

SERVICE MANUAL & PARTS LIST (with price)

SF-4600RS (ZX-860AT)

SF-4900RS (ZX-860ET)

JUN. 1995



SF-4600RS



SF-4900RS

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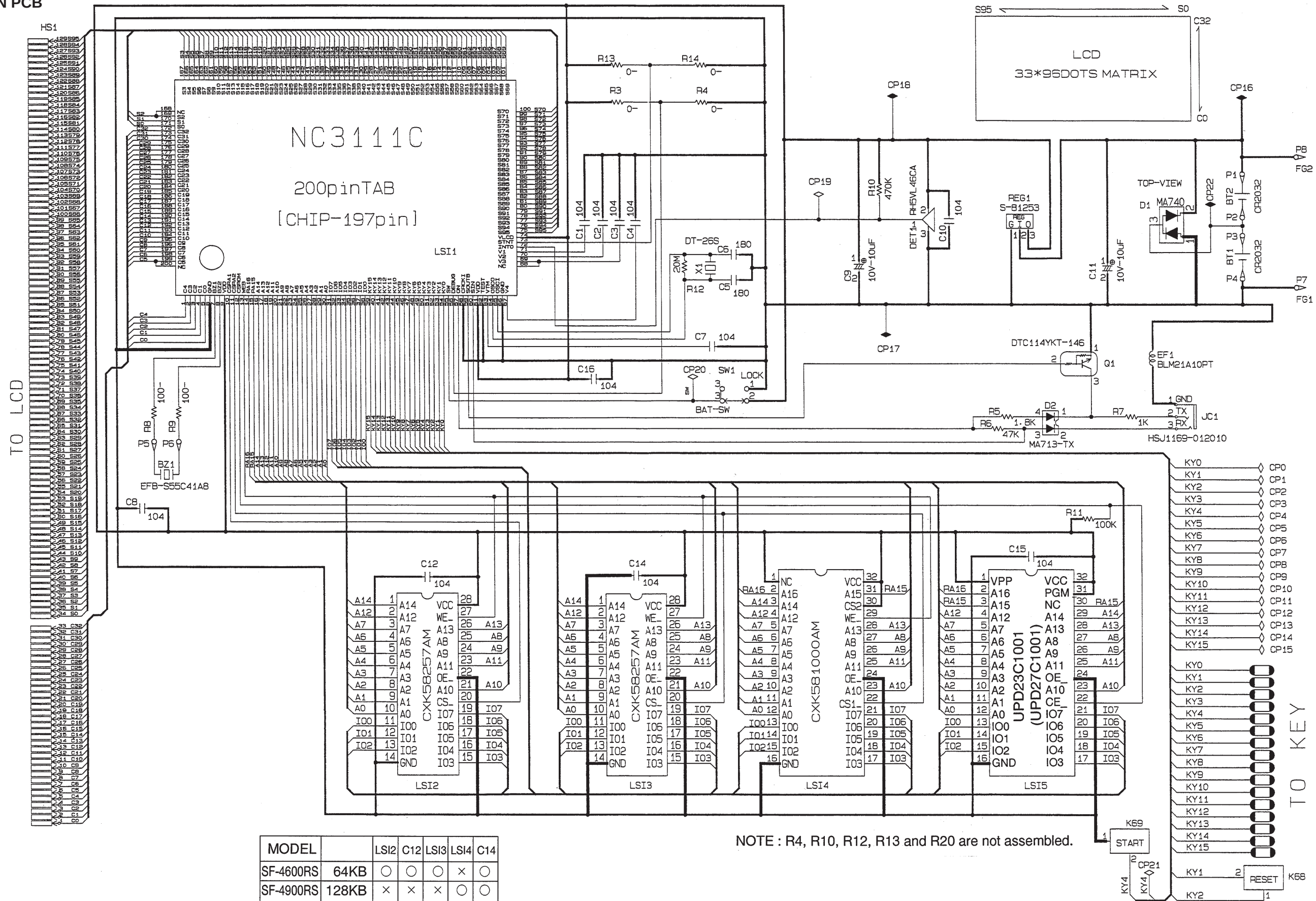
CASIO®

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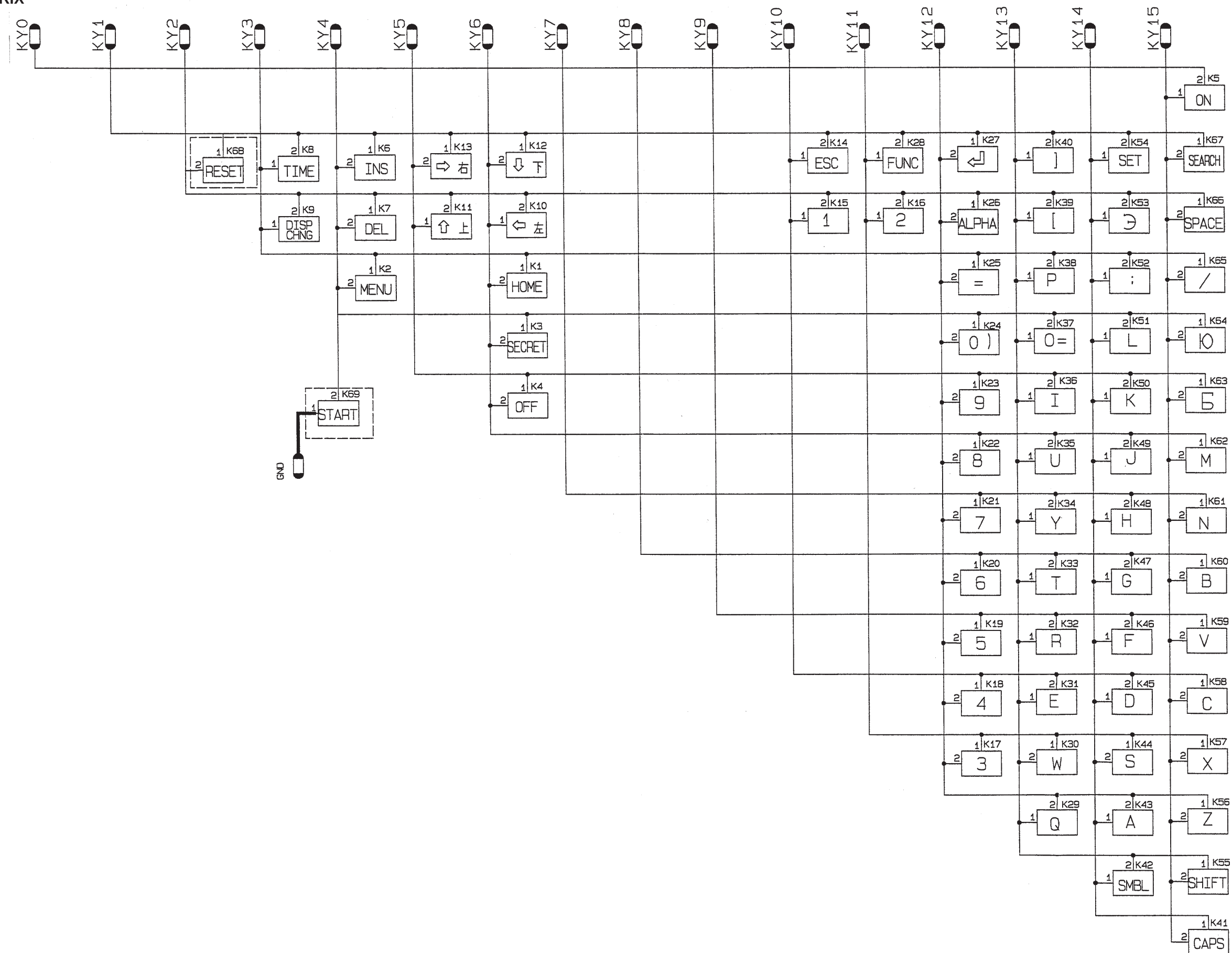
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1. SCHEMATIC DIAGRAMS

1-1. MAIN PCB



1-2. KEY MATRIX



2. SPECIFICATIONS

Data storage:

Storage and recall of telephone, memo, schedule, reminder data; calendar display; secret area; editing; memory status display.

