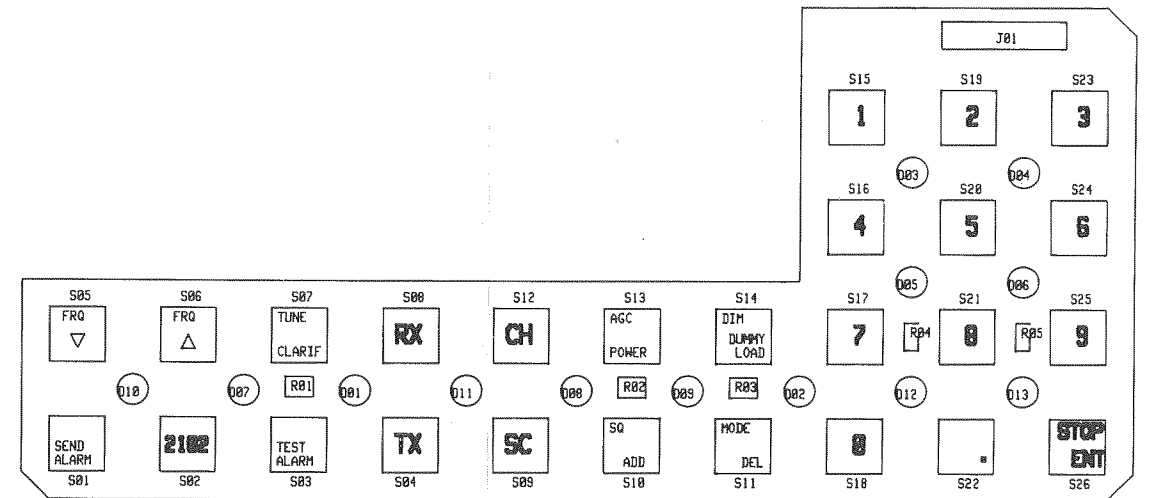
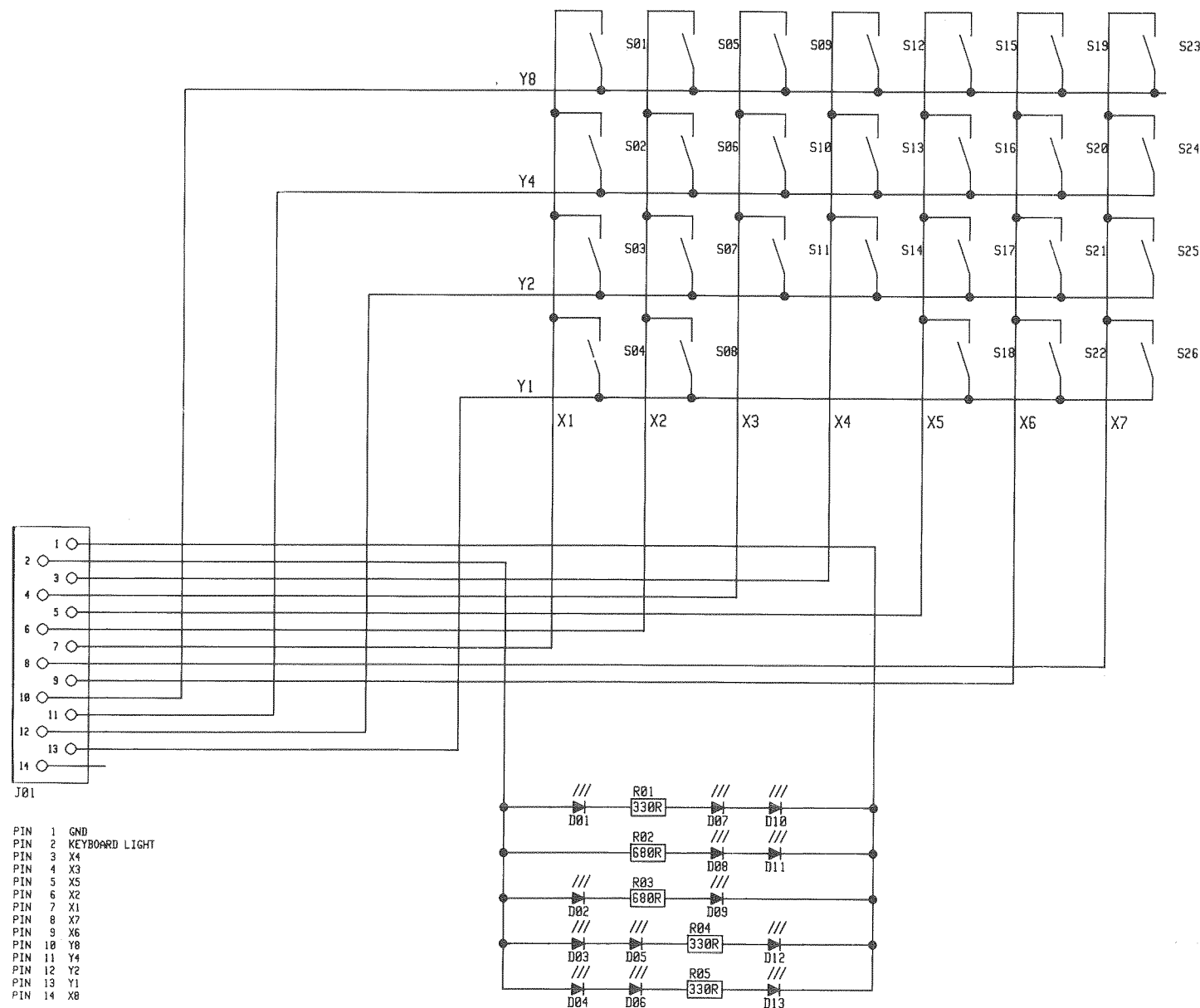
5.6. KEYBOARD UNIT (MODULE 6)

