

CAV-1/2/10E/10R

SERVICE MANUAL

*US Model
Canadian Model*



Photo : CAV-1

- This set consist of the following units.

	CAV-1	CAV-2
COMPUTER AV INTERFACE	CAV-10R	CAV-10E
REMOTE COMMANDER	RM-VP10	_____

SPECIFICATIONS

Interface box inputs/outputs

RS232C serial connector (1)
Mouse connector (PS/2, ADB, PC-98)(CAV-10R only) (3)
IR output (1)
CONTROL A1(Mono Mini jack)(bi-directional) (1)
LANC (Stereo Mini-Mini jack)(bi-directional) (1)

Requirements

Macintosh computer:

System System 7.1 or later
RAM 4 MB or more
Colors 256 or more

IBM-compatible PC computer:

System Windows 3.1 or later
RAM 16 MB or more
(recommended)
Colors 32768 or more

- Interface box (CAV-10R for CAV-1, or CAV-10E for CAV-2) (1)
- Wireless mouse (Air-EGG) (CAV-1 only) (1)
- CD-ROM control software (1)
- Sony SUM-3 (NS) batteries (CAV-1 only) (2)
- Mouse cable for PS/2 (CAV-1 only) (1)

Battery life

- About three months of normal operation can be expected using Sony SUM-3 (NS), and a half year using Sony AM-3 (NW) alkaline batteries. Since the Air-EGG consumes power whenever you pick it up and perform on-screen operations, the service life of the batteries may be less than three months, depending on the amount of use.
- The Air-EGG battery indicator (see page 12) lights up when the batteries become weak.

COMPUTER AND HOME AV SYSTEM INTERFACE
SONY[®]



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[SERVICE NOTE]

• Forced Reset of IC101

IC101 (IR CONTROL) backs up the learnt data using C105.
When the IR CONTROL does not function due to the overrun of IC101, force-reset the unit using the following method.

Method : Short-circuit both ends of C105 using a lead wire
(approx. 5 seconds).
Then turn on the power supply and reset.

Note : Performing force-reset will erase all the information
recorded by the user. Therefore be careful not to perform
it unintentionally.

Reference : When the following problems occur, try forced
reset.

- ① The learning function does not function.
- ② The other equipment cannot be controlled by
generating IR codes.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED
LINE WITH MARK Δ ON THE SCHEMATIC DIAGRAMS
AND IN THE PARTS LIST ARE CRITICAL TO SAFE
OPERATION. REPLACE THESE COMPONENTS WITH
SONY PARTS WHOSE PART NUMBERS APPEAR AS
SHOWN IN THIS MANUAL OR IN SUPPLEMENTS
PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE Δ
SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE
DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ
DE FONCTIONNEMENT. NE REMPLACER CES
COMPOSANTS QUE PAR DES PIÈCES SONY DONT
LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU
DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SECTION 1 GENERAL

This section is extracted from instruction manual.

Below are some of the features of the CAV-1/
CAV-2.

On-screen operations

You can control audio and video program sources through on-screen computer operations.

Controlling non-Sony electrical equipment

You can control audio and video program sources made by manufacturers other than Sony, as well as electrical equipment with infrared remote control capability.

Macro Play

Macro Play allows you to operate several electrical devices, automatically and sequentially.

Three ways to access CDs in a CD changer

You can access CDs by number, genre, or artist.

Overview

The CAV-1 is an interface device that allows you to use a hand-held wireless mouse and a personal computer to control multiple audio and video program sources and electrical equipment. The CAV-1 consists of three parts: a wireless mouse (Air-EGG), an interface box (CAV-10R), and CD-ROM control software. The CAV-2 is identical to CAV-1, but comes with an interface box (CAV-10E) and CD-ROM control software only. The following parts are provided on the CAV-10R, but not the CAV-10E:

- PS/2 connector
- ADB connector
- PC-98 connector (unused in North America)
- Air-EGG battery indicator
- Security switch

The CAV-1/CAV-2 is available for both the Macintosh and Windows operating systems.