Clock:

World time; reminder alarm; schedule alarm; daily alarm; accuracy under normal temperatures: ± 3 seconds average.

Calculation:

10-digit arithmetic calculations; arithmetic constants (+, −, ×, ÷); independent memory; percentages; square roots; 20-digit approximations; date calculations; other mixed calculations.

General:

Display element: 16-column × 4-line LCD

Memory capacity: SF-4600RS: 64 KB (61282 bytes)
SF-4900RS: 128 KB (126818 bytes)

Main component: LSI

Power supply: 2 lithium batteries (CR2032)

Power consumption: 0.05W

Battery life:

Approximately 350 hours continuous operation in Telephone Directory

Approximately 300 hours repeating one minute of input and 10 minutes of display in Telephone Directory

Approximately 12 months for memory backup

Auto power off: Approximately 6 minutes after last key operation

Operating temperature: 0°C ~ 40°C (32°F ~ 104°F)

Dimensions:

Unfolded: 10.6H × 141W × 159.5Dmm ($\frac{3}{8}$ "H × 5 $\frac{1}{2}$ "W × 6 $\frac{1}{4}$ "D)

Folded: 12.4H × 141W × 82Dmm ($\frac{1}{2}$ "H × 5 $\frac{1}{2}$ "W × 3 $\frac{1}{4}$ "D)

Weight: 105 g (3.7 oz)

Current consumption:

Power switch	TYP. [μ A]	MAX [μ A]
OFF	11	—
ON	560	600

Storage Capacity:

The 64K(SF-4600RS)/128K(SF-4900RS) bytes memory capacity includes a 61282(SF-4600RS)/126818(SF-4900RS) bytes user area. The following shows examples of what this means for the storage of data in each mode.

Telephone Directory:

Approximately 2918(SF-4600RS)/6038(SF-4900RS), under the following conditions:

8-character name

10-character telephone number

Approximately 1459(SF-4600RS)/3019(SF-4900RS), under the following conditions:

8-character name
10-character telephone number
20-character address

Memo:

Approximately 2785(SF-4600RS)/5764(SF-4900RS), 20-character memos.

Schedule Keeper:

Approximately 1857(SF-4600RS)/3842(SF-4900RS), under the following conditions:

20 characters per item
Starting time specified, alarm time set

Approximately 2188(SF-4600RS)/4529(SF-4900RS), under the following conditions:

20 characters per item
Starting time specified, no alarm time

Reminder:

Approximately 3604(SF-4600RS)/7459(SF-4900RS), under the following conditions:

10 characters per item
Alarm time set

Approximately 4085(SF-4600RS)/8454(SF-4900RS), under the following conditions:

10 characters per item
No alarm time

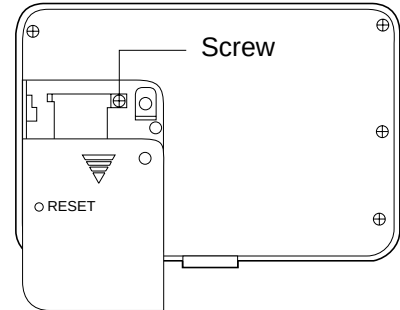
3. TO REPLACE THE BATTERIES

- 1) Loosen the screw on the back of the unit that holds the battery compartment cover in place, and remove the cover.
- 2) Loosen the screw that secures one of the two battery holders in place and remove the battery holder.

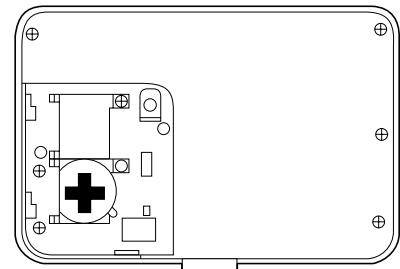
Caution:

Be sure to remove only one battery at a time.

Otherwise, you will lose all data stored in memory.



- 3) Replace the old battery with a new one, making sure that the positive (+) side of the new battery is facing up (so you can see it).



- 4) Replace the battery holder and secure it by tightening its screw.
 - Be sure careful that you do not over tighten the screw.
- 5) Repeat steps 2) through 4) for the other two batteries.
 - Be sure to replace all two batteries. Never mix old batteries with new ones, and be sure to use CR2032 lithium batteries only.
- 6) After you replace all two batteries, replace the battery compartment cover and secure it by tightening its screw.
 - Be careful that you do not over tighten the screw.

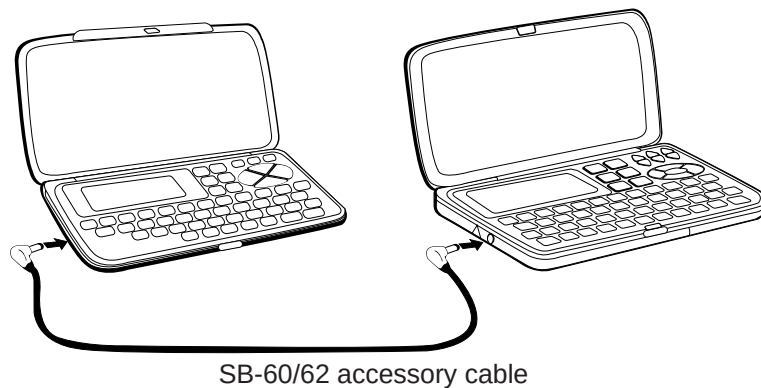
4. DATA TRANSFER

SF-4600RS/4900RS can transfer customers data to other SF-4600RS/4900RS with memory protection only when replacing the LCD or the outer case.

* Before connecting the cable (SB-60/62), be sure to reset the slave machine to clear all data.

How to transfer the data

- 1) Turn off the power switch and connect the two units using the cable (SB-60/62) as shown in the drawing.



- 2) Turn on the power switch of each machine.
- 3) The slave machine must be set the date of Feb. 3rd, 1901 into the memory under the calculator mode.

Operation: 1. Press **ВКЛ** **МЕНЮ**
2. Select "CAL" mode or press **⑥**.

3. ①

ВРЕМ
ДАТА

 ②

ВРЕМ
ДАТА

 ③

ВРЕМ
ДАТА

 M+ **Н**

M	SUN
1901/ 2/ 3	

If you don't set the date, the "PASSWORD" isn't transferred to the slave machine.

Setting up for Data Communications

The following procedures describe what you should do to set up for data communications between two SF Units or between an SF Unit and a personal computer. In addition to hardware connections, it details how to set up the communications parameters and how to set up the SF-Units to receive data. By following these instructions carefully, you can be ensured of successful communications every time.

To connect two SF Units

1. Check to make sure that the power of the two SF Units is switched off.
2. Remove the covers from the connectors on the two SF Units.
3. Connect the two SF Units using the optional SB-60/62 cable. You can also connect them using an SB-60/62 cable.

Important

Be sure to replace the connector covers on the SF Units when you are not performing data communications.

- 4) Check the hardware parameters.
 1. Select "TEL" mode or press **1** under MENU screen.
 2. Press **ФУНК** twice to display the second function menu.

ФУНК **ФУНК**

1* TO SECRET AREA
2 ALL DELETE
3 LABEL EDIT
4 DATA COMM

ЗАГЛ



* If the password isn't registered in the SF unit, display shows **X** instead of "1".

- You can perform the above operation while the initial screen of the Memo Mode, Schedule Keeper, Calendar, or Reminder is displayed also.

