SERVICE MANUAL & PARTS LIST (without price)

CFX-9850G PLUS (ZX-935A)

MAY. 1997

CFX-9850G PLUS

INDEX

CASIO®

CONTENTS

1. SPECIFICATIONS

Variables: 28

Text display:
$\pm 1 \times 10^{-99}$ to $\pm 9.999999999 \times 10^{99}$ and 0. Internal operations use 15-digit mantissa.

Exponential display range: Norm1: $10^{-2} \geqq [x], [x] \geqq 10^{10}$
Norm2: $10^{-9} \geqq [x], [x] \geqq 10^{10}$

Program capacity: 28 kbytes (max.)

Power supply:

Main: Four AAA-size batteries (LR03(AM4) or R03 (UM-4))
Back-up: One CR2032 lithium battery

Power consumption: 0.06 W

Battery life*:

Main:
LR03(AM4): Approximately 240 hours (continuous display of main menu)
Approximately 2 years (power off)
R03(UM-4): Approximately 150 hours (continuous display of main menu)
Approximately 2 years (power off)
Back-up: Approximately 2 years

* The batteries that have been installed in this unit when user purchased it had been used in the factory test, so it will be impossible to fully satisfy this specifications when these batteries are used.

Auto power off:

Power is automatically turned off approximately six minutes after last operation except when drawing dynamic graphs.
The calculator automatically turns off if it is left for about 60 minutes with a calculation stopped by an output command (◢), which is indicated by the “-Disp-” message on the display.

Ambient temperature range: 0 °C ~ 40 °C

Dimensions: 19.7 mm H × 83 mm W × 175.5 mm D ($^3/_4$" H × 3 $^1/_4$" W × 6 $^7/_8$" D)

Weight: 190 g (including batteries)

Current consumption:

	TYP [μA]	MAX [μA]
ON (MENU)	2416	2852
OFF	————	17.1

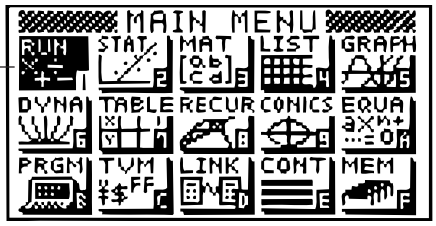
2. GENERAL GUIDE

2-1. Modes

• To select an icon

1. Press [MENU] to display the Main Menu.

[MENU]



2. Use the cursor keys (◀ , ▶ , ▲ , ▼) to move the highlighting to the icon you want.

3. Press [EXE] to display the initial screen of the mode whose icon you selected.
   - You can also enter a mode without highlighting an icon in the Main Menu by inputting the number or letter marked in the lower right corner of the icon.
   - Use only the procedures described above to enter a mode. If you use any other procedure, you may end up in a mode that is different than the one you thought you selected.

The following explains the meaning of each icon.

Icon	Mode Name	Description
	RUN	Use this mode for arithmetic calculations and function calculations, and for calculations involving binary, octal, decimal and hexadecimal values.
	STATistics	Use this mode to perform single-variable (standard deviation) and paired-variable (regression) statistical calculations, to perform tests, to analyze data and to draw statistical graphs.
	MATrix	Use this mode for storing and editing matrices.
	LIST	Use this mode for storing and editing numeric data.
	GRAPH	Use this mode to store graph functions and to draw graphs using the functions.
	DYNAmic graph	Use this mode to store graph functions and to draw multiple versions of a graph by changing the values assigned to the variables in a function.

Icon	Mode Name	Description
	TABLE	Use this mode to store functions, to generate a numeric table of different solutions as the values assigned to variables in a function change, and to draw graphs.
	RECURsion	Use this mode to store recursion formulas, to generate a numeric table of different solutions as the values assigned to variables in a function change, and to draw graphs.
	CONICS	Use this mode to draw graphs of implicit functions.
	EQUAtion	Use this mode to solve linear equations with two through six unknowns, quadratic equations, and cubic equations.
	PRoGraM	Use this mode to store programs in the program area and to run programs.
	Time Value of Money	Use this mode to perform financial calculations and to draw cash flow and other types of graphs.
	LINK	Use this mode to transfer memory contents or back-up data to another unit.
	CONTrast	Use this mode to adjust the color contrast of the display.
	MEMory	Use this mode to check how much memory is used and remaining, to delete data from memory, and to initialize (reset) the calculator.

2-2. Color Contrast Adjustment

Adjust the color whenever objects on the display appear dim or difficult to see. There are two different settings you can make to get color the way you want it.

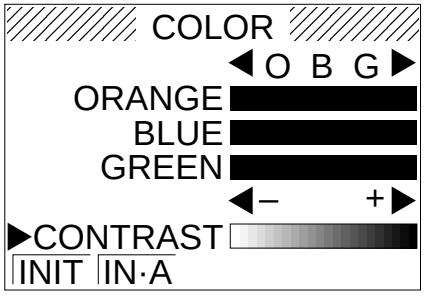
- Color contrast
- Tint adjustment for each color

• To display the color adjustment screen

Highlight the **CONT** icon in the Main Menu and then press EXE.

- **{INIT}/{IN•A}** ... {initialize highlighted color}/{initialize all colors}

Use the following procedures while the color adjustment screen is on the display to adjust the color contrast and tint settings.



• To adjust the color contrast

1. Use the cursor ▲ and ▼ keys to move the pointer so it is next to CONTRAST.
2. Press the ► cursor key to make the display darker and the ◄ cursor key to make it lighter. Holding down either key changes the setting at high speed.

• To adjust the color tint

1. Use the cursor ▲ and ▼ keys to move the pointer so it is next to the color (ORANGE, BLUE, GREEN) whose tint you want to adjust.
2. Press the ► cursor key to give the color greener tint and the ◄ cursor key to give it an orange tint. Holding down either key changes the setting at high speed.

• To exit the color adjustment screen

Press MENU to return to the Main Menu.

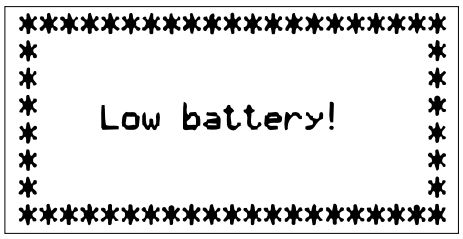
- It is recommended that you always adjust the CONTRAST setting first, and then adjust the tint settings for individual colors.

- You can change the CONTRAST setting at any time without displaying the color adjustment screen. Simply press SHIFT and then ◄ or ► to change the setting. Press SHIFT once again after get the display looking the way you want.

2-3. Power Supply

This unit is powered by four AAA-size (LR03(AM4) or R03(UM-4)) batteries. In addition, it uses a single CR2032 lithium battery as a back up power supply for the memory.

If the following message appears on the display, immediately stop using the calculator and replace batteries.



If you try to continue using the calculator, it will automatically turn power off, in order to protect memory contents. You will not be able to turn power back on until you replace batteries.

Be sure to replace the main batteries at least once every two years, no matter how much you use the calculator during that time.

Warning!
If you remove both the main power supply and the memory back up batteries at the same time, all memory contents will be erased. If you do remove both batteries, correctly reload them and then perform the reset operation.

Replacing Batteries

Precautions:
Incorrectly using batteries can cause them to burst or leak, possibly damaging the interior of the unit. Note the following precautions:

- Be sure that the positive ⊕ and negative ⊖ poles of each battery are facing in the proper directions.
- Never mix batteries of different types.
- Never mix old batteries and new ones.
- Never leave dead batteries in the battery compartment.
- Remove the batteries if you do not plan to use the unit for long periods.
- Never try to recharge the batteries supplied with the unit.
- Do not expose batteries to direct heat, let them become shorted, or try to take them apart.
  (Should a battery leak, clean out the battery compartment of the unit immediately, taking care to avoid letting the battery fluid come into direct contact with your skin.)

Keep batteries out of the reach of small children. If swallowed, consult with a physician immediately.

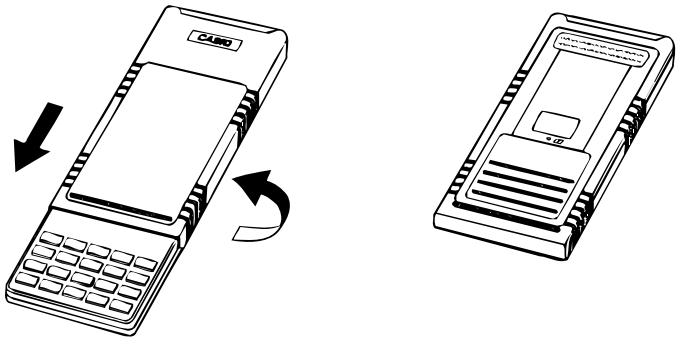
• To replace the main power supply batteries

* Never remove the main power supply and the memory back up batteries from the unit at the same time.
* Never replace the main power supply battery compartment cover or turn the calculator on while the main power supply batteries are removed from the calculator or not loaded correctly. Doing so can cause memory data to be deleted and malfunction of the calculator. If mishandling of batteries causes such problems, correctly load batteries and then perform the RESET operation to resume normal operation.
* Be sure to replace all four batteries with new ones.