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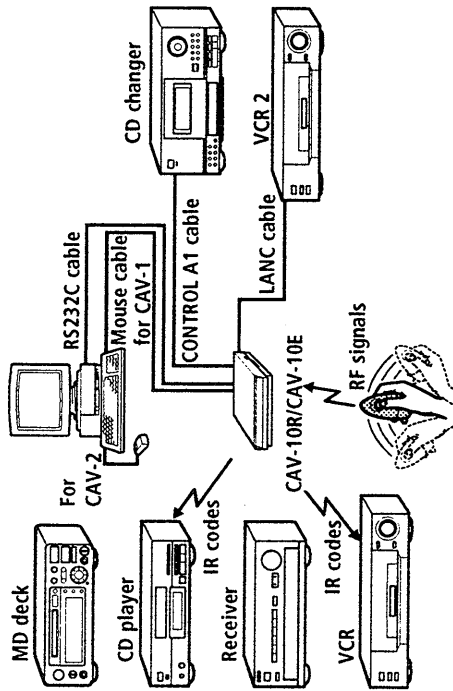
Introduction

Operating Configuration of the CAV-1/CAV-2

Since the CAV-10R uses a built-in receiving antenna and a wireless mouse (Air-EGG) to transmit radio frequency (RF) signals, steel beams within walls, PCs, monitors, or other metallic objects may interfere with signal reception by the CAV-10R. To prevent this, keep the interface box at least 20 inches (about 50 cm) away from all metallic objects.

The CAV-1/CAV-2 operating configuration

The illustration below shows the CAV-1/CAV-2 operating configuration. With the CAV-2, you control on-screen operations with the mouse that comes with your computer.



Remote control operations with the CAV-1

The wireless mouse (Air-EGG) emits signals that correspond to those of the computer's mouse, and can thus be used to control on-screen operations. Signals from the Air-EGG to the interface box are radio frequency (RF) signals, and are unaffected by objects standing between the Air-EGG and the interface box.

Pre-stored IR code sets in the interface box

The infrared (IR) code sets of AV equipment made by Sony and other manufacturers come pre-stored in the interface box, giving you almost immediate control of your AV equipment through the Air-EGG and on-screen button operations.

Introduction

Using the CAV-1/CAV-2

You can use your CAV-1/CAV-2 to control AV products made by Sony, most AV products made by other manufacturers, and other types of equipment with infrared remote control capability, such as lighting equipment, projection screens, and motorized curtains. If the IR codes for a particular device are not included among those pre-stored in the interface box, you must install them manually using the device's remote commander.

Note

Since control codes pre-stored in the interface box correspond to those omitted by remote commanders, your CAV-1/CAV-2 can control only electrical equipment with remote commander capability. Equipment without this capability, such as power amplifiers, must be turned on and off manually.

Preparation

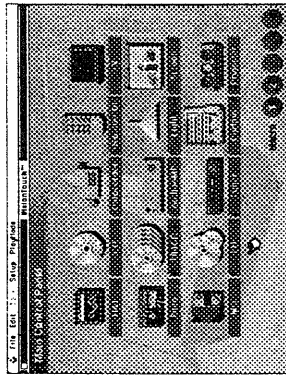
To avoid damage by battery leakage and corrosion

Remove the batteries from the Air-EGG if it will not be used for a long time.

How to Use the Air-EGG (CAV-1 Only)

The Air-EGG's gyroscopic positioning system eliminates the need to point the Air-EGG directly at the interface box to operate the on-screen pointer. You can thus control the pointer even while holding the Air-EGG with your arms folded and the Air-EGG pointed towards the side.

To move the pointer on the screen, lightly hold down the click button on the Air-EGG (see page 12). To activate a button or select a menu item on the screen, press the click button further.



Note

- The Air-EGG can be operated up to about 17 feet (5m) from the interface box. This distance, however, may be shortened if there are metal objects near the interface box or Air-EGG.
- The Air-EGG is most suitable for control during controlling equipment through the control software or during presentations but not for the precision control required in games.

Hints on handling the Air-EGG

- A slight move of the wrist is all you need to direct the pointer (see illustration on the previous page).
- Hold the Air-EGG with its "click" button facing up, as shown below. If the click button is oriented diagonally, the on-screen pointer will also be oriented diagonally.



- The Air-EGG will not operate if you move it parallel as shown below.



- If the pointer has not reached the desired point by the time you finish moving the Air-EGG, release the click button, move the Air-EGG back, lightly hold down the click button, then continue moving the pointer again.

Notes

- If the pointer begins drifting on the screen while the Air-EGG is stationary, place the Air-EGG on a flat surface for a few seconds. The pointer should behave normally when you operate the Air-EGG again.

Major Parts and Their Use

Interface box



Power indicator

This indicator lights up when the interface box is turned on.

IR code indicator

This indicator lights up whenever an IR code is emitted from the interface box.

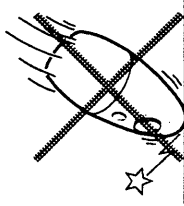
Air-EGG battery indicator

This indicator flashes when you are inserting batteries, and lights up when batteries are weak.

- The pointer may drift when it is used for more than 5 continuous minutes. It also may drift due to changes in the surrounding temperature.
- If the pointer response is too sensitive, do the procedure in "To adjust the sensitivity of the Air-EGG" on this page.
- The pointer freezes on the screen when you release the click button.