3. Press 4 to select DATA COMM.

4

1 SEND
2 RECEIVE
3 SET UP PAR.

ЗАГЛ



4. Press 3 to select SET UP.

3

*** SET UP PAR. ***
PARITY E O **N**
BIT LENGTH **7** 8
BPS 4800 **9600**

ЗАГЛ



• **N** is blinking.

5. If the units have another condition, reset as above.

- To change the parameters

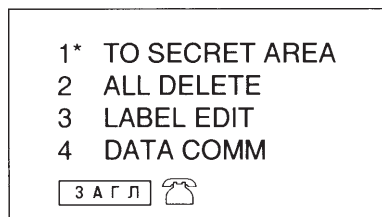
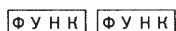


1. Use the Δ and ∇ cursor keys to change the selected parameter on the display.
2. Use the $\triangleleft$ and $\triangleright$ cursor keys to change the high-lighted setting of the currently selected parameter.
3. Press **УСТ** to store them in memory.



5) Set up the slave machine

1. While an initial screen is displayed, press **ФУНК** twice to display the second function menu.



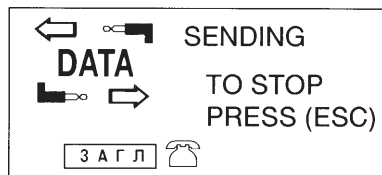
* If the password isn't registered in the SF unit, display shows **X** instead of "1".

- You can perform the above operation while the initial screen of the Memo Mode, Schedule Keeper, Calendar, or Reminder is displayed also.

2. Press 4 to select DATA COMM.

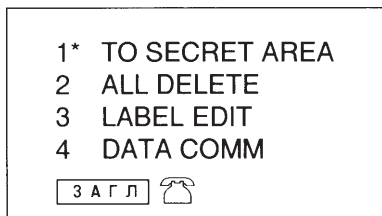


3. Press 2 to select RECEIVE.



6) Set up the customer's machine.

1. While an initial screen is displayed, press **ФУНК** twice to display the second function menu.



* If the password isn't registered in the SF unit, display shows **X** instead of "1".

- You can perform the above operation while the initial screen of the Memo Mode, Schedule Keeper, Calendar, or Reminder is displayed also.

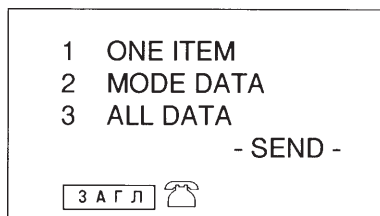
2. Press 4 to select DATA COMM.

4



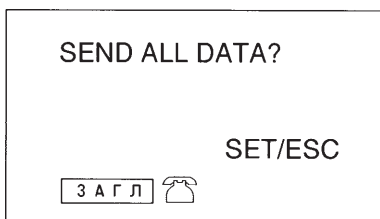
3. Press 1 to select SEND.

1



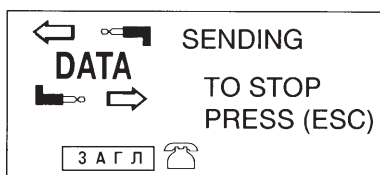
4. Press 3 to select ALL DATA.

3



5. Press **УСТ** to start the send operation or **ВЫХ** to abort the operation without sending anything.

УСТ Or ВЫХ



- Data is send in the sequence: Telephone Directory, Memo Mode, Reminder Mode, Schedule Keeper, Calendar.
 - To abort the send operation at any time, press **ВЫХ**.
 - If an error occurs during the send operation, the message "TRANSMIT ERROR!" appears on the display. Press **ВЫХ** to clear the error message.
6. After the send operation is complete, the display returns to the initial screen of the mode you were in when you started this procedure.

5. OPERATION REFERENCE

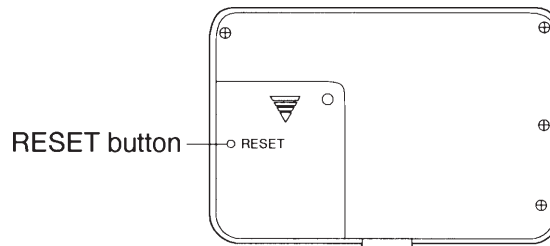
5-1. RESET OPERATION

The following procedure erases all data stored in the memory of the SF Unit.

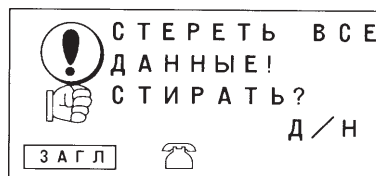
Perform the following operation only when you want to delete all data and initialize the settings of the SF Unit.

Remember-you should always keep copies of important data by writing it down, by transferring it to a personal computer or other SF Unit.

To reset the SF Unit's memory



1. Switch on power and press the **RESET** button with a thin, pointed object.



Warning!

The next step deletes all data stored in the SF Unit's memory. Make sure that you really want to delete the data before you continue!

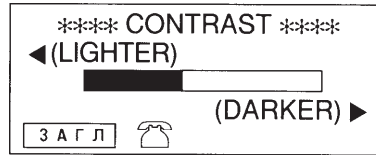
2. Press **ДА** to reset the memory and delete all data or **НЕТ** to abort the reset operation without deleting anything.

Following the reset operation described above, the Home Time display appears and the SF Unit settings are initialized as noted below.

Home Time:	12-hour format 1/Я Н В (JAN)/1996 Д П (AM)/12:00 00
Zone:	М О С (MOSCOW)
World Time:	Л О Н (LONDON)
Alarm Time:	12:00 П П (PM)
Sound:	Schedule alarm → В К (ON) Reminder alarm → В К (ON) Daily alarm → В Ы К (OFF) Key → В К (ON)
Character input:	ЗАГЛ (CAPS)
Language:	Russian

5-2. TO ADJUST THE DISPLAY CONTRAST

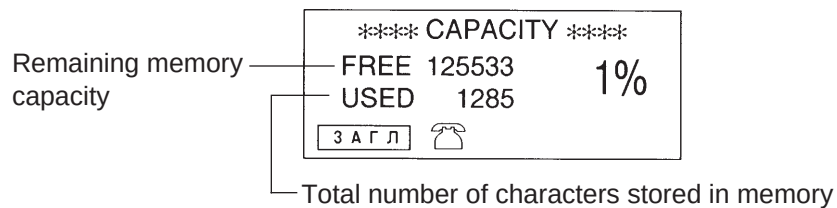
- 1 Enter the Telephone Directory Mode.
 - You could enter any mode except the Calculator mode here.
- 2 Press **CMEHA** and confirm that the "S" indicator is on the display.
- 3 Press **KOHT**.
- 4 Use the ◀ and ▶ keys to adjust the contrast.



- 5 After you are finished, press **BbIX** to clear the contrast adjustment display.

5-3. TO CHECK THE MEMORY STATUS

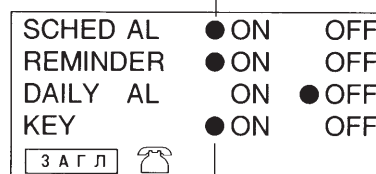
Hold down **CMEHA** and then hold down **EMK** to display a screen that shows the current memory status. To clear the memory status display, release **EMK**. (SF-4900RS)



5-4. THE SOUND MENU

The sound menu lets you switch the key input tone and the various alarms of the SF Unit on and off.