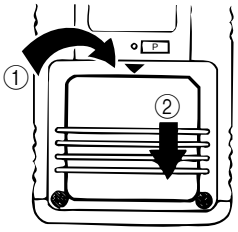
1. Press [SHIFT] [OFF] to turn the calculator off.

   Warning!
   * Be sure to turn the unit off before replacing batteries. Replacing batteries with power on will cause data in memory to be deleted.

2. Making sure that you do not accidently press the [AC/ON] key, slide the case onto the calculator and then turn the calculator over.



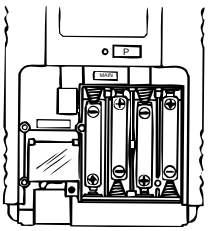
3. Remove the back cover from the calculator by pressing it in the direction indicated by arrow ①, and then sliding it in the direction indicated by arrow ②.



4. Remove the four old batteries.

5. Load a new set of four batteries, making sure that their positive ⊕ and negative ⊖ ends are facing in the proper directions.

6. Replace the back cover.



7. Turn the calculator front side up and slide off its case. Next press [AC/ON] to turn on power.

- Power supplied by memory back up battery while the main power supply batteries are removed for replacement retains memory contents.
- Do not leave the unit without main power supply batteries loaded for long periods. Doing so can cause deletion of data stored in memory.
- If the figures on the display appear too light and hard to see after you turn on power, adjust the tint.

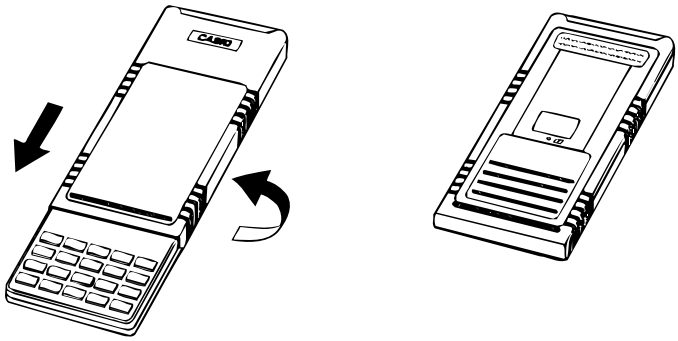
• To replace the memory back up battery

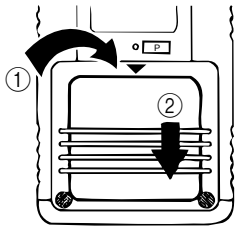
* Before replacing the memory back up battery, turn on the unit and check to see if the “Low battery!” message appears on the display. If it does, replace the main power supply batteries before replacing the back up power supply battery.
* Never remove the main power supply and the memory back up batteries from the unit at the same time.
* Be sure to replace the back up power supply battery at least once 2 years, regardless of how much you use the unit during that time. Failure to do so can cause data in memory to be deleted.

1. Press [SHIFT] [OFF] to turn the calculator off.

   Warning!
   * Be sure to turn the unit off before replacing batteries. Replacing batteries with power on will cause data in memory to be deleted.

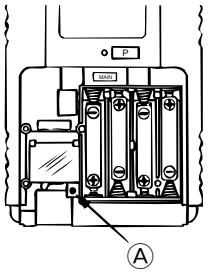
2. Making sure that you do not accidently press the [AC/ON] key, slide the case onto the calculator and then turn the calculator over.





3. Remove the back cover from the calculator by pressing it in the direction indicated by arrow ①, and then sliding it in the direction indicated by arrow ②.

4. Remove screw Ⓐ on the back of the calculator, and remove the back up battery compartment cover.

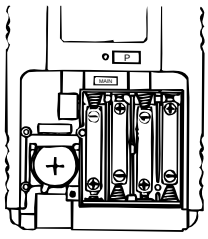


5. Remove the old battery.

6. Wipe off the surfaces of a new battery with a soft, dry cloth. Load it into the calculator so that its positive ⊕ side is facing up.

7. Install the memory protection battery cover onto the calculator and secure it in place with the screw. Next, replace the back cover.

8. Turn the calculator front side up and slide off its case. Next press [AC/ON] to turn on power.



About the Auto Power Off Function

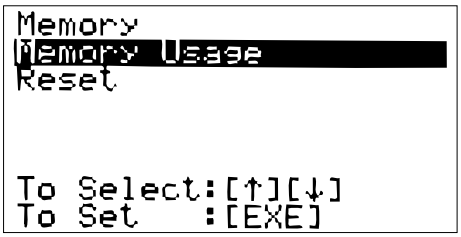
The calculator turns power off automatically if you do not perform any key operation for about 6 minutes. To restore power, press [AC/ON] .

3. RESET OPERATION

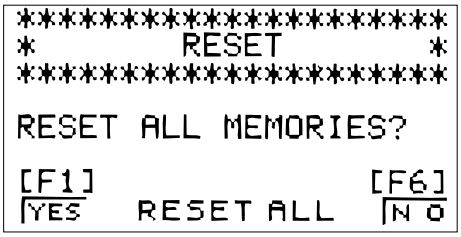
Warning!
The procedure described here clears all memory contents. Never perform this operation unless you want to totally clear the memory of the calculator. If you need the data currently stored in memory, be sure to write it down somewhere before performing the RESET operation.

• To reset the calculator

1. Highlight the **MEM** icon on the main menu and then press [EXE], or press [F] [tan].

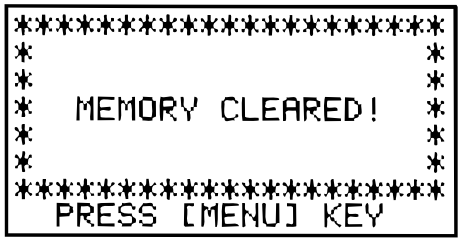


2. Use [▼] to move the highlighting down to "RESET" and then press [EXE].



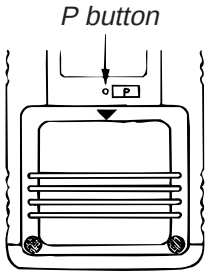
[F1] [F6]

3. Press [F1] (YES) to reset the calculator or [F6] (NO) to abort the operation without resetting anything.



4. Press [MENU].

- If the display appears too dark or dim after you reset the calculator, adjust the tint.
- If the calculator stops operating correctly for some reason, use a thin, pointed object to press the P button on the back of the calculator. This should make the RESET screen appear on the display. Perform the procedure to complete the RESET operation.
- Pressing the P button while an internal calculation is being performed will cause all data in memory to be deleted.



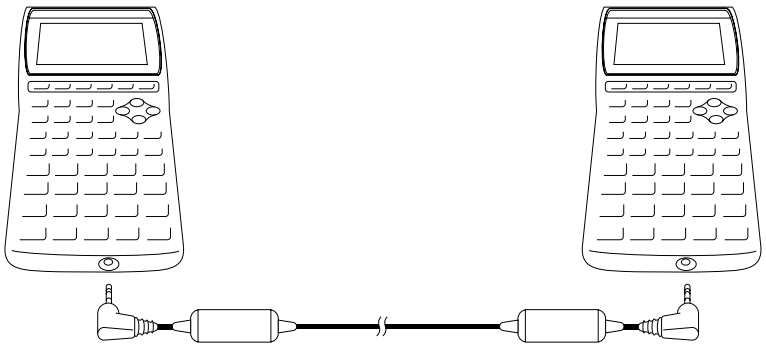
4. DATA COMMUNICATIONS

4-1. Connecting Two Units

The following procedure describes how to connect two units with an optional SB-62 connecting cable for transfer of programs between them.

To connect two units

1. Check to make sure that the power of both units is off.
2. Remove the covers from the connectors of the two units.
   - Be sure you keep the connector covers in a safe place so you can replace them after you finish your data communications.
3. Connect the two units using the SB-62 cable.



SB-62 cable

• Keep the connectors covered when you are not using them.

4-2. Before Starting Data Communications

In the Main Menu, select the **LINK** icon and enter the LINK Mode. The following data communication main menu appears on the display. (Select the **LINK** icon, then press **EXE** button.)

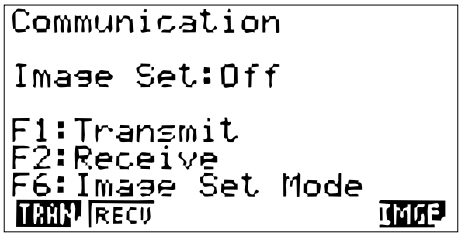


Image Set: ..... Indicates the status of the graphic image send features.

Off:	Graphic images not sent.
Monochrome:	Pressing F↔D sends graphic images in monochrome.
Color:	Pressing F↔D sends graphic images in color.