Caution

Since the Air-EGG contains delicate circuitry and parts, do not subject it to sudden changes in temperatures or to shock.



To adjust the sensitivity of the Air-EGG*

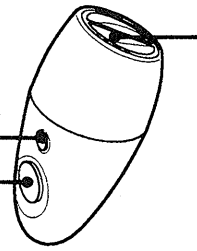
While holding down the control key, press to decrease the sensitivity or to increase the sensitivity. Note that poor response may result when the sensitivity is too low.

The sensitivity of the Air-EGG can be adjusted by adjusting the mouse sensitivity on the PC.

* This function is available only when the RS232C cable is connected.

Air-EGG

Click button
Click button (for IBM-compatible PC users)



Battery compartment

Click button

This button has two levels. Hold down slightly to move the pointer. Press further to activate a button or select a menu item on the screen. Releasing the button freezes the pointer.

Click button (for IBM-compatible PC users)

This button functions the same as the right button of the IBM-compatible PC mouse, but is non-functional for Macintosh users. It is not used for dragging.

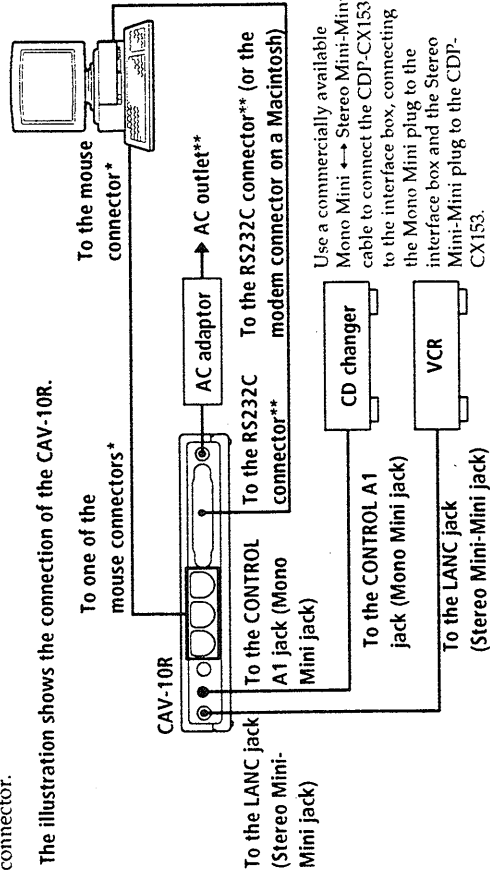
Battery compartment

Insert batteries here.

Hooking Up the System

Be sure to turn off the power to each unit before making any connections. The "Basic Setup" procedure on pages 17 to 20 is more easily performed using the mouse that came with your computer. After completing the basic setup, connect the interface box (CAV-10R) to the computer with the mouse connector.

The illustration shows the connection of the CAV-10R.



* Use the supplied cable or a commercially available S cable (for a Macintosh)

** The above cable connections are unnecessary when you use the Air-EGG as a mouse substitute only.

Preparation

Connecting the interface box to your computer

Use the procedure below to connect your CAV-1/CAV-2 to a personal computer that uses the Macintosh or Windows operating system. The CAV-1 Air-EGG can be used with personal computers that have a PS/2 or ADB mouse connector.

- 1 Connect the RS-232C straight-type interface cable.
For Macintosh users, connect the cable to the computer's modem connector.
- 2 Connect the mouse cable (CAV-1 only).
Connect the cable to the PS/2 or ADB mouse connector, depending on the type of your mouse.

Connecting the interface box to a VCR and Sony CD changer

You can connect your interface box to any Sony CD changer with a CONTROL A1 jack (Mono Mini jack) and to a VCR with a LANC jack (Stereo Mini-Mini jack). Information from the CD changer and time information from the VCR will appear on your computer screen.

To connect a CD changer

Connect the CD changer to the interface box with a CONTROL A1 cable (Mono Mini cable).

To connect a VCR

Connect the VCR to the interface box with a LANC cable (Stereo Mini-Mini cable).

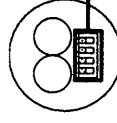
Connecting the AC adapter

Connect the AC adapter to the interface box first, then to an AC outlet.

Preventing Interference When Using Two or More Air-EGGs (CAV-1 Only)

If you use two or more CAV-1 at the same time, interference between the RF signals may occur, causing the interface boxes to operate erratically. To prevent this, you can give each Air-EGG a unique identification (security setting) to allow RF signals from one Air-EGG to be distinguished from those of another. Follow the procedure below to assign a security setting to each Air-EGG.