The keyboard consists of a 4x8 matrix of which 26 keys are used. One side is connected to the microprocessor data bus by an 8 bit driver. The other side is connected to 4 of the microprocessor ports.

By setting the 4 ports high and reading the data bus alternately it is possible to determine which key has been activated. In this way the keyboard is scanned 100 times per second.

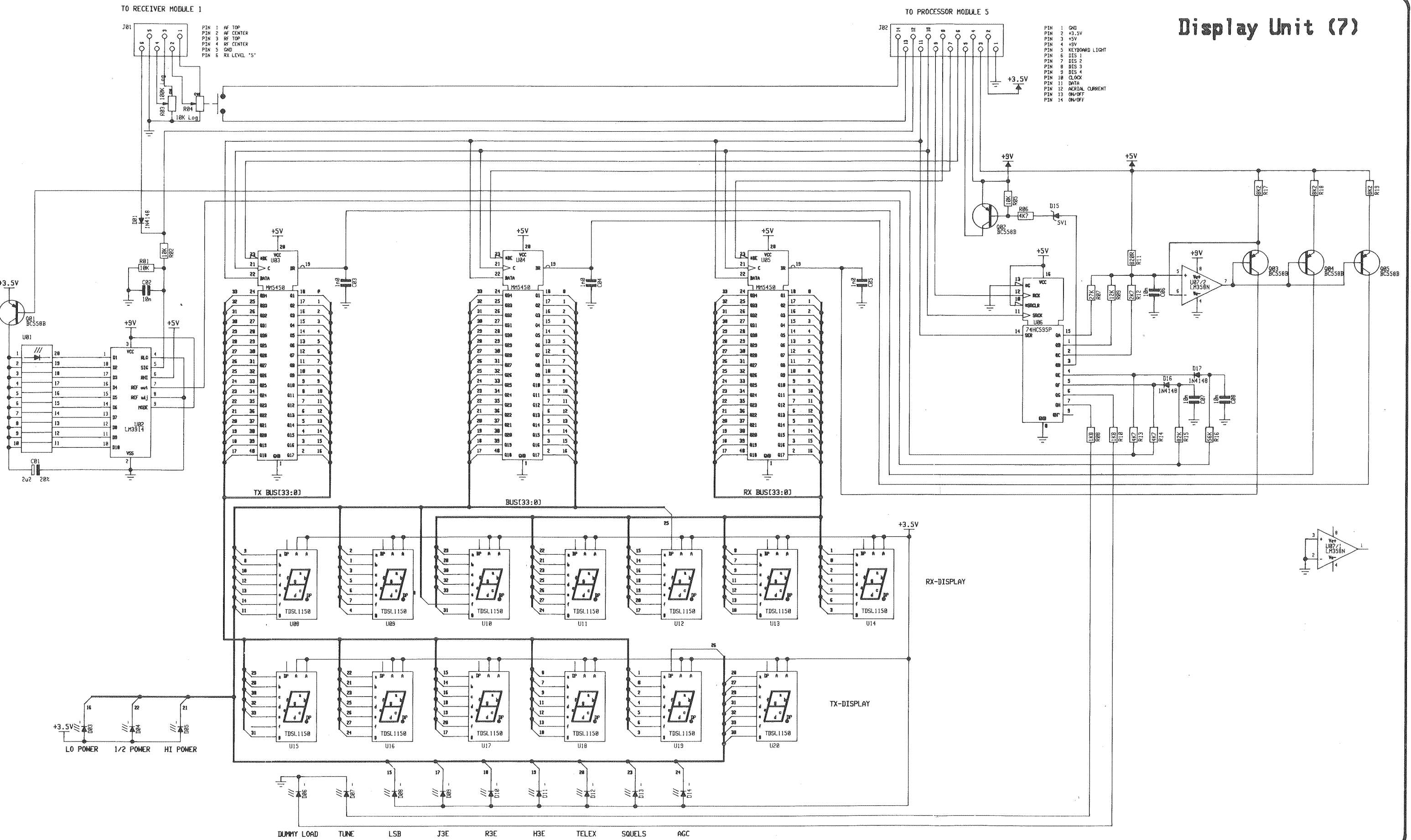
The keyboard light, consisting of 13 LEDs divided in 5 columns, is controlled by an open collector (Q02) on the display print PCB, module 7. The power in each column is approx. 8.5 mA.