- {**TRAN**}/{**RECV**} ..... Menu of {send settings}/{receive settings}
- {**IMGE**} ..... {menu of graphic image transfer settings}

Communications parameters are fixed at the following settings.

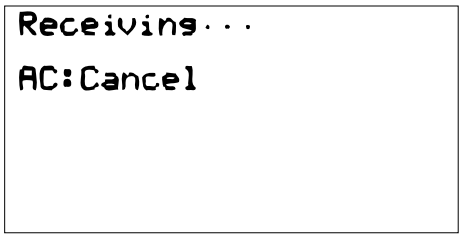
- Speed (BPS): 9600 bits per second
- Parity (PARITY): NONE

4-3. Performing Data Transfer Operation

Connect the two units and then perform the following procedures.

Receiving unit

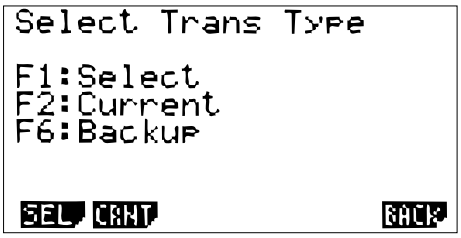
To set up the calculator to receive data, press [F2] (RECV) while the data communication Main Menu is displayed.



The calculator enters a data receive standby mode and waits for data to arrive. Actual data receive starts as soon as data is sent from the sending unit.

Sending unit

To set up the calculator to send data, press [F1] (TRAN) while the data communication Main Menu is displayed.

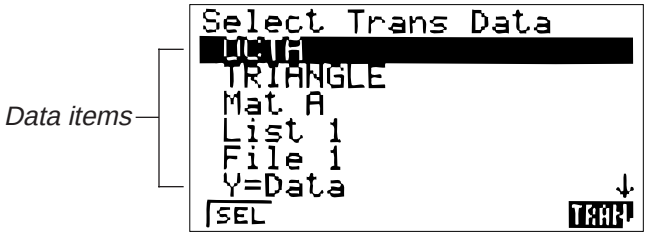


Press the function key that corresponds to the type of data you want to send.

- {**SEL**} .....{selects data items and sends them}
- {**CRNT**} ....{selects data items from among previously selected data items and sends them}
- {**BACK**} ...{all memory contents, including mode settings}

• To send selected data items

Press [F1] (SEL) or [F2] (CRNT) to display a data item selection screen.



- {SEL} .....{selects data item where cursor is located}
- {TRAN} ....{sends selected data items}

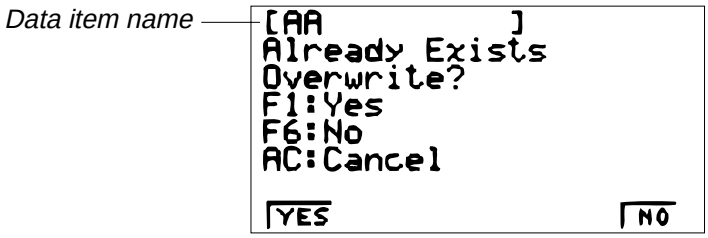
Use the ▲ and ▼ cursor keys to move the cursor to the data item you want to select and press [F1] (SEL) to select it. Currently selected data items are marked with " ▶ ". Pressing [F6] (TRAN) sends all the selected data items.

• To deselect a data item, move the cursor to it and press [F1] (SEL) again.

Only items that contain data appear on the data item selection screen. If there are too many data items to fit on a single screen, the list scrolls when you move the cursor to the bottom line of the items on the screen. The following are the types of data items that can be sent.

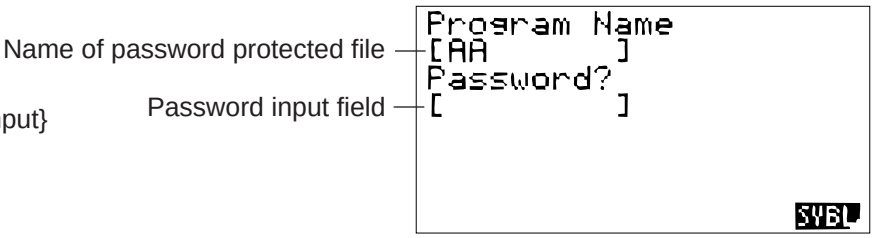
Data Item	Contents	Overwrite Check*1	Password Check*2
Program	Program contents	Yes	Yes
Mat *n*	Matrix memory (A to Z) contents	Yes	
List *n*	List memory (1 to 6) contents	Yes	
File *n*	List file memory (1 to 6) contents	Yes	
Y=Data	Graph expressions, graph write/non-write status, View Window contents, zoom factors	No	
G-Mem *n*	Graph memory (1 to 6) contents	Yes	
V-Win *n*	View Window memory contents	No	
Picture *n*	Picture (graph) memory (1 to 6) data	No	
DynaMem	Dynamic Graph functions	Yes	
Equation	Equation calculation coefficient values	No	
Variable	Variable assignments	No	
F-Mem	Function memory (1 to 6) contents	No	

*1 No overwrite check: If the receiving unit already contains the same type of data, the existing data is overwritten with the new data.
With overwrite check:If the receiving unit already contains the same type of data, a message appears to ask if the existing data should be overwritten with the new data.



- {YES} .....{replaces the receiving unit's existing data with the new data}
- {NO} .....{skips to next data item}

*2 With password check: If a file is password protected, a message appears asking for input of the password.

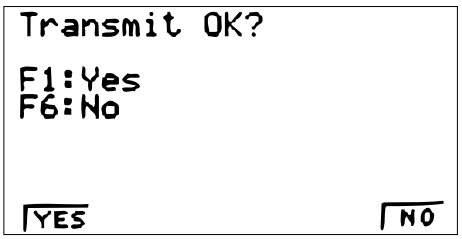


- {SYBL} ....{symbol input}

After inputting the password, press EXE.

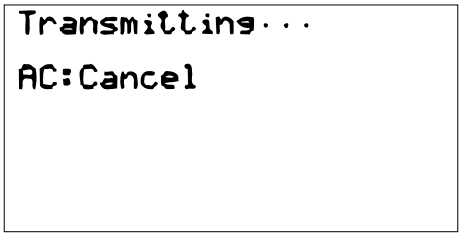
• To execute a send operation

After selecting the data items to send, press [F6] (TRAN). A message appears to confirm that you want to execute the send operation.



- {YES}.....{sends data}
- {NO}.....{returns to data selection screen}

Press [F1] (YES) to send the data.

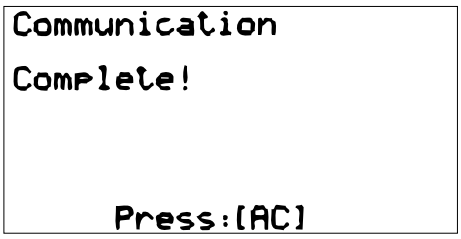


- You can interrupt a data operation at any time by pressing [AC] .

The following shows what the displays of the sending and receiving units look like after the data communication operation is complete.

Sending Unit

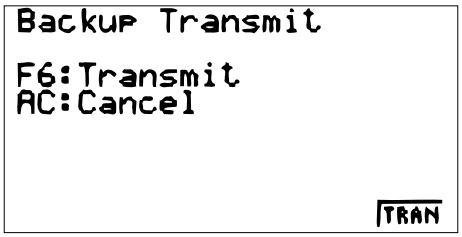
Receiving Unit



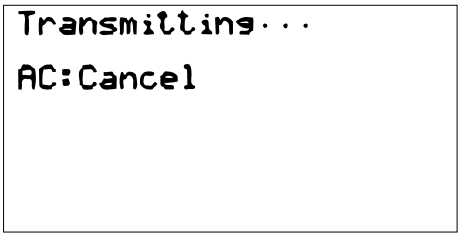
Press [AC] to return to the data communication Main Menu.

• To send backup data

This operation allows you to send all memory contents, including mode settings. While the send data type selection menu is on the screen, press [F6] (BACK), and the back up send menu shown below appears.

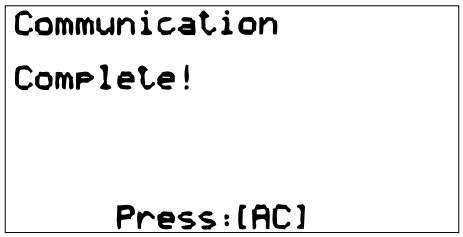


Press [F6] (TRAN) to start the send operation.

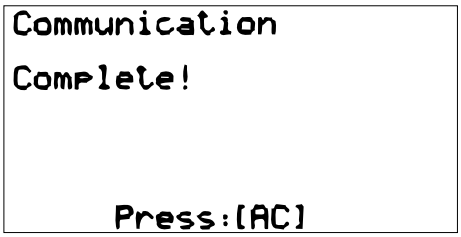


The following shows what the displays of the sending and receiving units look like after the data communication operation is complete.