- 1 Open the battery compartment on the Air-EGG and remove the batteries.
You will see a set of security switches as shown below.



- 2 Set the security switches.
Use a pointed object to flip up each switch according to the security setting to be assigned to that Air-EGG.

Preparation

- 3 Set the security switches on the front-right of the interface box to the same security setting as its Air-EGG.

Installing the CD-ROM Control Software

To install the CD-ROM control software, your computer's operating system must be version 7.1 or later (for a Macintosh), or Windows 3.1 or later (for an IBM-compatible PC). Use of the Air-EGG as a mouse substitute, however, does not require installation of the control software.

- 1 Turn on the computer and the interface box (CAV-10R/CAV-10E).
- 2 Insert the CD-ROM into your CD-ROM drive.
The icon for installing the software appears.


(Continued)

Preparation

- 3 **On a Macintosh**
Copy the whole folder to your hard disk.
On an IBM-compatible PC
Activate the installer. Specify the directory to which the control software should be installed, and click on the Start button.

Basic Setup

Starting the Software


Click on the  icon. If you are using the software for the first time, enter a user name, then click on the OK button.

Changing Icons

Up to 15 icons can be displayed on the Main Control Panel at one time. Use the procedures below to freely replace and reposition any of the icons.

- 1 Select Function... from the Setup menu.
The Function Select menu appears.
- 2 Double click on the icon to be displayed on the Main Control Panel.
The icon is depressed. Icons that are not depressed do not appear on the Main Control Panel.

To return to the Main Control Panel
Click on Exit.

 **Icons can be deleted from the Main Control Panel**
Click on the icon to be deleted, then press the delete key on the keyboard.

Creating New Function Icons

You can copy an icon, change its name, and add it to the Function Select menu. You can also add your own custom graphics to create a new icon.

- 1 Select Function... from the Setup menu.
The Function Select menu appears.
- 2 Click on the icon you want to copy.
The icon lights up purple.
- 3 Click on Copy.
The New Function menu appears.
- 4 Enter the new name of the icon on the keyboard.

(Continued)

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Basic Setup

- 5 Click on Enter.
The newly named icon is added to the Function Select menu.

To rename an icon

Click on current name of the icon, then enter the new name on the keyboard.

To delete a copied icon

Click on the icon, then on Delete.

To create a new icon

The custom graphics to be used must be saved in the PICT file format (in case of a Macintosh) or the BMP file format (in case of a IBM-compatible PC).

- 1 Read the graphical data into the clip board.
- 2 Click on the icon you want to change.
The icon lights up purple.
- 3 Click on Copy.
- 4 Click on Load.
- 5 Enter the new name on the keyboard.
- 6 Click on Enter.

Installing IR Codes

Before you can use your CAV-1/CAV-2 to remotely control electrical equipment, you must first install the IR codes for the equipment to be used.

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Note

Some IR codes for buttons, such as vol +/-, 1st/ch, and ENTER on TV sets and those of certain manufacturers, may not function.

For a Sony product or a TV set, laser disc player, or VCR made by another manufacturer

- 1 Select Function... from the Setup menu.
The Function Select menu appears.
- 2 Click on the icon of the device so that it presses down and lights up purple.
- 3 Click on Enter.
The Function-IR Setting menu appears along with the device's control panel.
- 4 Select SONY from the Maker/Format menu below Command Set if the device is a Sony product, or the name of the manufacturer if it is not a Sony product.
- 5 Select the product category from the Category menu.

If more than one set of IR codes is available from the same manufacturer (such as Sony VTR 1 and VTR 2), choose the set here.

The IR code set for the device is automatically installed.

To confirm that the IR code has been installed, press the button on the device's control panel on the left and see if the IR code is installed.

Note

- The IR codes of some remote commanders may not be successfully installed even if "OK" has appeared.
- If your VCR is connected to the interface box with a LANC cable, select LANC from the Maker/Format menu. Under this setting, the power button will not operate.
- When using a Sony CD changer connected through the CONTROL A1 cable, click on 100CD in the Function Select menu and select Control A1 from the Maker/Format menu (or Control A if your Sony CD changer is the CDP-CX153). Then select the number of the CD changer (CD1, CD2, or CD3) from the Category menu. The CDP-CX151 does not operate when it is connected through the CONTROL A1 cable.

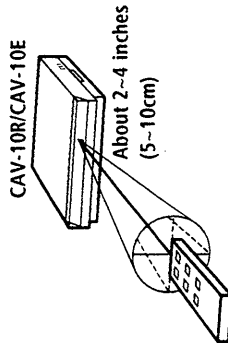
- The IR codes of some Sony AV amplifiers, receivers, and audio amplifiers may differ from the pre-installed codes in the interface box. As a result, the devices will not operate even after you have installed the IR codes. If this occurs, do the procedure in "To install IR codes not included in your CAV-1/CAV-2" on this page.
- All IR codes that you have installed will remain effective for a few days even if the AC adaptor is disconnected.