Flashing dot indicates currently selected item



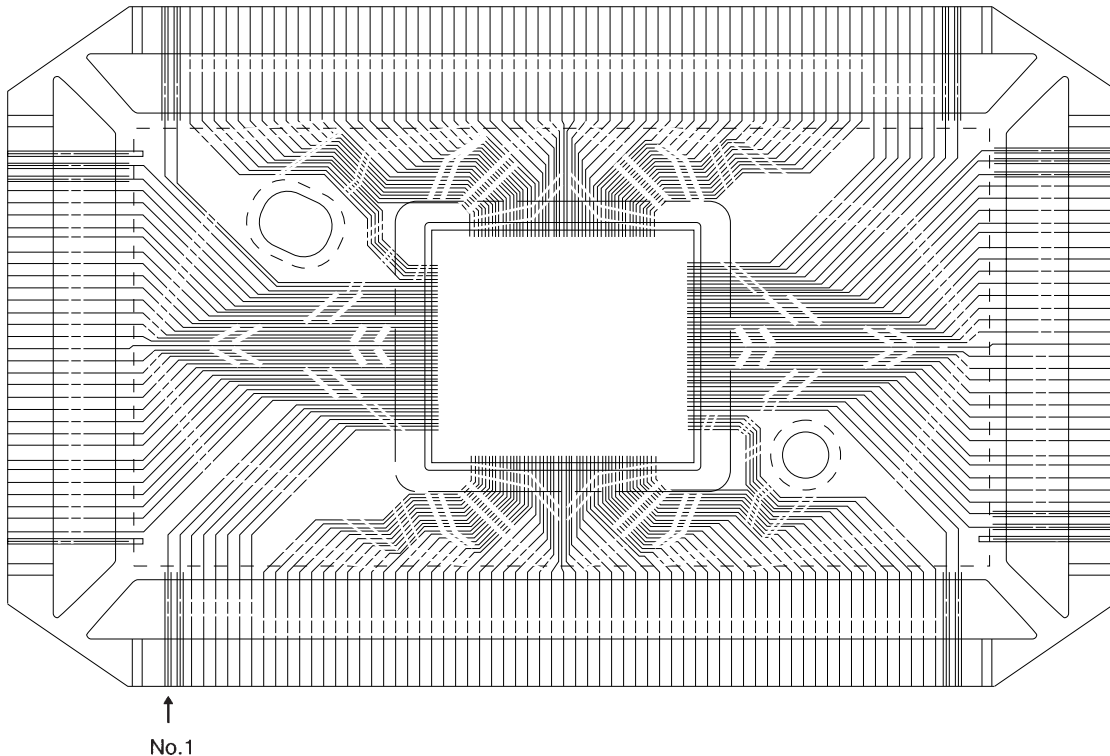
Dot indicates on/off status

The on/off status of each SOUND menu items is indicated by a dot, and the dot that is flashing on the menu is the one that is currently selected.

Use ▲ and ▼ to change the currently selected (flashing) item. Use ◀ and ▶ to switch the currently selected item on and off.

6. LSI, IC (Pin function)

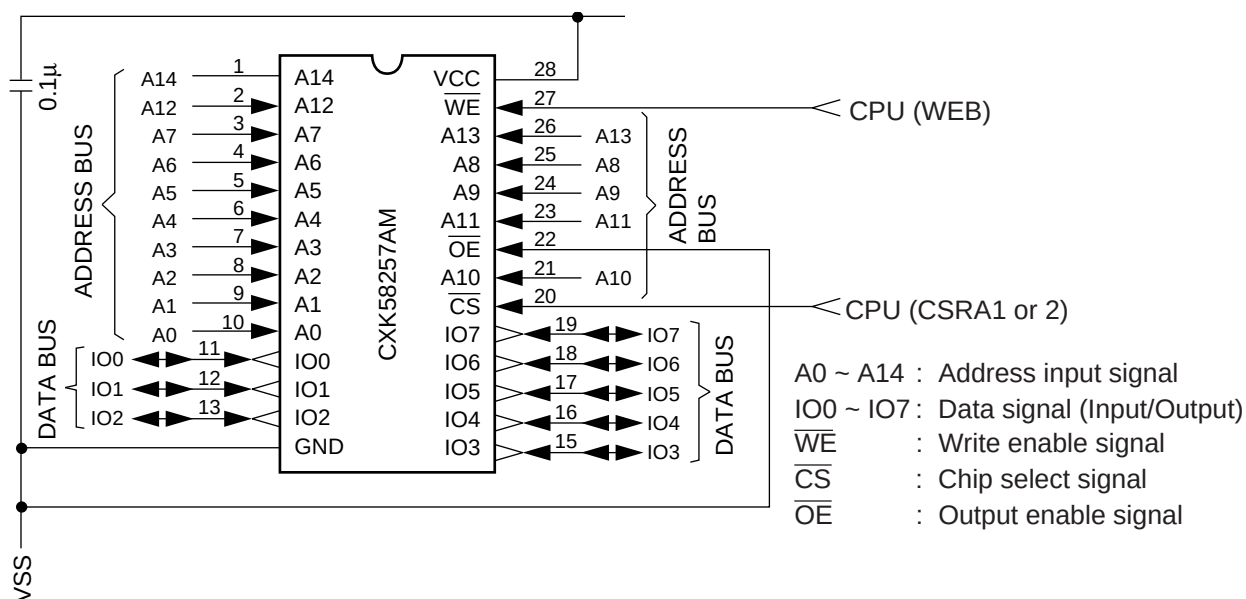
6-1. CPU



Pin No.	Signal	I/O	Function
1 ~ 5	C0 ~ 4	Out	Common Signal for display
6	GND	In	GND /0[V]
7,8	BZ1,2	Out	Buzzer terminal
9	VDD	In	Power supply/5.3[V]
10	CSRA1	Out	Chip enable signal for RAM (LSI2)
11	CSRA2	Out	Chip enable signal for RAM (LSI3 or LSI4)
12	CSROM	Out	Chip enable signal (Not used)
13	WEB	Out	Write enable signal for RAM
14,15	RA15,16	Out	Address bus (for LSI4 only)
16 ~ 30	A0 ~ 14	Out	Address bus
31 ~ 38	IO0 ~ 7	I/O	Data bus
39 ~ 54	KY0 ~ 15	I/O	Key signal
55	SW	In	Battery switch (On: "L"/0[V] Off: "H"/6[V])
56	DEBUG	-	Test for manufacturer/5.3[V]
57	ON	Out	Data communication enable
58	CRCKI	In	GND/0[V]
59	SOUTB	Out	Transmission data output
60	SIN	In	Transmission data input
61	VDD	In	Power supply/5.3[V]
62	TEST	-	Test for manufacturer
63	VTM	-	Not used

Pin No.	Signal	I/O	Function
64,65	OSC I/O	I/O	Clock terminal (DT-26S)
67,69~71	V1 ~ 4		Voltage for LCD driver OFF: 0[V] ON: V1: 0.64(Light) ~ 1.29(Dark)[V] V2: 1.29 ~ 2.56 [V] V3: 3.99 ~ 2.71 [V] V4: 4.64 ~ 3.99 [V]
68	NC	-	Not used
72	INTO	In	Low battery detection INTO<5.2[V]=> No power on
73	STNT	-	Switch terminal for LCD construction
74	VLCD	In	Power supply/5.3[V]
75 ~ 171	S0 ~ 95	Out	Segment signal for display
172 ~ 199	C5 ~ 32	Out	Common signal for display
168,200	NC	-	Not used

6-2. RAM: CXK58257AM (LSI2, LSI3)



6-3. OPERATION PROGRAM ROM PIN DESCRIPTIONS (μPD23C1001)