Sending Unit



Receiving Unit



Press [AC] to return to the data communication Main Menu.

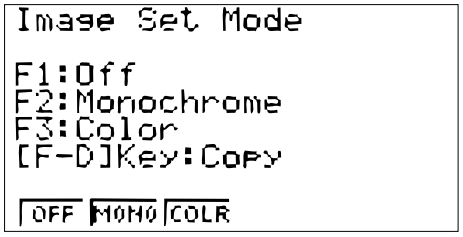
- Data can become corrupted, necessitating a RESET of the receiving unit, should the connecting cable become disconnected during data transfer. Make sure that the cable is securely connected to both units before performing any data communication operation.

4-4. To Send the Screen

The following procedure sends a bit mapped screen shot of the display to a connected computer.

1. Connect the unit to a personal computer or to a CASIO Label Printer.

2. In the data communication main menu, press [F6] (IMGE), and the following display appears.



- {**OFF**} .....{graphic images not sent}
- {**MONO**}/{**COLR**}..... {monochrome}/{color} bitmap

3. Press a function key to specify either “Monochrome” or “Color” for the Image Set Mode.

4. Display the screen you want to send.

5. Set up the personal computer or Label Printer to receive data. When the other unit is ready to receive, press [F↔D] to start the second operation.

- Selecting “Monochrome” for Image Set allows data to be sent to any CASIO Label Printer equipped with data communications capabilities.

Selecting “Color” allows data to be sent to Color Label Printer models only.

You cannot send the following types of screens to a computer.

- The screen that appears while a data communication operation is in progress.
- A screen that appears while a calculation is in progress.
- The screen that appears following the reset operation.
- The low battery message.
- The flashing cursor is not included in the screen image that is sent from the unit.
- If you send a screen shot of any of the screens that appear during the data send operation, you will not be able to then use the sent screen to proceed with the data send operation. You must exit the data send operation that produced the screen you sent and restart the send operation before you can send additional data.
- You cannot use 6 mm wide tape to print a screen shot of a graph.

4-5. Data Communication Precautions

Note the following precautions whenever you perform data communications.

- An error occurs whenever you try to send data to a receiving unit that is not yet standing by to receive data. When this happens, press [AC] to clear the error and try again,after setting up the receiving unit to receive data.

- An error occurs whenever the receiving unit does not receive any data approximately six minutes after it is set up to receive data. When this happens, press [AC] to clear the error.

- An error occurs during data communications if the cable becomes disconnected, if the parameters of the two units do not match, or if any other communications problem occurs. When this happens, press [AC] to clear the error and correct the problem before trying data communications again. If data communications are interrupted by [AC] key operation or an error, any data successfully received up the interruption will be in the memory of the receiving unit.

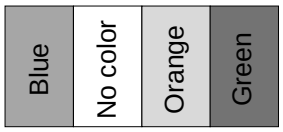
- An error occurs if the receiving unit memory becomes full during data communications. When this happens, press [AC] to clear the error and delete unneeded data from the receiving unit to make room for the new data, and then try again.

- To send picture (graph) memory data, the receiving unit need 1-kbyte of memory for use as a work area in addition to the data being received.

5. OPERATION CHECK

✻ Performing this operation check, the data stored in this calculator deleted. If you want not to delete these data, save these data to another CFX-9850G PLUS.

STEP	OPERATION	DISPLAY	NOTE
1	Press [P] button on the back of the unit using any thin and pointed object.	✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻ ✻ RESET ✻ ✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻ RESET ALL MEMORIES? [F1] [F6] YES RESET ALL NO	Reset
2	Press [F1] button.	✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻ ✻ MEMORY CLEARED! ✻ ✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻✻ PRESS [MENU] KEY	
3	Press [SHIFT], then [AC/ON] button.	OFF (No display)	
4	Press [AC/ON] button while pressing [F6] and [ab/c] buttons.	ZX935 Ver.X TEST MODE 1. Cnt 6. ROM 2. LCD 7. RAM 3. KEY 8. CYC 4. DET 0. Rst 5. TRS	TEST mode menu
5	Press [1], then [EXE] button.	COLOR ◀O B G▶ ORANGE BLUE GREEN ◀– +▶ ▶ CONTRAST INIT IN•A	The contrast is changed automatically. Min→Max→default
6	Press [EXIT] button.	ZX935 Ver.X TEST MODE 1. Cnt 6. ROM 2. LCD 7. RAM 3. KEY 8. CYC 4. DET 0. Rst 5. TRS	TEST mode menu
7	Press [2] button.	Frame is displayed	
8	Press [EXE] button.	No color, no display	
9	Press [EXE] button.	All orange dots are displayed	Check for display
10	Press [EXE] button.	All green dots are displayed	Check for display
11	Press [EXE] button.	All blue dots are displayed	Check for display
12	Press [EXE] button.	Checkers are displayed	Check for display
13	Press [EXE] button.	Reverse checkers are diaplayed	Check for display

STEP	OPERATION	DISPLAY	NOTE
14	Press [EXE] button.		Check four colors. If the colors do not appear accurately, perform the adjustment mentioned in page 5.
15	Press [EXE] button.		Check four colors
16	Press [EXE] button.	ZX935 Ver.X TEST MODE 1. Cnt 6. ROM 2. LCD 7. RAM 3. KEY 8. CYC 4. DET 0. Rst 5. TRS	TEST mode menu
17	Press [3] button.	Trace	Check for keys
18	Press [F1] [F2] [F3] ..... buttons.	Zoom, V-Window, Sketch	Check for keys. To push the key sequentially that is being appeared in the display.
19	Press ..... [EXE] buttons.	ZX935 Ver.X TEST MODE 1. Cnt 6. ROM 2. LCD 7. RAM 3. KEY 8. CYC 4. DET 0. Rst 5. TRS	TEST mode menu
20	Press [6] button.	ROMSIZE 8M bits ROM OK checksum= xxxxxxxx	ROM check
21	Press [EXE] button.	ZX935 Ver.X TEST MODE 1. Cnt 6. ROM 2. LCD 7. RAM 3. KEY 8. CYC 4. DET 0. Rst 5. TRS	TEST mode menu
22	Press [7] button.	RAMSIZE 32K byte RAM OK RAMaddress 7FFF RAMwrite AA RAMread AA	RAM check

STEP	OPERATION	DISPLAY	NOTE
23	Press EXE button.	********** MEMORY CLEARED! ********** PRESS [MENU] KEY	Reset
24	Press SHIFT , then AC/ON button.	OFF (No display)	End

6. DATA TRANSFER CHECK

Turn off both units (**A** and **B** unit), then connect them using the cable SB-60 or SB-62. Perform **STEP 1 ~ 4** described in **5. OPERATION CHECK** before this check.

STEP	A unit		B unit		NOTE
	OPERATION	DISPLAY	OPERATION	DISPLAY	
STEP 4 of 5.OPERATION CHECK	Press [AC/ON] button while pressing [F6] and [ab/c] buttons.	ZX935 TEST MODE 1. Cnt 6. ROM 2. LCD 7. RAM 3. KEY 8. CYC 4. DET 0. Rst 5. TRS	Press [AC/ON] button while pressing [F6] and [ab/c] buttons.	ZX935 TEST MODE 1. Cnt 6. ROM 2. LCD 7. RAM 3. KEY 8. CYC 4. DET 0. Rst 5. TRS	TEST mode menu
1	Press [5] button.	TRANSMIT Check 1. COM Check 2. VCCI Spec Test	Press [5] button.	TRANSMIT Check 1. COM Check 2. VCCI Spec Test	
2	Press [1] button.	0. Self 1. Send 2. Receive	Press [1] button.	0. Self 1. Send 2. Receive	
3			Press [2] button.	WAITING	
4	Press [1] button.	SENDING ↓ COM END		RECEIVING ↓ COM OK	Check for sending and receptivity
5	Press [EXE] button.	0. Self 1. Send 2. Receive	Press [EXE] button.	0. Self 1. Send 2. Receive	
6	Press [2] button.	WAITING			
7		RECEIVING ↓ COM OK	Press [1] button.	SENDING ↓ COM END	Check for sending and receptivity
8	Press [EXE] button.	0. Self 1. Send 2. Receive	Press [EXE] button.	0. Self 1. Send 2. Receive	
9	Press [AC/ON] button.	ZX935 TEST MODE 1. Cnt 6. ROM 2. LCD 7. RAM 3. KEY 8. CYC 4. DET 0. Rst 5. TRS	Press [AC/ON] button.	ZX935 TEST MODE 1. Cnt 6. ROM 2. LCD 7. RAM 3. KEY 8. CYC 4. DET 0. Rst 5. TRS	TEST mode menu
10	Take the steps as same as the end of 5. OPERATION CHECK to end this check.		Take the steps as same as the end of 5. OPERATION CHECK to end this check.		End

7. PIN FUNCTION

CPU HCD62121A03 (HC-3017) : COB

NOTE: The CPU is bonding on the PCB. If the CPU is defective, replace the PCB ass'y because the CPU cannot be replaced.