Keyboard Unit (6)

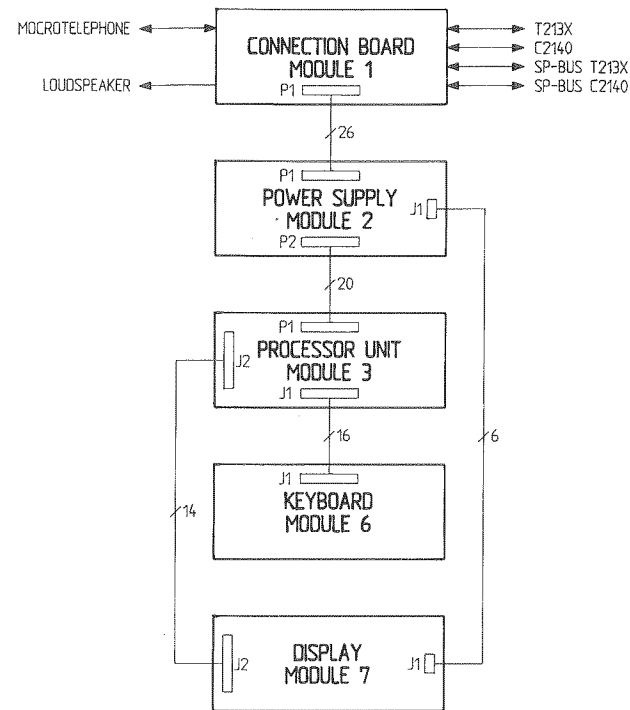


4-0-25636C

Display Unit (7)



5.8. INTERCONNECTION CABLE DIAGRAM



CONNECTION BOARD TO POWER SUPPLY

CONNECTION BOARD (1)		POWER SUPPLY (2)
1	TELEPHONE	1
2	TELE. GND	2
3	MIC. GND	3
4	MIC.	4
5	AUX AF TO TX	5
6	AUX AF TO TX	6
7	RF-GAIN CONTROL	7
8	+15V	8
9	AE-CURRENT	9
10	SP-BUS INTERRUPT	10
11	-BATT.	11
12	-BATT.	12
13	LOUDSPEAKER	13
14	MIC. KEY	14
15	+BATT.	15
16	HOOK SWITCH	16
17	DISTRESS	17
18	+BATT.	18
19	GND	19
20	SP-BUS	20
21	0 dBm	21
22	0 dBm	22
23		23
24		24
25		25
26		26
P1-1		P1-2