To install IR codes not included in your CAV-1/CAV-2

- 1 Do steps 1 to 3 of "For a Sony product or a TV set, laser disc player, or VCR made by another manufacturer".
- 2 Select Other from the Maker/Format menu below Command Set.
- 3 Click on Learning. All buttons light up purple.
- 4 Click on any one of the buttons whose IR code is to be installed. The button is depressed.

(Continued)

- 5 Install the IR code. Point the remote commander of the device directly towards the front of the interface box from a distance of about 2~4 inches (5~10 cm) and hold down the corresponding button on the commander until "OK" appears on the screen. When "OK" appears, the next button is depressed. Repeat this procedure to install the IR code for the remaining buttons. You can install up to about 120 IR codes.



To end the procedure
Click on END.

To erase all installed IR codes
Click on All Clear. All the installed IR codes of all devices will be cleared.

Operations

Adding New Buttons

You can add up to eight new buttons to those that are pre-installed in the interface box. After adding a new button, you must install its IR code before it will operate (see "Installing IR codes" on page 18).

- 1 Do steps 1 to 3 of "For a Sony product or a TV set, laser disc player, or VCR made by another manufacturer" on page 18.
- 2 Click on Add below Button Customize.
- 3 Enter the name of the button on the keyboard.
The letters appear to the right of Naming. The name can be up to eight letters in length.
- 4 Repeat steps 2 and 3 to add more buttons.

To delete an added button

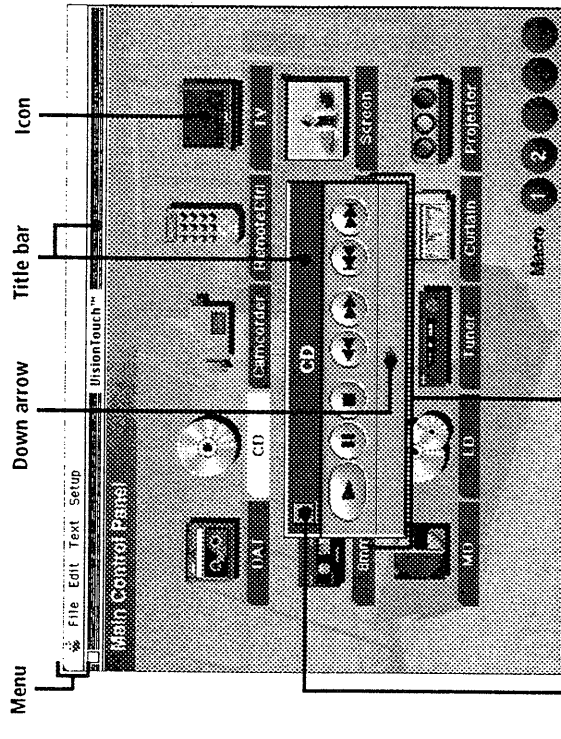
Click on the button you want to delete, then on Delete.

To end the procedure

Click on EXIT.

Operating Electrical Equipment

You can operate electrical equipment whose IR codes have been installed (see "Installing IR Codes" on page 18).



Operation panel

Up to three panels can be displayed at the same time. (Continued)

Operations

- 1 Double click on the icon on the Main Control Panel of the electrical device you want to control.
The operation panel of the device appears. If you want to operate an additional electrical device, double click on its icon. Up to three operation panels can be displayed at the same time.
- 2 Click on the operation buttons of the device you want to use.
The device starts to operate.

To see more operation buttons

Click on the down arrow.



To change the position of the Main Control Panel, an operation panel or an icon

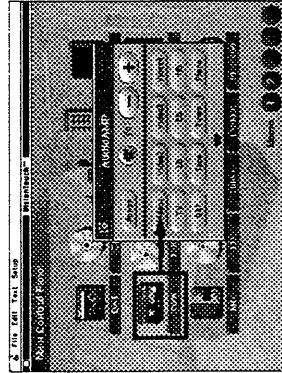
Drag the title bar of the Main Control Panel, the operation panel, or icon to the new position. Icons, however, cannot be positioned outside of the boundaries of the icon area.



Device operation can be set to begin immediately after its operation panel appears

Select Auto Play On from the Setup menu. To cancel the function, click on Auto Play On again to deselect it. To use this function on camcorders or other devices, you must do the following procedure.

- 1 Double click on the AudioAMP icon to open the AudioAMP operation panel.
- 2 Drag the icon of the device onto one of the buttons. The button changes to the name of the device.