Pin No.	Pin Name	Input/Output	Function
1 ~ 14	KO14 ~ KO1	O	Key common signal
15 ~ 22	KI8 ~ KI1	I	Key input signal
23	BUFON	O	Chip select for RAM
24	IT2	I	Interrupt input
25	IT0	I	Interrupt input
26 ~ 46	AO20 ~ AO0	O	Address bus
47 ~ 54	IO0 ~ IO7	I / O	Data bus
55	OEBO	O	Output enable signal for RAM
56	WEBO	O	Write enable signal for RAM
64	CS3BO	O	Chip selecting signals
69 ~ 72	OPT3 ~ OPT0	O	Changeover signal
73	PORT7	I	Receiving terminal for data communication
74	PORT6	I	Receiving terminal for data communication
75	PORT5	O	Transmitting terminal for data communication
76	PORT4	O	Transmitting terminal for data communication
80	PORT0	I	Low battery message for back-up battery (2.6 V)
81	VSS	I	GND
82	PI	I	4.3 MHz clock input
83	PO	O	4.3 MHz clock output
84	VDD	I	+6 V source
85	XO	O	Clock output
86	XI	I	Clock input
87	VCC	I	+6 V source
88	VREG2	O	Voltage for main switch detection
89, 90	TS1, TS2	—	Test terminals of factory purpose only
91	VSSR	I	GND
94	VSS	I	GND
96	ITOFF	I	Switching terminal from main switch
97	TEMU	—	Test terminals of factory purpose only
98	SW	I	Receiving terminal for reset switch
99	VDB	I	+3 V source
100	VREG1	—	Test terminals of factory purpose only
101	VREG4	O	+3 V source for ROM
102	VREG5	—	Test terminals of factory purpose only
103	VDT1I	I	Forced power off detecting terminal (2.3 V)
104	VDT2I	I	Low battery message for main battery (2.5 V)
105	VREG3	—	+3 V source for RAM

8. TROUBLESHOOTING

SYMPTOM	CAUSE	SOLUTION
Intermittent display	Dirt or poor contact on battery	Clean or adjust pressure of contact
	Poor contact on power switch	Clean or replace power switch
	Poor connection on PC joiner	Resolder or replace
	Poor soldering on LSI, capacitor, or resistor	Resolder
No display at all	Weak battery	Replace battery
	Dirt or poor contact on battery	Clean or adjust pressure of contact
	Poor contact on power switch	Clean or replace power switch
	Poor connection on PC joiner	Resolder or replace
	Defective LSI, capacitor, or resistor	Replace
Erratic display	Poor contact between LCD and PCB	Replace the heat seal
	Poor soldering on LSI	Resolder or replace display PCB ass'y
Certain key does not function	Dirt on key contact	Clean or replace contact
	Heavy key motion	Clean or replace the key
	Poor soldering on LSI	Resolder
	Defective LSI, capacitor, or resistor	Replace
All keys do not function	Constant contact is made on a certain key	Separate the contact
	Defective LSI, capacitor, or resistor	Replace
Heavy key motion	Dirt or scratch on the key	Clean or replace the key

9. OPERATION PROBLEMS

If you keep having problems when you are trying to perform operations, try the following before assuming that there is something wrong with the calculator.

• Get the Calculator Back to its Original Mode Settings

1. In the Main Menu, select the **RUN** icon and press [EXE] .
2. Press [SHIFT] [SET UP] to display the set up screen.
3. Highlight "Angle" and press [F2] (Rad).
4. Highlight "Display" and press [F3] (Norm) to select the exponential display range (Norm 1 or Norm 2) that you want to use.
5. Now enter the correct mode and perform your calculation again, monitoring the results on the display.

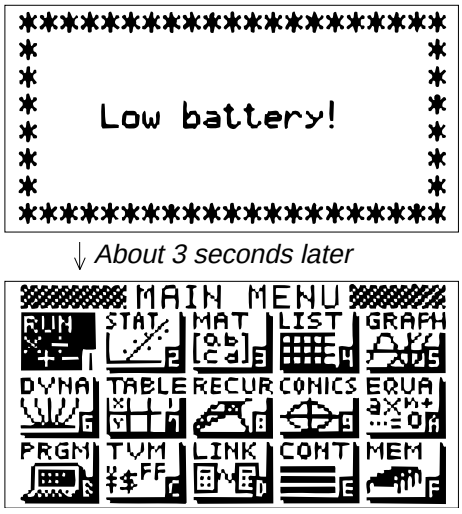
• In Case of Hang Up

- Should the unit hang up and stop responding to input from the keyboard, press the P button on the back of the calculator to reset the memory. Note, however, that this clears all the data in calculator memory.

• Low Battery Message

The low battery message apppears whenever you press [AC/ON] to turn power on or [MENU] to display the Main Menu while the main battery power is below a certain level.

[AC/ON] or [MENU]



If you continue using the calculator without replacing batteries, power will automatically turn off to protect memory contents. Once this happens, you will not be able to turn power back on, and there is the danger that memory contents will be corrupted or lost entirely.

- You will not be able to perform data communications operations once the low battery message appears.