POWER SUPPLY TO PROCESSOR UNIT

POWER SUPPLY (2)		PROCESSOR UNIT (3)
1	GND	1
2	-5V	2
3	-15V	3
4	+15V	4
5	+5VB	5
6	+3.5V	6
7	POWER ON/OFF	7
8	POWER ON/OFF	8
9	AE-CURRENT	9
10	SP-BUS INT.	10
11	SPI CLOCK	11
12	C2141 SELECT	12
13	SPI TX	13
14	MIC KEY	14
15	SELECT	15
16	DISTRESS	16
17	HOOK SWITCH	17
18	AF/RF D/A CONVERTER	18
19	GND	19
20	SP-BUS	20
P2-2		P1-3

PROCESSOR TO KEYBOARD

PROCESSOR UNIT (3)		KEYBOARD (6)
1	GND	1
2	KEYBOARD LIGHT	2
3	X5	3
4	X6	4
5	X4	5
6	X7	6
7	X8	7
8	X2	8
9	X3	9
10	Y8	10
11	Y4	11
12	Y2	12
13	Y1	13
14	X1	14
J1-3		J1-6

PROCESSOR TO DISPLAY

PROCESSOR UNIT (3)		DISPLAY (7)
1	GND	1
2	+3.5V	2
3	+5V	3
4	+9V	4
5	KEYBOARD LIGHT	5
6	DIS 1	6
7	DIS 2	7
8	DIS 3	8
9	DIS 4	9
10	CLOCK	10
11	DATA	11
12	AERIAL CURRENT	12
13	ON/OFF	13
14	ON/OFF	14
J2-3		J2-7

POWER SUPPLY TO DISPLAY

POWER SUPPLY (2)		DISPLAY (7)
1	AF TOP	1
2	AF CENTER	2
3	RF TOP	3
4	RF CENTER	4
5	GND	5
6	RX LEVEL "S"	6
J1-2		J1-7

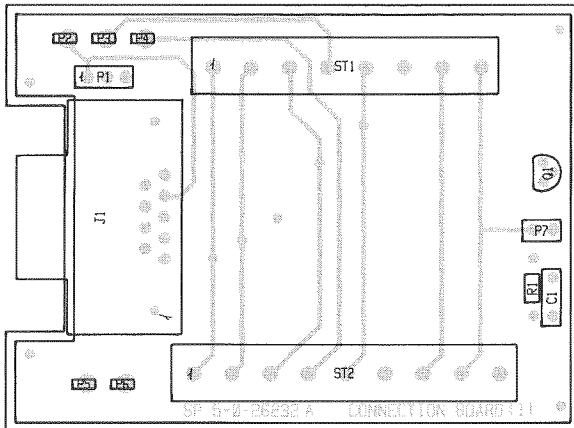
C2140A 4-0-26627

6. MICROTELEPHONE INSTALLATION

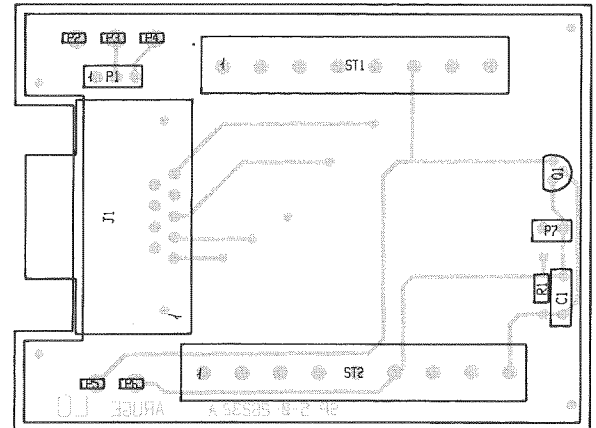
CIRCUIT DESCRIPTION FOR HOOK ASSEMBLY 726233 USED WITH C2140 / RE2100 AND HOOK ASSEMBLY 726235 USED WITH CRY2001

CONNECTION BOARD (MODULE 1)