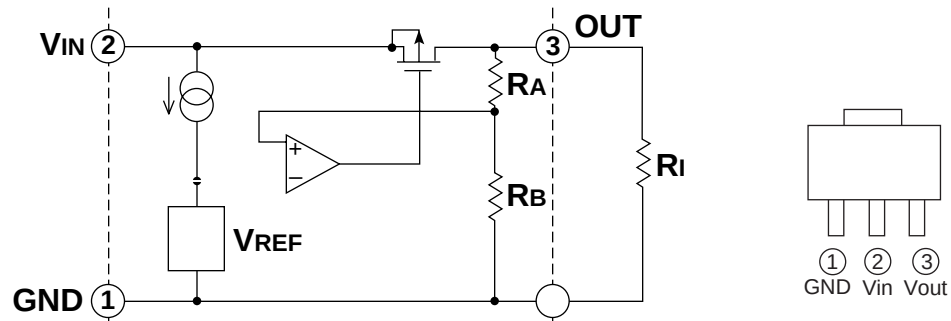
Pin No.	Name	In/Out	Status of OFF	Status of ON	Description
2~12,23, 25~31	A0~A18	In	L	Pulse	Address bus line (A0~A14, RA15~RA18)
13~15, 17~21	O0~O7	Out	L	Pulse	Data bus line (IO0~IO7)
16	GND	In	L	L	GND terminal
22	CE	In	H	Pulse	Chip enable signal from CPU (CS ROM)
24	OE	In	L	Pulse	Output enable signal / GND
1, 32	VPP, VCC	In	L	H	VDD terminal

6-4. RAM PIN DESCRIPTIONS (CXK581000AM)

Pin No.	Name	In/Out	Status of OFF	Status of ON	Description
2~12,23, 25~28, 31	A0~A16	In	L	Pulse	Address bus line (A0~A14, RA15, RA16)
13~15, 17~21	O0~O7	Out	L	Pulse	Data bus line (IO0~IO7)
16	GND	In	L	L	GND terminal
22	CS1	In	H	Pulse	Chip enable signal from CPU (CSRA2)
24	OEB	In	L	Pulse	Output enable signal / GND
1, 32	N.C., VCC	In	L	H	VDD terminal
29	WE	In	H	Pulse	Write enable signal from CPU (WEB)

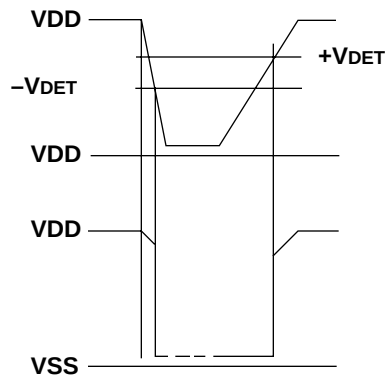
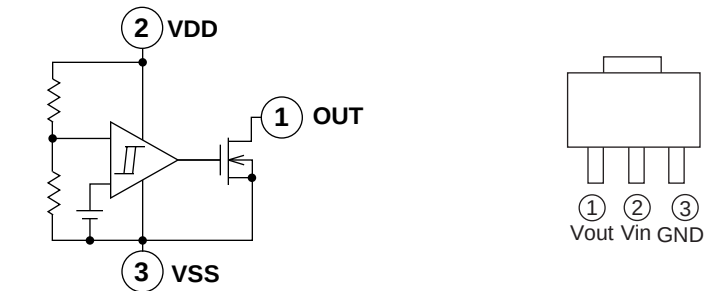
6-5. VOLTAGE REGULATOR: S-81253SGUP (REG1)

Output Voltage (Vout) : $5.3V \pm 5\%$



6-6. VOLTAGE DETECTOR: RH5VL46CA (DET1)

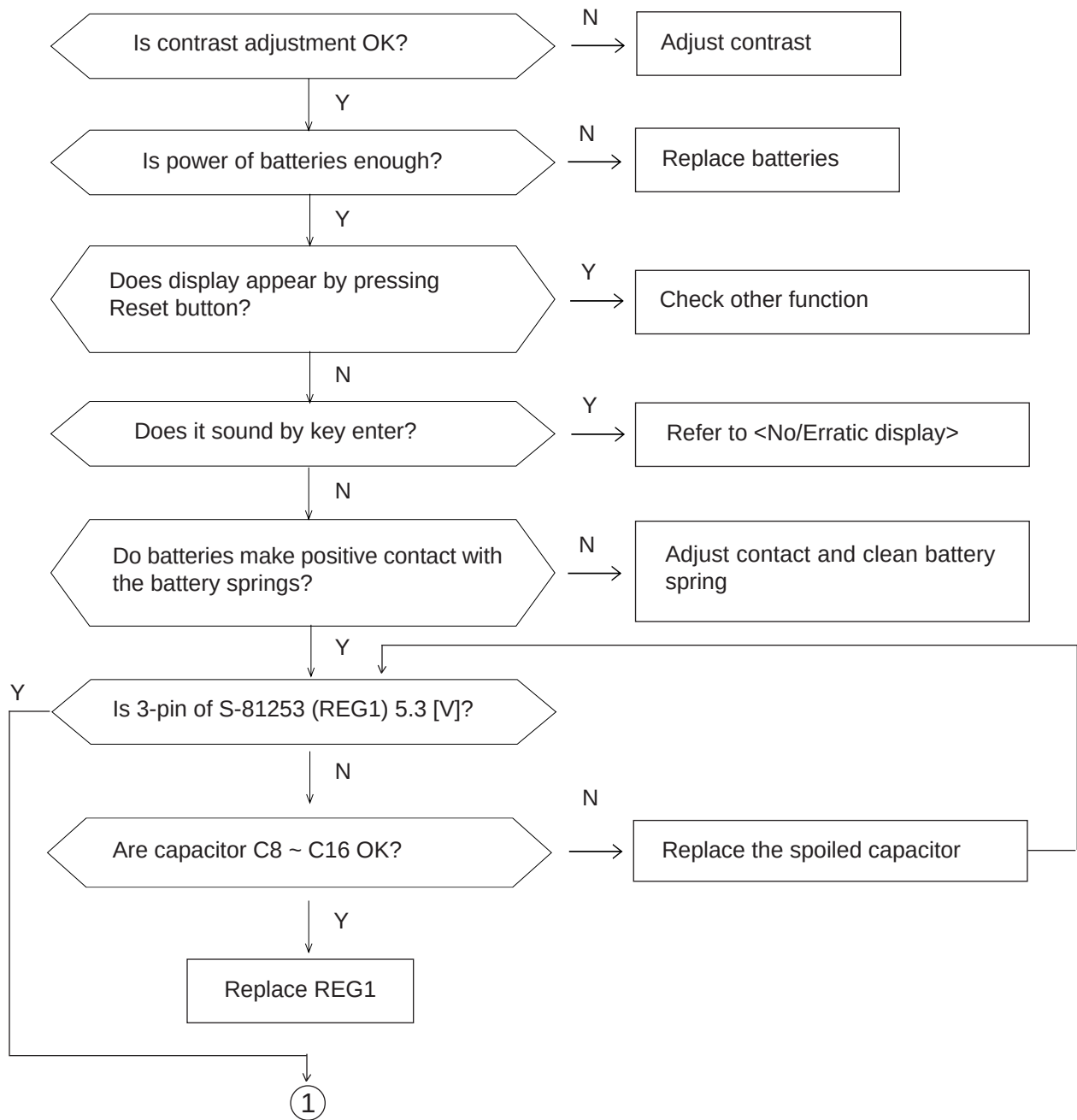
Detection Voltage($-V_{DET}$) : $5.2V \pm 2.5\%$
[$5.07V$ (MIN) ~ $5.33V$ (MAX)]