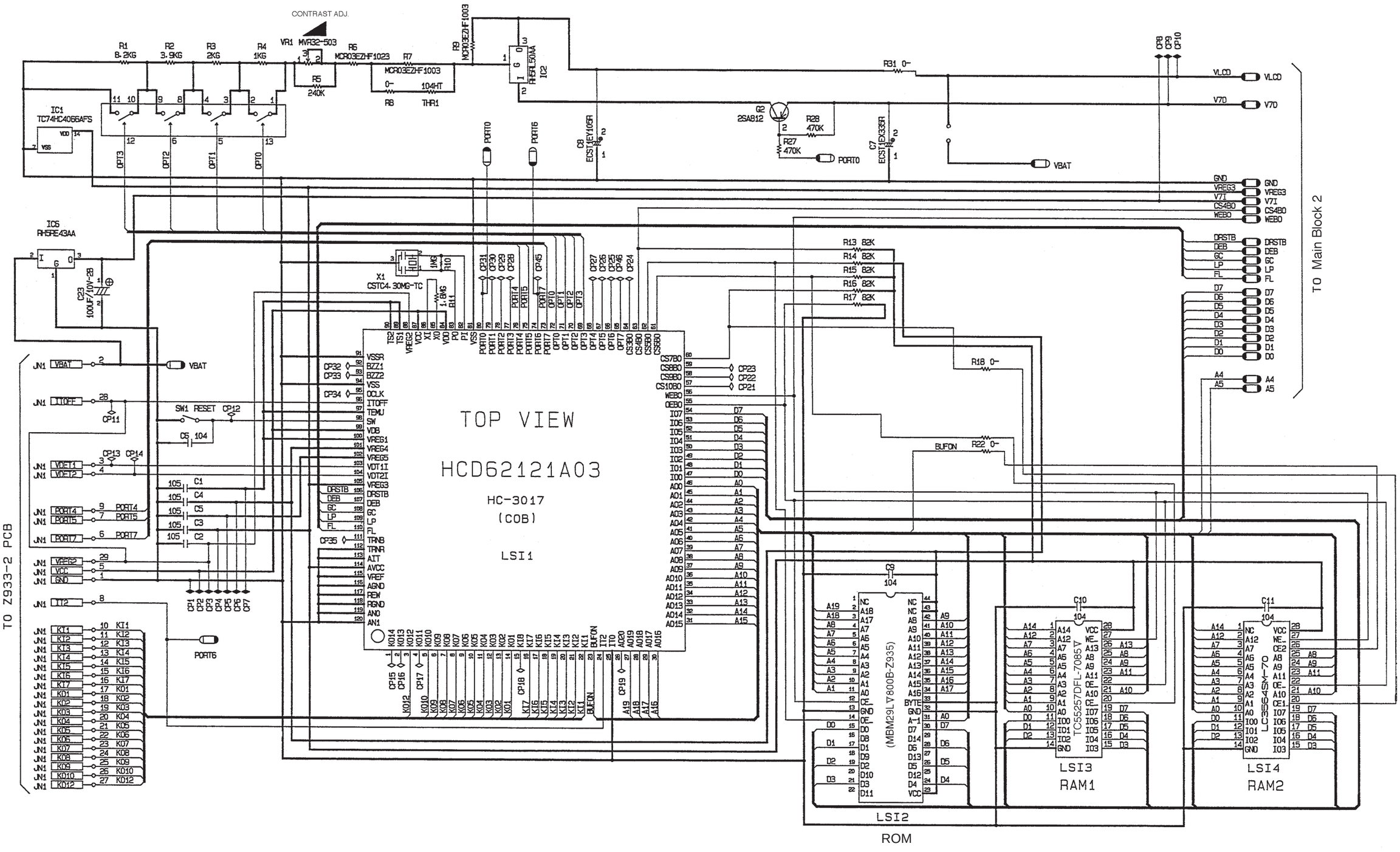
10. ERROR MESSAGE

Message	Meaning	Countermeasure
Syn ERROR	① Calculation formula contains an error. ② Formula in a program contains an error.	① Use ◄ or ► to display the point where the error was generated and correct it. ② Use ◄ or ► to display the point where the error was generated and then correct the program.
Ma ERROR	① Calculation result exceeds calculation range. ② Calculation is outside the input range of a function. ③ Illogical operation (division by zero, etc.) ④ Poor precision in Σ calculation results. ⑤ Poor precision in differential calculation results. ⑥ Poor precision in integration calculation results. ⑦ Cannot find results of equation calculations.	①②③④ Check the input numeric value and correct it. When using memories, check that the numeric values stored in memories are correct. ⑤ Try using a smaller value for Δx (x increment/decrement). ⑥ Try changing the tolerance "tol" when using Gauss-Kronrod Rule or the number of divisions "n" when using Simpson's Rule to another value. ⑦ Check the coefficients of the equation.
Go ERROR	① No corresponding Lbl n for Goto n. ② No program stored in program area Prog "file name".	① Correctly input a Lbl n to correspond to the Goto n, or delete the Goto n if not required. ② Store a program in program area Prog "file name", or delete the Prog "file name" if not required.
Ne ERROR	• Nesting of subroutines by Prog "file name" exceeds 10 levels.	• Ensure that Prog "file name" is not used to return from subroutines to main routine. If used, delete any unnecessary Prog "file name". • Trace the subroutine jump destinations and ensure that no jumps are made back to the original program area. Ensure that returns are made correctly.
Stk ERROR	• Execution of calculations that exceed the capacity of the stack for numeric values or stack for commands.	• Simplify the formulas to keep stacks within 10 levels for the numeric values and 26 levels for the commands. • Divide the formula into two or more parts.

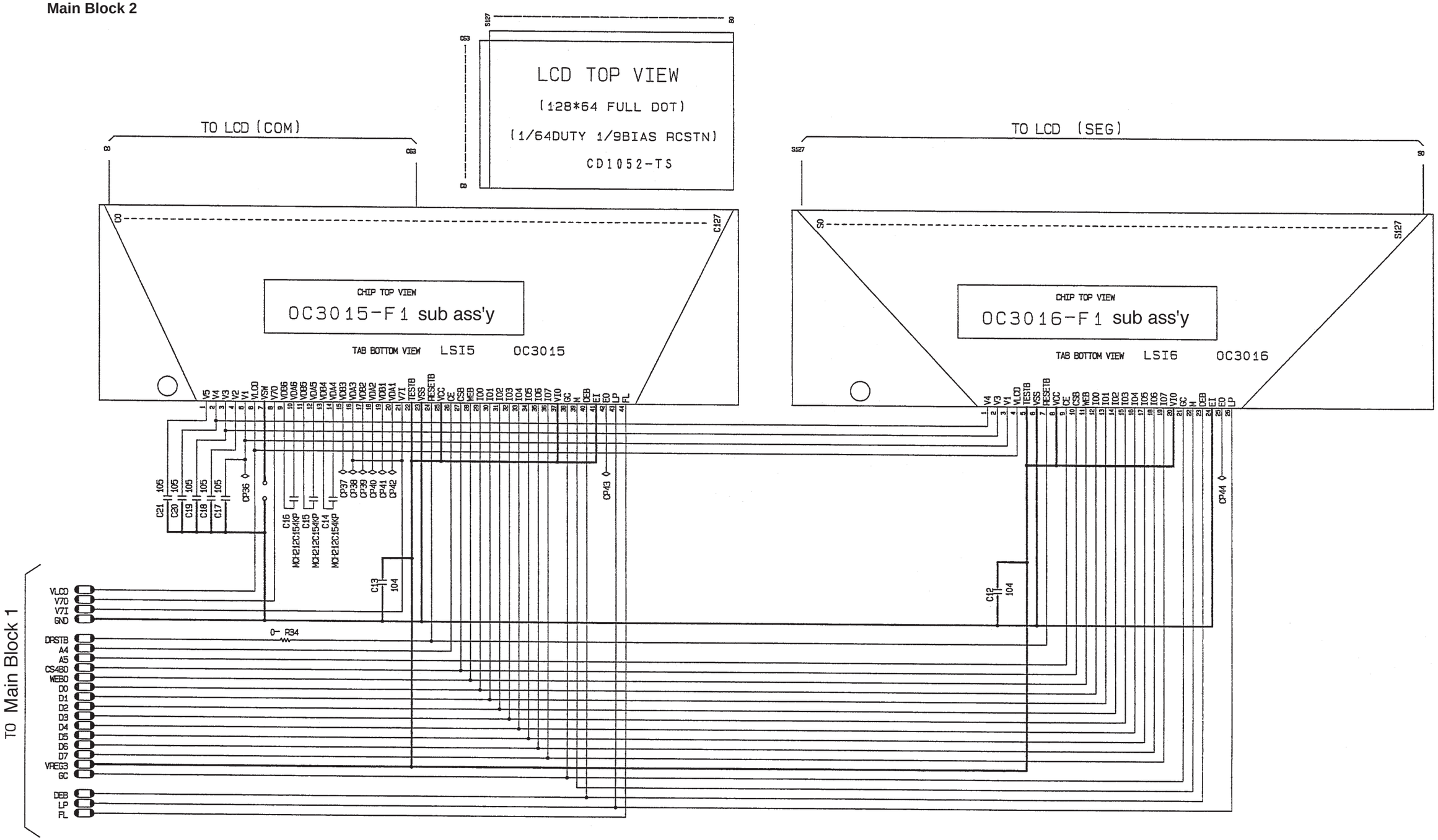
Message	Meaning	Countermeasure
Mem ERROR	• Not enough memory to input a function into function memory. • Not enough memory to create a matrix using the specified dimension. • Not enough memory to hold matrix calculation result. • Not enough memory to store data in list function. • Not enough memory to input coefficient for equation. • Not enough memory to hold equation calculation result. • Not enough memory to hold function input in the Graph Mode for graph drawing. • Not enough memory to hold function input in the DYNA Mode for graph drawing. • Not enough memory to hold function or recursion input.	• Keep the number of variables you use for the operation within the number of variables currently available. • Simplify the data you are trying to store to keep it within the available memory capacity. • Delete no longer needed data to make room for the new data.
Arg ERROR	• Incorrect argument specification for a command that requires an argument.	• Correct the argument. • Lbl *n*, Goto *n*: *n* = integer from 0 through 9.
Dim ERROR	• Illegal dimension or list used during matrix calculations.	• Check matrix or list dimension.
Com ERROR	• Problem with cable connection or parameter setting during program data communications.	• Check cable connection.
TRANSMIT ERROR!	• Problem with cable connection or parameter setting during data communications.	• Check cable connection.
RECEIVE ERROR!	• Problem with cable connection or parameter setting during data communications.	• Check cable connection.
MEMORY FULL!	• Memory of receiving unit became full during program data communications.	• Delete some data stored in the receiving unit and try again.