Starting Program Sources and Other Electrical Equipment Automatically and Sequentially — Macro Setting

A macro is a command that activates and operates a series of electrical devices in sequential order. Use the procedure below to create up to five macros, each of which can perform up to ten operations.

- 1 Select Macro from the Setup menu.
The Macro Setting menu appears.
- 2 Click on one of the number buttons (1 to 5) to select the macro.
- 3 Click on one of the icons under Selection: to register it as one of the devices to be operated by the macro.
To find other icons, click on either the ▲ or ▼ button to the right of the screen.
The operation panel of the selected device appears.

Operations

- 4 Click on the operation button that you want to register. The button is registered in the Macro, and the numbered space below lights up purple.

To specify a time lag between the execution of one operation and the execution of the next

Click in "sec" box, then enter the time in seconds on the keyboard.

- 5 Repeat steps 3 and 4 to register other items.

To delete a registered operation button or delay time

Click on the item you want to delete, then on Delete.

To delete a macro

Click on ALL Clear. All macros are deleted.

To name a macro

Click on the blank area to the right side of Macro List; then enter the name of the macro on the keyboard.

To execute a macro

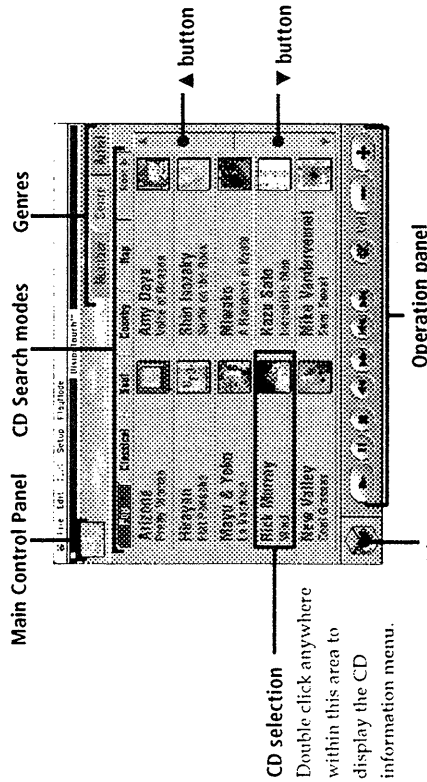
Click on the number of the macro to be executed in the Main Control Panel. To check the contents of a macro, move the pointer to the macro number.

CD Changer Operations

Playing a CD in the CD Changer

CD information of the CD changer stored in the computer appears on the screen. If you have input artist names and CD and track titles (see page 25), you can select CDs in three different ways: by number, genre, or artist. You can also enjoy viewing the background as it changes from day to night, and back again (according to the clock in your computer). Note that these CD changer functions can be used only with Sony CD changers.

CD list menu displayed by genre



CD selection
Double click anywhere within this area to display the CD information menu.

Click here to use the Favorite CD function (see page 29).

Creating the Database

Before you can operate the CD Changer, you must first create a database containing, at the least, the titles of the CDs in the Changer.

Opening, closing, or creating a new database are done through the File menu while the CD list menu is displayed (The default name of any new database is "My Best Selection"). Custom graphics to be read in as jacket data must be saved to individual files.

When operating the CD changer for the first time

When you use the CD changer for the first time after creating the database, double click on the 100CD icon in the Main Control Panel to display the dialog box for saving data. Then click on Save. The CD list menu shown on page 24 appears. This operation is not necessary from the next time you use the CD changer.

Adding Text data

- 1 Select Data Input from the Setup menu while the CD information menu is displayed.
- 2 Click on the place where you want to change or add information.

To specify the font, size, or style of characters

Highlight the item, then select the feature from the Text menu.

To select a genre change an assigned genre

Click on Genre to the left of the artist's name, then select the genre.

- 3 Enter letters on the keyboard. Before returning to the Main Control Panel or the CD list menu, you must cancel the data input mode by clicking again on Data Input in the Setup menu to deselect it.

Adding graphics

You can add two types of graphics: the genre icons included in the control software and custom graphics.

To add your custom graphics, the data must be saved in the PICT file format (in case of a Macintosh) or the BMP file format (in case of an IBM-compatible PC).

- 1 Select Data Input from the Setup menu while the CD information menu is displayed.

(Continued)

- 2 Click on the square where the graphic will appear. The Genre Icon setting menu appears.