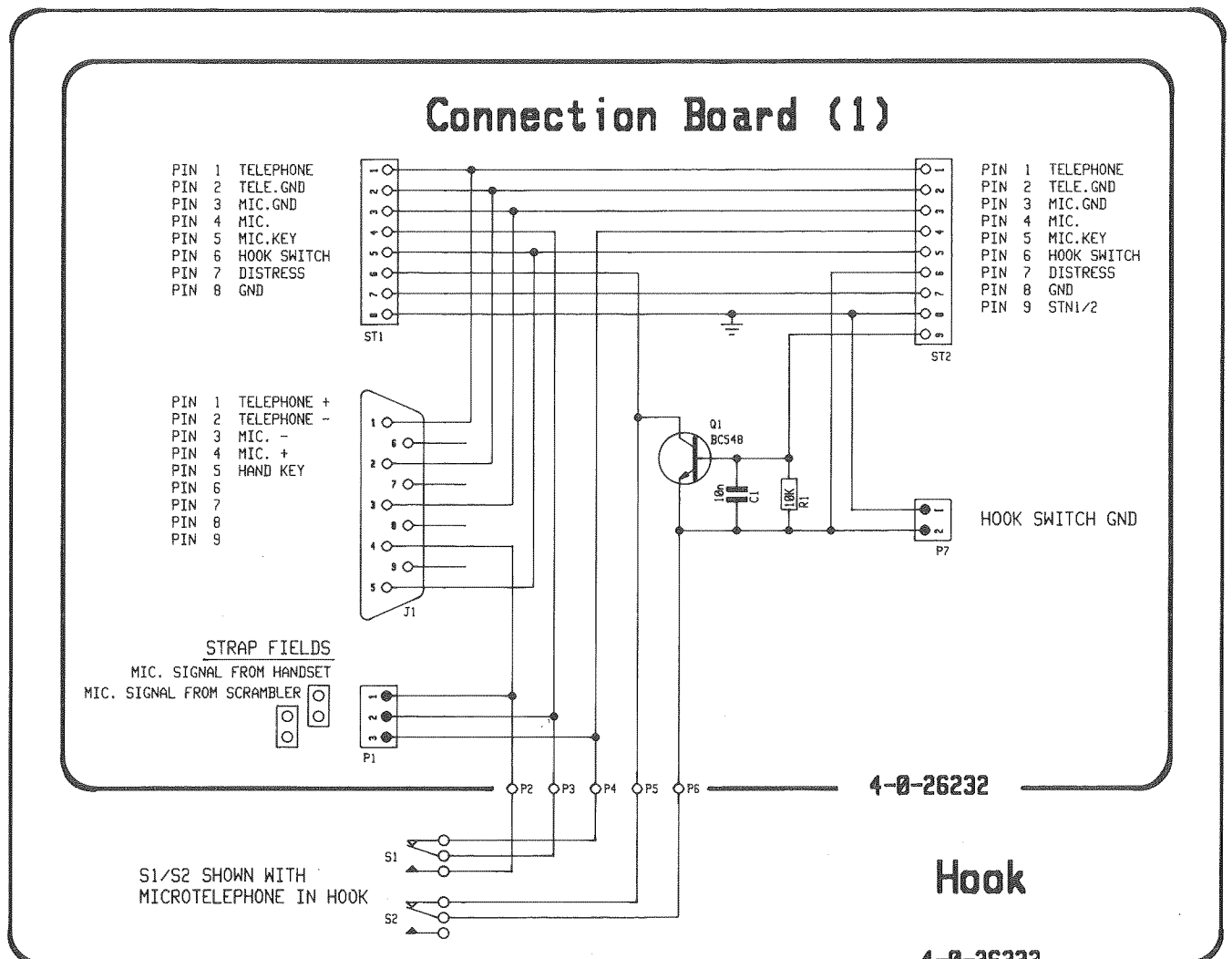
The Connection Board is used in Hook Assembly 726233. Selection of one or two hook installation can be made. One hook installation is used for RE2100 with C2140 only and is described in section 6.1. NORMAL INSTALLATION RE2100 AND C2140. Two hook installation are used for RE2100 / C2140 with SAILOR Scrambler CRY2001 and is described in section 6.2. SPECIAL INSTALLATION WITH SAILOR SCRAMBLER CRY2001.



View from component side with upper side tracks.



View from component side with lower side tracks.



6.1. NORMAL INSTALLATION RE2100 AND C2140

Normal installation RE2100 and C2140 with one Hook Assembly 726233. The Hook Assembly is delivered with multicable mounted in Supply Terminal Block ST1, this multicable is connected to either RE2100 J3 or C2140 J1. Plug in the normal microtelephone in Hook Assembly 726233's J1 plug. Mount jumpers on P7 pin 1-2 and on P1 pin 1-2. Supply Terminal Block ST2 is not used.

Quick Installation Hints:

Strap settings with normal installation RE2100 / C2140:

Mount jumper on P7 pin 1-2.

Mount jumper on P1 pin 1-2.