11. SCHEMATIC DIAGRAMS

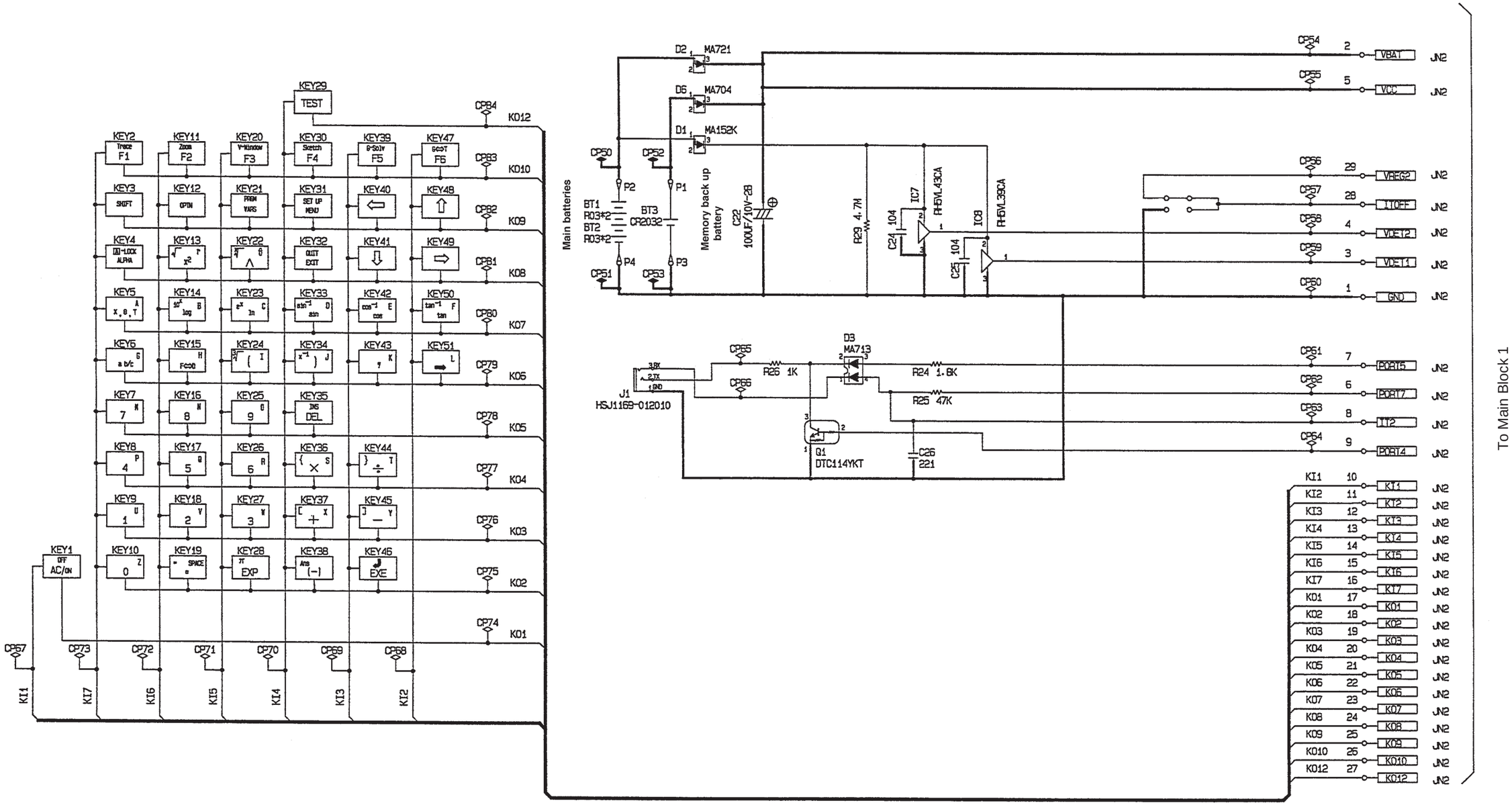
Main Block 1



Main Block 2


LCD TOP VIEW
(128*64 FULL DOT)
(1/64DUTY 1/9BIAS RCSTN)
CD1052-TS
TO LCD (COM)
TO LCD (SEG)
CHIP TOP VIEW
OC3015-F1 sub ass'y
TAB BOTTOM VIEW LSI5 OC3015
CHIP TOP VIEW
OC3016-F1 sub ass'y
TAB BOTTOM VIEW LSI6 OC3016
TO Main Block 1
VLCD
V70
V71
GND
DRSTB
A4
A5
CS4B0
WEB0
D0
D1
D2
D3
D4
D5
D6
D7
VREG3
GC
DEB
EI
ED
LP
FL
0- R34
C12 104
C13 104
C14 MCH212C154KP
C15 MCH212C154KP
C16 MCH212C154KP
C17 105
C18 105
C19 105
C20 105
C21 105
CP36
CP37
CP38
CP39
CP40
CP41
CP42
CP43
CP44

Key Block


KEY29 TEST
KEY2 F1 KEY11 F2 KEY20 F3 KEY30 F4 KEY39 F5 KEY47 F6
KEY3 SHIFT KEY12 OPTN KEY21 VARS KEY31 MENU KEY40 KEY48
KEY4 ALPHA KEY13 KEY22 KEY32 QUIT KEY41 KEY49
KEY5 KEY14 KEY23 KEY33 KEY42 KEY50
KEY6 KEY15 KEY24 KEY34 KEY43 KEY51
KEY7 7 KEY16 8 KEY25 9 KEY35 DEL
KEY8 4 KEY17 5 KEY26 6 KEY36 KEY44
KEY9 1 KEY18 2 KEY27 3 KEY37 KEY45
KEY1 OFF AC/ON KEY10 0 KEY19 KEY28 EXP KEY38 (-) KEY46 EXE
CP84 KO12
CP83 KO10
CP82 KO9
CP81 KO8
CP80 KO7
CP79 KO6
CP78 KO5
CP77 KO4
CP76 KO3
CP75 KO2
CP74 KO1
CP67 KI1
CP73 KI7
CP72 KI6
CP71 KI5
CP70 KI4
CP69 KI3
CP68 KI2
D2 MA721
D6 MA704
D1 MA152K
CP50 CP52
P2 P1
BT1 R03*2
BT2 R03*2
BT3 CR2032
P4 P3
CP51 CP53
Main batteries
Memory back up battery
C22 100UF/10V-2B
R29 4.7M
IC7 RH5VL43CA
IC8 RH5VL39CA
C24 104
C25 104
CP54 2 VBAT JN2
CP55 5 VCC JN2
CP56 29 VREG2 JN2
CP57 28 IIOFF JN2
CP58 4 VDET2 JN2
CP59 3 VDET1 JN2
CP60 1 GND JN2
D3 MA713
CP65 CP66
R26 1K
R24 1.8K
R25 47K
J1 HSJ1169-012010
Q1 DTC114YKT
C26 221
CP61 7 PORT5 JN2
CP62 6 PORT7 JN2
CP63 8 IIT2 JN2
CP64 9 PORT4 JN2
KI1 10 KI1 JN2
KI2 11 KI2 JN2
KI3 12 KI3 JN2
KI4 13 KI4 JN2
KI5 14 KI5 JN2
KI6 15 KI6 JN2
KI7 16 KI7 JN2
KO1 17 KO1 JN2
KO2 18 KO2 JN2
KO3 19 KO3 JN2
KO4 20 KO4 JN2
KO5 21 KO5 JN2
KO6 22 KO6 JN2
KO7 23 KO7 JN2
KO8 24 KO8 JN2
KO9 25 KO9 JN2
KO10 26 KO10 JN2
KO12 27 KO12 JN2
To Main Block 1