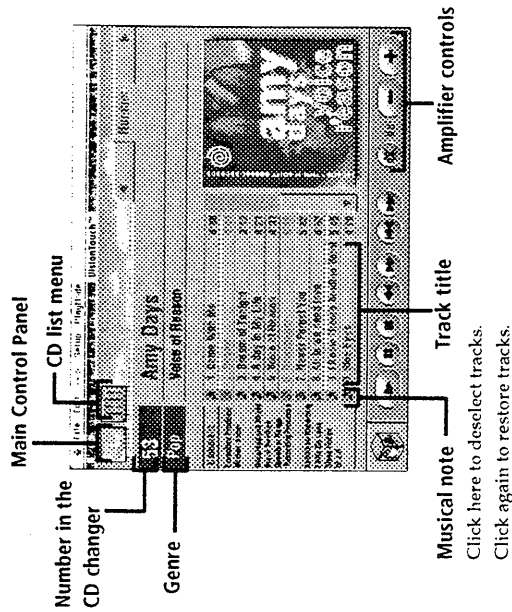
To select an icon from the Genre Icon setting menu

Click on one of the icons, then on End.

To add a custom graphic

- 1 Select Preference... from the Setup menu while in a CD information menu.
- 2 Click on Refer... to select the folder containing the pict file.
- 3 Select Data Input from the Setup menu.
- 4 Click on the square where the graphic will appear.
- 5 Click on Load in the Genre Icon setting menu.

CD information menu after input (see page 25 to input CD information)



- 1 Double click on the 100CD icon on the Main Control Panel.
The CD list menu appears. To show 10 discs at a time, select CD List 1 from the Setup menu. To show 24 discs at a time, select CD List 2 from the Setup menu.
- 2 Click on one of Number, Genre, or Artist to select a CD.
To show CDs according to genre, you must first indicate the genre of each CD (see "Creating the Database" on page 25).
(Continued)

if you click on	the screen shows
Number	the CDs in sequential order. To view other CDs, click on the number index above the list of CDs.
Genre	the CDs grouped according to genre. To view CDs in another genre, click on the genre index above the list of CDs.
Artist	the CDs according to artist name, listed in alphabetical order. To view CDs of other artists, click on the alphabetical index above the list of CDs.

To view more CDs, click on either the ▲ or ▼ button at the right side of the screen.

- 3 Single click on a CD selection to start playing the CD from the first track.
Double click on the selection to display the CD information menu and start playing the CD at the same time.

Customizing genres

- 1** Select Genre Setup from the Setup menu while the CD information menu is displayed.
The Genre Customize menu appears.
- 2** Click on the blank area to specify a new genre or change an existing genre.
- 3** Enter the genre name on the keyboard.

To delete a CD from the database

You can delete CD information from the CD list menu without opening the database. Click on the CD you want to delete in the CD list menu to change the color to blue, then press the delete key on the keyboard.

To delete all genres

Click on All Clear.

To restore the genre settings to their factory setting

Click on Standard.

You can program up to 20 CDs for sequential playback. To program CDs, you must do the following procedure while the CD list menu is displayed on the screen.

- 1** Select Program Play from the Setup menu.
The Program Play menu appears.
- 2** Click on the CD you want to program from among the CDs in the CD list menu.
The next numbered space lights up blue.
- 3** Repeat step 2 to program more CDs.

To delete a programmed CD

Click on the CD selection to be deleted, then click on Delete.

To end the Programming process

Click on End.

To start Program Play

Select Program Play from the Play Mode menu, then click on play button.



You can drag and drop CD selections while creating a program

You can drag and drop programmed CD selections to change their order in the program.

Selecting Your Favorite CDs — Favorite CD

You can select six of your favorite CDs and play them randomly one at a time. To make your selections, do the following procedure while the CD list menu is displayed on the screen.

- 1** Select Favorite CD from the Setup menu.
The Favorite CD Selection menu appears.
- 2** Click on a CD from among those in the CD list menu to select it.
The next blank lights up blue.
- 3** Repeat step 2 to select more CDs.

To delete a selected CD

Click on the CD you want to delete, then on Delete.

To end the selection process

Click on End.

To play a favorite CD

Click on the dice in the CD list or CD information menu. The dice rolls and one of the selected CDs is played.

SECTION 2 DIAGRAMS

2-1. IC PIN FUNCTIONS

• IC100 SYSTEM CONTROL (MB90672)