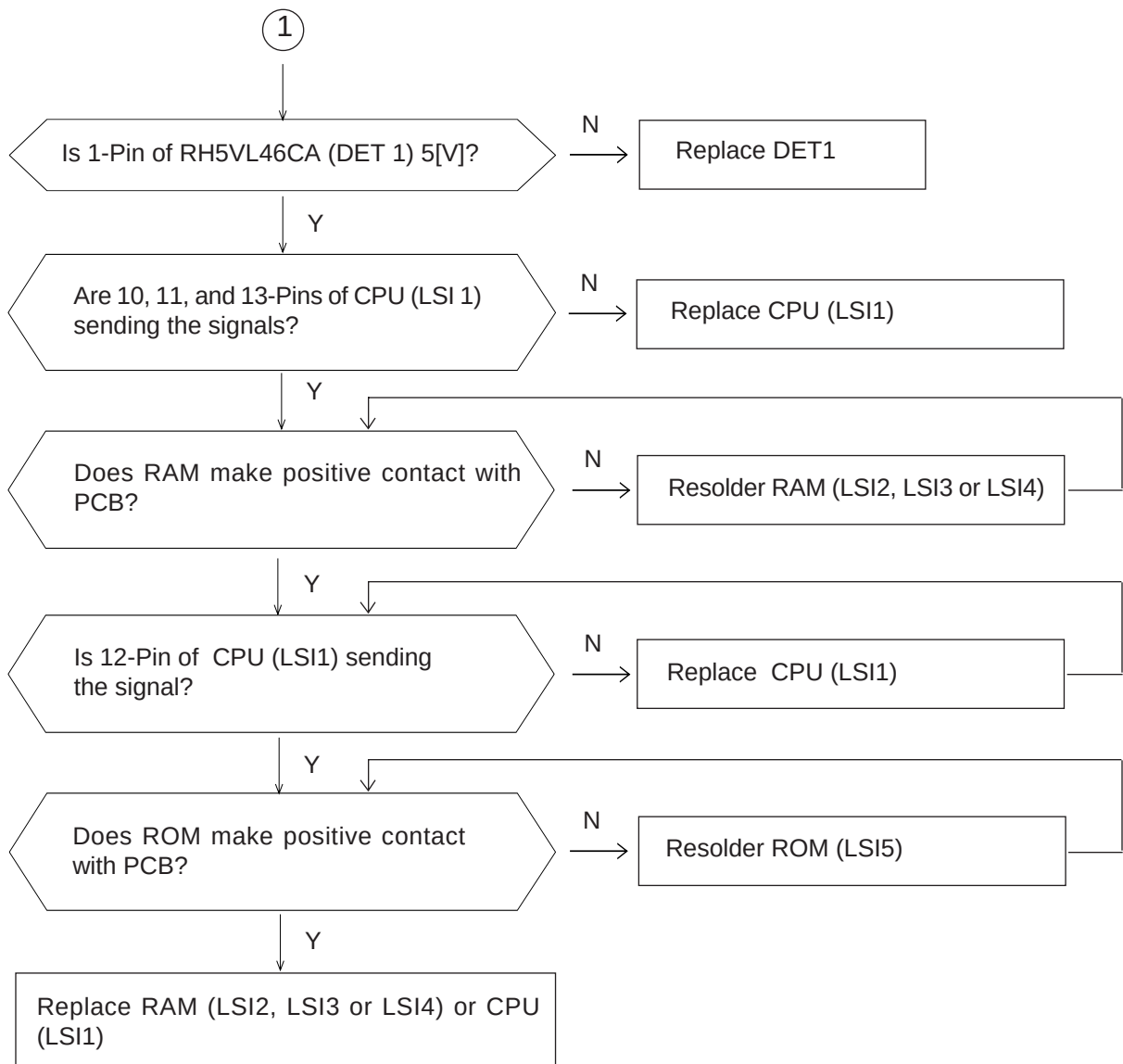


Input voltage	Output voltage
$>5.2V$	5V
$<5.2V$	0V

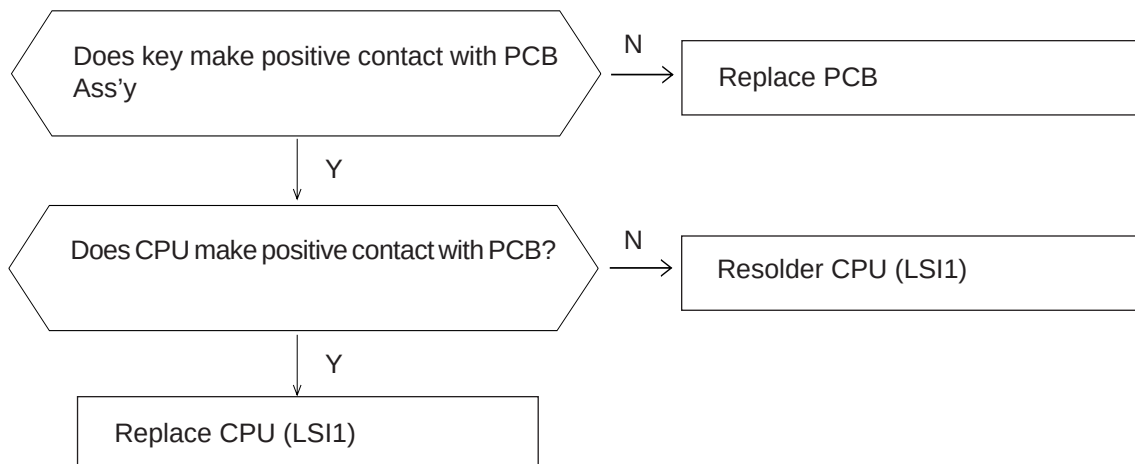
7. TROUBLESHOOTING

< No power on >

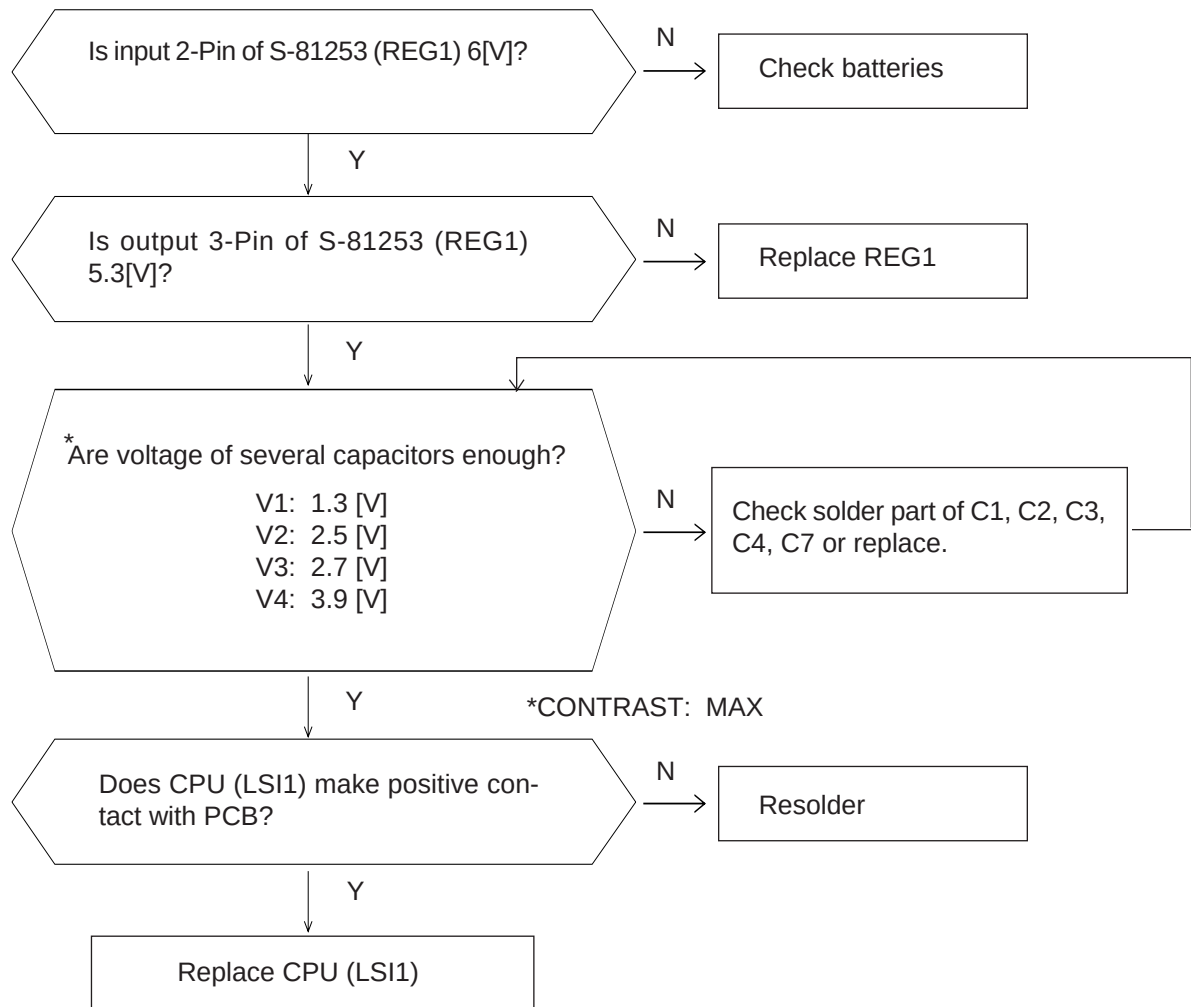




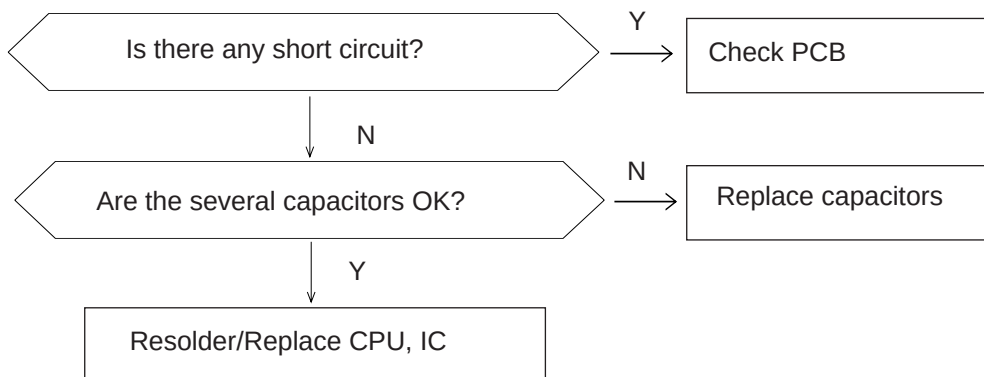
< No key input >



< No/Erratic display >

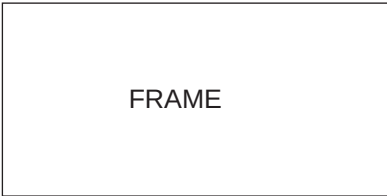
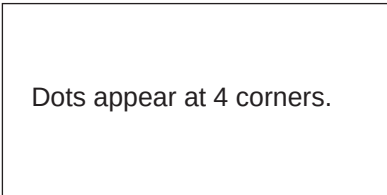
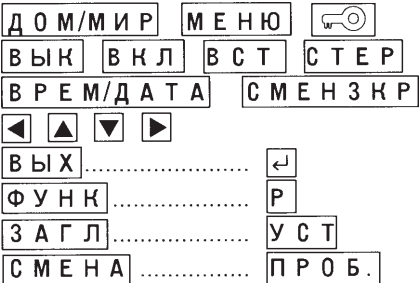
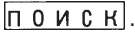


< High current consumption >



8. HARD CHECK

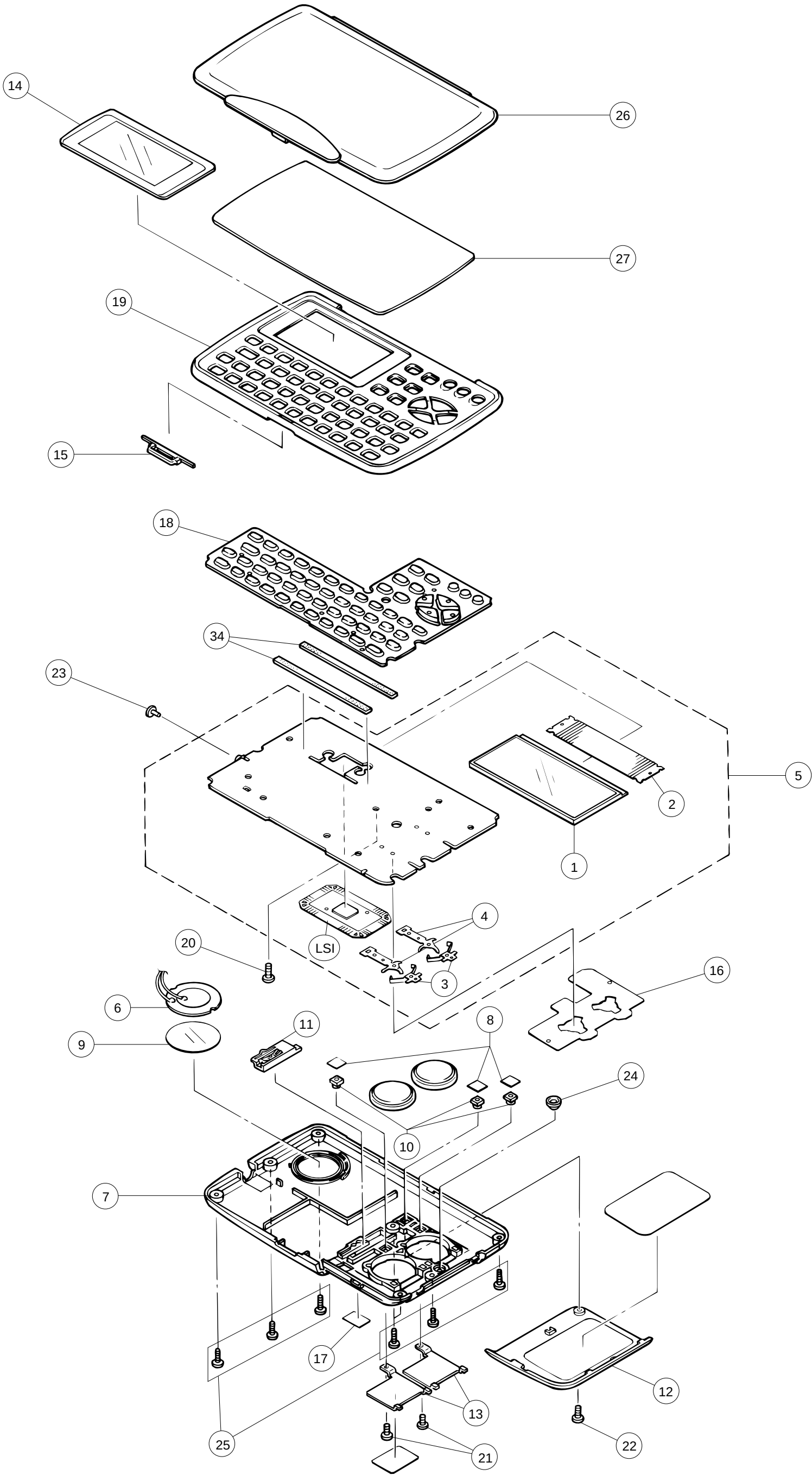
No.	OPERATION	DISPLAY	NOTE
1	Turn on while short the short pad (KEY69).	SELF TEST PROG. PRESS SEARCH QUIT BY OFF CASIO APR. 1994	The short pad is located behind the tape ①9.
2	ПОИСК	TEST MENU 1 DISP 2 MEMORY 3 KEY 4 BUZZER 5 I/F	Main menu
3	1	DISP 4 RVS. 1 WHITE 5 FRAME 2 BLACK 6 DOT 4 3 CHECK. 7 TIME	Display check
4	1	No display	
5	2	All dots display	
6	3	Checker display	
7	4	Reverse checker display	

No.	OPERATION	DISPLAY	NOTE
8	5		
9	6		
10	7	TIME DISPLAY 00:00:00	Check if timer is working.
11		TEST 2 MEMORY MENU 3 KEY 4 BUZZER 1 DISP 5 EXT	
12	3	KEY 1 RANDOM 2 AUTO	Key check
13	2	No display	
14		00 01 02 03 04 56 57	• Check the key No. appears on the display. • Check the key sounds. • To return to the menu mode, enter .