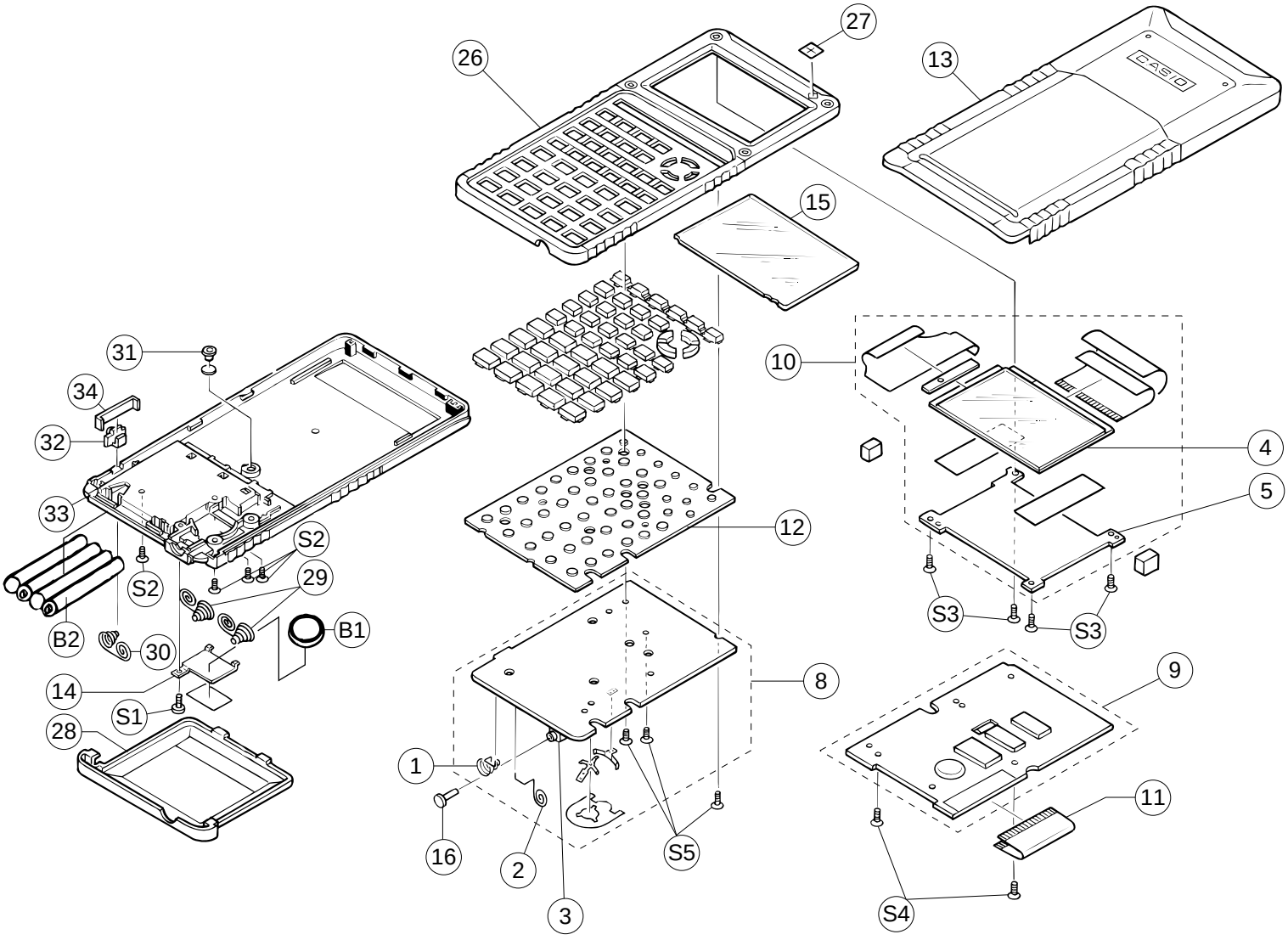
12. PARTS LIST

N	Item	Code No.	Parts Name	Specification	Q	R
		ZX933-1 ASS'Y				
	LSI3	2012 3192	LSI	TC55257DFL-7085V	1	B
	LSI4	2012 3185	LSI	LC3564SM-70	1	B
N	LSI2	2012 5645	LSI	MBM29LV800B-Z935	1	B
	Q2	2250 1281	Chip transistor	2SA1179M5, M6, M7-TB	1	C
	IC1	2114 4683	CMOS-IC	TC74HC4066AFS(EL)	1	C
	IC2	2105 2737	CMOS-IC	RH5RL50AA-T1	1	C
	IC6	2105 2968	CMOS-IC	RH5RE43AA-T1	1	C
	THR1	2755 0147	Thermister	104HT	1	X
	VR1	3122 3227	Chip variable resister	CVR-32A-503SX2	1	X
	X1	2590 1967	Ceramic oscillator	CSTC4.30MG-TC	1	C
		ZX933-2 ASS'Y				
	1	6416 9441	Battery spring A-Z933	A441557A-1	1	X
	2	6416 9450	Battery spring B-Z933	A441558-1	1	X
	3	3501 6538	Mini jack	HSJ1169-012010	1	C
	Q1	2259 0959	Chip digital transistor	DTC114YKT-146	1	C
		LCD UNIT				
	4	3335 6216	LCD	CD1052-TS	1	B
	5	6416 9370	LCD holder Z933	A341010-1	1	C
	6	5610 9050	Heat seal C-Z933	A340956-1	1	B
	7	5610 9060	Heat seal S-Z933	A341018-1	1	B
	LSI5	6417 3441	COF3015-F1 sub ass'y	C340532A*2	1	B
	LSI6	6416 3211	COF3016-F1 sub ass'y	C340533A*1	1	B
		PCB UNIT				
N	8	6420 7250	Z933-2 ASS'Y	A240572A*2 HK	1	B
N	9	6420 2300	Z933-1 ASS'Y	A140379Q*4 HK	1	B
	10	6417 3430	LCD UNIT	A240603B*2 HK	1	B
	11	6408 0210	PC joiner L370	A413642-1	1	B
		COMPONENTS				
	12	6416 9340	Key contact rubber Z933	A240567-1	1	C
N	13	6420 2330	Hard case Z935AE	A240568-3	1	C
	14	6416 9500	Battery holder	A441594-1	1	X
	15	6416 9380	Display plate Z933	A341011-1	1	C
	16	6390 0432	Cap V332	A310765B-1	1	C
	17	6413 5080	Button E-L392	A313257-3	1	C
	18	6413 5090	Button F-L392	A313257-4	1	C
N	19	6420 5330	Button B-Z935	A340110-3	1	C
	20	6413 6000	Button H-L392	A340256-1	1	C
	21	6419 5130	Button A-Z934	A240072-4	1	C
N	22	6420 5310	Button B-Z935	A211316-10	1	C
	23	6413 5011	Button C-L392	A340111A-1	1	C
N	24	6420 5340	Button D-Z935	A340123-3	1	C
N	25	6420 5320	Button G-Z935	A313257-8	1	C
N	26	6420 2320	Upper case Z935AE	A140373-7	1	X
	27	6417 3450	Badge label Z933	A441676-1	1	C
N	28	6420 2340	Battery cover Z935AE	A240903-3	1	C
	29	6408 0110	Battery spring B-L370	A410113-3	2	X
	30	6408 0120	Battery spring L370	A412218-2	1	X
	31	6419 9840	Rubber key Z934	A341594-1	1	C
N	32	6420 2350	Lock spring Z935AE	A341016-3	1	C
N	33	6420 2362	Lower case Z935AY	A140374B-8	1	X
	34	6417 3520	Spring H-Z933	A441675-1	1	C
		Parts prices will be informed separately by Parts Price List.				

Notes: N – New parts
Q – Quantity used per unit
R – Rank

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

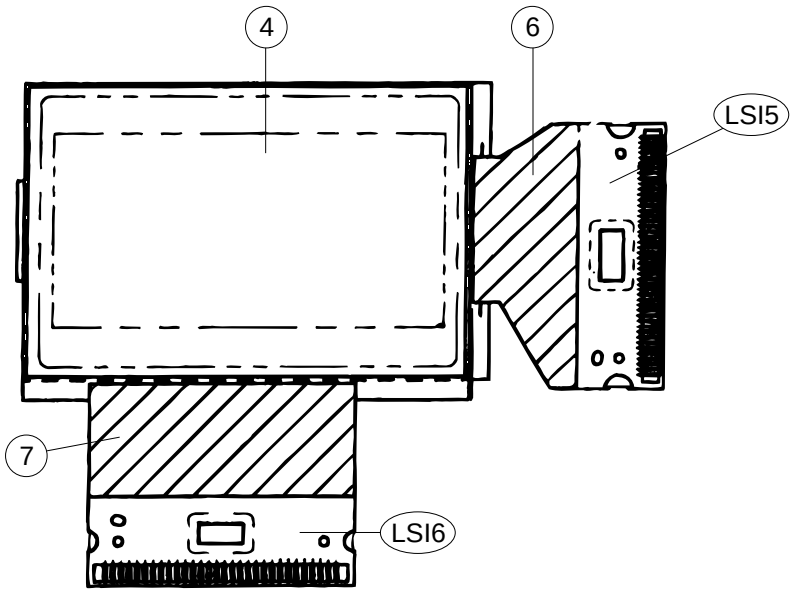
13. EXPLODED VIEW (1/2)

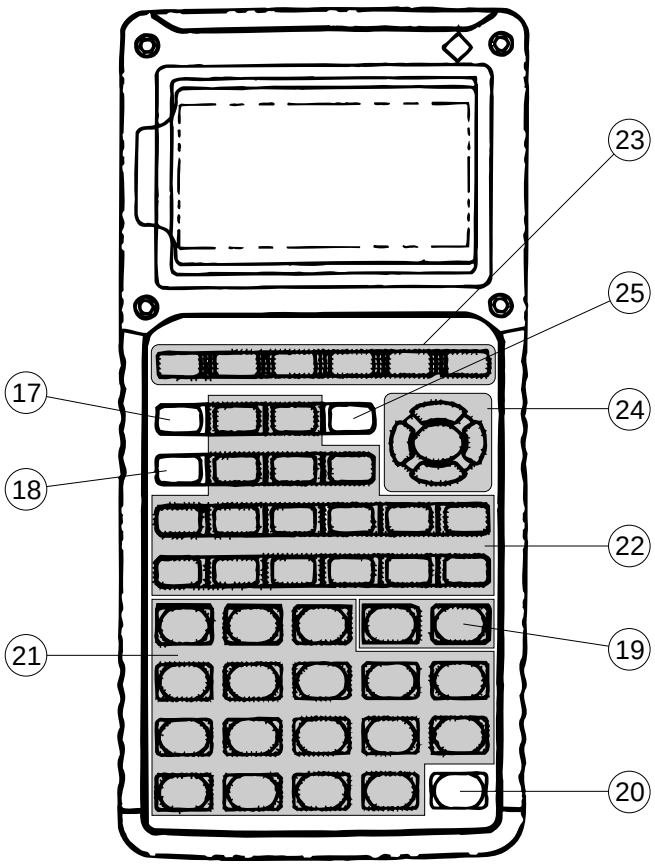


DISASSEMBLY

1. Remove the hard case ⑬.
2. Remove the battery cover ㉘.
3. Remove the battery holder ⑭, then loosen the screw Ⓢ1.
4. Remove the lithium battery Ⓑ1.
5. Remove four main batteries Ⓑ2.
6. Loosen four screws Ⓢ2.
7. Open the lower case ㉝ using any opener.
8. Loosen four screws Ⓢ3.
9. Loosen two screws Ⓢ4.
10. Loosen three screws Ⓢ5.

13. EXPLODED VIEW (2/2)





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