No.	OPERATION	DISPLAY	NOTE
15	ПОИСК	TEST MENU 1 DISP 2 MEMORY 3 KEY 4 BUZZER 5 EXT	
16	4	BUZZER 1 BEEP 2 ALARM1 3 ALARM2	Buzzer check
17	2	EXECUTING!!	Check the alarm 1 sound.
18	ВЫХ	BUZZER 1 BEEP 2 ALARM1 3 ALARM2	
19	ВЫХ	TEST MENU 1 DISP 2 MEMORY 3 KEY 4 BUZZER 5 EXT	
20	2	MEMORY 3 WR2 4 READ2 1 WR1 5 DUMP 2 READ1 6 CHKSUM	RAM check
21	1	WRITE1	

No.	OPERATION	DISPLAY	NOTE
22	(After few seconds)	MEMORY 3 WR2 4 READ2 1 WR1 5 DUMP 2 READ1 6 CHKSUM	
23	2	EXECUTING	
24		COMPLETE 64KB (128KB)	Check sound. If RAM has defect, error message will be appered.
25	B Y X	MEMORY 3 WR2 4 READ2 1 WR1 5 DUMP 2 READ1 6 CHKSUM	ROM check
26	6	TY SZ SUM XOR FE 0 128 18EX XX C3 A XX XXX XX	
27	B Y X B Y X	TEST 2 MEMORY MENU 3 KEY 4 BUZZER 1 DISP 6 EXT	
28	Press "RESET" key.		

9. ASSEMBLY VIEW



A: SF-4600RS

B: SF-4900RS

10. PARTS LIST

N	Item	Code No.	Parts Name	Specification	Q'ty		M	FOB Japan N.R.Yen Unit Price	R
					A	B			
PCB ASS'Y									
N	5	6414 9840	PCB ass'y	DB25XX0300N	1	0	1	2,990	A
N	5	6414 9850	PCB ass'y	DB25AX0300T	0	1	1	3,330	A
(The two assemblies contain the following available elements.)									
	C1~4,7,8, 10,14~16	2845 1540	Chip capacitor	MCH212F104ZK	10	10	20	4	C
	C12	2845 1540	Chip capacitor	MCH212F104ZK	1	0	20	4	C
	C5,6	2845 2534	Chip capacitor	MCH185A180JK	2	2	20	4	C
	C9,11	2803 6806	Electrolytic capacitor	10MS510M-MW	2	2	20	13	C
	D1	2390 2128	Chip diode	MA740-(TX)	1	1	20	50	C
	D2	2390 0364	Schottky diode	MA713-TX	1	1	20	33	C
	DET1	2105 3864	CMOS IC	RH5VL46CA	1	1	10	45	B
	EF1	3013 2002	Chip inductor	BLM21A10PT	1	1	20	14	B
	JC1	3501 6538	Jack	HSJ1169-012010	1	1	5	56	C
N	LSI1	6412 3981	L594 TAB sub ass'y	C312133A*4	1	1	1	960	A
N	LSI2,3	2011 8071	LSI (RAM)	CXK58257AM-10/12L	2	0	1	530	B
N	LSI4	2011 9422	LSI (RAM)	CXK581000AM-10LL	0	1	1	1,220	B
N	LSI5	2012 0693	LSI (ROM)	UPD23C1001EAGW-N07	1	1	1	310	B
	Q1	2259 0959	Chip digital transistor	DTC114YKT-146	1	1	20	12	B
	R3,14	2797 3752	Chip resistor	ERJ-6GEYJ000	1	1	20	3	C
	R5	2791 1170	Chip resistor	ERJ-6GEYJ182	1	1	20	3	C
	R6	2797 0637	Chip resistor	ERJ-6GEYJ473	1	1	20	2	C
	R7	2797 1309	Chip resistor	ERJ-6GEYJ102	1	1	20	3	C
	R8,9	2797 1078	Chip resistor	ERJ-6GEYJ101	2	2	20	3	C
N	R11	6512 1420	Chip resistor	CC0015D11T0	1	1	20	3	C
	REG1	2105 3290	Regulator	S-81253SGUP-DIJ-T1	1	1	5	60	B
	X1	7110 0642	Crystal oscillator	DT-26S	1	1	1	57	B
N	1	3335 5628	LCD	CD429-TS	1	1	1	350	A
	2	6409 6270	Heat seal	FX200P40056	1	1	5	82	A
N	3	6410 9810	Battery plate (+)	EF01DB10107	2	2	20	14	C
	4	6409 6310	Battery plate (-)	EF02DB10100	2	2	20	16	C
N	34	6406 8940	Adhesive tape	XX063810006	2	2	1	100	C
COMPONENTS									
	6	3122 2380	Buzzer	EFB-S55C41A8	1	1	10	36	C
N	7	6414 9770	Lower cabinet	FABDB100003	1	0	5	63	X
N	7	6414 9780	Lower cabinet	FABDB100011	0	1	5	63	X
	8	6510 4440	Nut tape	HGFC0001206	3	3	20	6	X
	9	6510 4500	Buzzew tape	HGFC0000501	1	1	20	17	X
	10	6512 1080	Nut	MD100000602	3	3	20	13	X
	11	6408 5920	Switch knob ass'y	DB2AXX4A00M*1	1	1	20	30	C
	12	6411 6080	Battery cover	FADDB100018	1	0	20	29	X
N	12	6411 2580	Battery cover	FADDB100000	0	1	20	29	X
	13	6409 6120	Battery holder	ECDB1011108	2	2	20	26	X
N	14	6414 9880	PC sheet	EL5C0011609	1	0	5	63	C
N	14	6414 9890	PC sheet	EL5C0011706	0	1	5	63	C
	15	6410 9670	Push button	FB3DB100001	1	1	1	130	X
N	16	6414 9900	Overlay mylar	EL4K0004105	1	1	20	26	X
	17	6411 6030	Mask tape	HGC00001501	1	0	20	9	X
N	17	6410 9680	Mask tape	HGC00001609	0	1	20	9	X
N	18	6414 9910	Rubber key sheet	LADB2510003	1	0	1	170	C

Notes: N – New parts
M – Minimum order/supply quantity
R – Rank
Q – Quantity used per unit

R – A : Essential
B : Stock recommended
C : Others
X : No stock recommended

N	Item	Code No.	Parts Name	Specification	Q'ty		M	FOB Japan N.R.Yen Unit Price	R
					A	B			
N	18	6414 9920	Rubber key sheet	LADB2510101	0	1	1	230	C
N	19	6414 9930	Upper cabinet	FAADB251005	1	0	1	140	X
N	19	6414 9940	Upper cabinet	FAADB251013	0	1	1	140	X
	20	6510 4290	Screw	MAB80002303	1	1	20	3	X
	21	6510 4310	Screw	MAA80006311	2	2	20	3	C
	22	6510 4350	Screw	MAA80006302	1	1	20	2	B
	23	6511 7160	RB insert	LC120000102	1	1	20	17	B
	24	6511 8400	Key contact rubber	LADB0220105	1	1	20	10	C
	25	6512 0980	Screw	MAB20086306	8	8	20	2	X
N	26	6414 9950	Hard case	FC1DB101029	1	0	5	84	X
N	26	6414 9960	Hard case	FC1DB101045	0	1	5	84	X
N	27	6414 9970	Label	HGP00000208	1	0	1	110	X
N	27	6414 9980	Label	HGP00000607	0	1	1	110	X

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