Pin No.	Pin Name	I/O	Function
1	L	O	Output for mouse left button
2	R	O	Output for mouse right button
3	XA	O	Mouse encoder output XA
4	XB	O	Mouse encoder output XB
5	YA	O	Mouse encoder output YA
6	YB	O	Mouse encoder output YB
7	PCE	O	Chip Enable output
8	PCLK	O	Clock output
9	PDATA	O	Data output
10	P27	O	Not used
11	GND	—	Ground
12	ALE	O	} Not used
13	RDX	O	
14	WRLX	O	
15	WRHX	O	
16	HRQ	O	
17	HAKX	O	
18	RDY	O	
19	CLK	O	
20	RX (SIN)	I	RS232C RX (RX: Receiver)
21	TX (SOT)	O	RS232C TX (TX: Transmitter)
22	P42	O	} Not used
23	P43	O	
24	DATA (OSD)	O	
25	CLK (OSD)	O	
26	LAT (OSD)	O	
27	VBLK	O	
28	AVcc	—	} Not used (Open)
29	AVR +	—	
30	AVR -	—	} Ground
31	AVss	—	
32	VOL A/D	O	} Not used (Ground)
33	P51	O	
34	GND	—	Ground
35	P52	O	Not used (Ground)
36	OK	I	Learning OK
37	MEMORY FULL	I	Memory full
38	BACK UP NG	I	Back up NG
39	NG	I	Learning NG
40	P-IR	I	Input to the integral calculus circuit of the remote control reception signal.

Pin No.	Pin Name	I/O	Function
41	MODE 0	I	Mode setting
42	MODE 1	I	
43	MODE 2	I	
44	HSTX	—	Hardware standby (FIXED "H")
45	STOP	O	Not used
46	RC (INPUT)	I	RC remote control input
47	WAKE UP	I	LANC wake up
48	P63	O	Not used
49	CONTROL A	I	Control A input
50	P65	O	Not used
51	LANC IN	I	LANC input
52	LANC OUT	O	LANC output
53	CONTROL A	O	Control A output
54	P71	O	Not used
55	P72	O	
56	P73	O	
57	P74	O	
58	P75	O	
59	P76	O	
60	P77	O	
61	P80	O	
62	RESET	I	Reset signal input
63	GND	—	Ground
64	XO	O	Ceramic oscillator (4 MHz)
65	XI	I	
66	Vcc	—	+5V
67	ID1	I	Remote control ID
68	ID2	I	
69	ID3	I	
70	ID4	I	
71	P04	O	Not used
72	P05	O	
73	P06	O	
74	P07	O	
75	P10	O	
76	P11	O	
77	EMPTY	O	LED for remote control battery empty
78	P13	O	Not used
79	P14	O	
80	P15	O	

• IC101 IR CONTROL (S-1810CF)

Pin No.	Pin Name	I/O	Function
1	VDD 1	—	+5V power supply
2	Vss 1	—	Ground
3 to 10	$\overline{\text{SEN}} 0$ to $\overline{\text{SEN}} 7$	I	Key matrix sense input (Not used.) (Open)
11	VDD 2	—	+5V power supply
12	XIN	I	Oscillation circuit input or external clock input
13	XOUT	O	Oscillation circuit output or external clock output
14	Vss 2	—	Ground
15	$\overline{\text{REN}}$	O	Power supply control of the remote control signal reception circuit (Not used) (Open)
16	RM IN	I	Remote control reception signal input (Not used) (Ground)
17	Vss 3	—	Ground
18	CHK OUT	O	Output of the remote control reception signal amplifier circuit (Not used) (Open)
19	CHK IN	I	Input to the waveform shaper circuit of the remote control reception signal
20	VADJ 1	I	For the first detection voltage adjustment of the low voltage detection circuit Connected to the resistor. (Not used) (Open)
21	VADJ 2	I	For the second detection voltage adjustment of the low voltage detection circuit Connected to the resistor. (Not used) (Open)
22	DATA	I	Serial data input (Also serves as a port input.)
23	PB1/SO	O	Serial data output (Also serves as a port input.) (Not used.)
24	CLK	I/O	Serial clock input/output (Also serves as a port input.)
25	VDD 3	—	+5V power supply
26	NC	—	Not used. (Open)
27	Vss 4	—	Ground
28, 29	$\overline{\text{TEST}} 1, \overline{\text{TEST}} 2$	I	Test pin
30 to 32	PA 4 to PA 6	I/O	Port input/output (Not used.) (Open)
33	NG	O	Learning NG signal output
34	BACK UP	O	Backup NG signal output
35	M-FULL	O	Memory full signal output
36	OK	O	Learning OK signal output
37	—	I/O	(Not used.) (Open)
38	Vss 5	—	Ground
39	LAT	I	External interrupt input
40	$\overline{\text{ENV}}$	O	Output of the waveform shaper circuit of the remote control reception signal (Not used) (Open)
41	VDD R	—	Power supply for the built-in SRAM
42	$\overline{\text{RESET}}$	I	Reset input
43	CN HIGH	—	Connected to the power supply.
44	RM OUT	O	Remote control transmission signal output
45 to 56	SCN 0 to SCN 9	O	Key matrix scanning output (Not used) (Open)

2-2. PRINTED WIRING BOARD

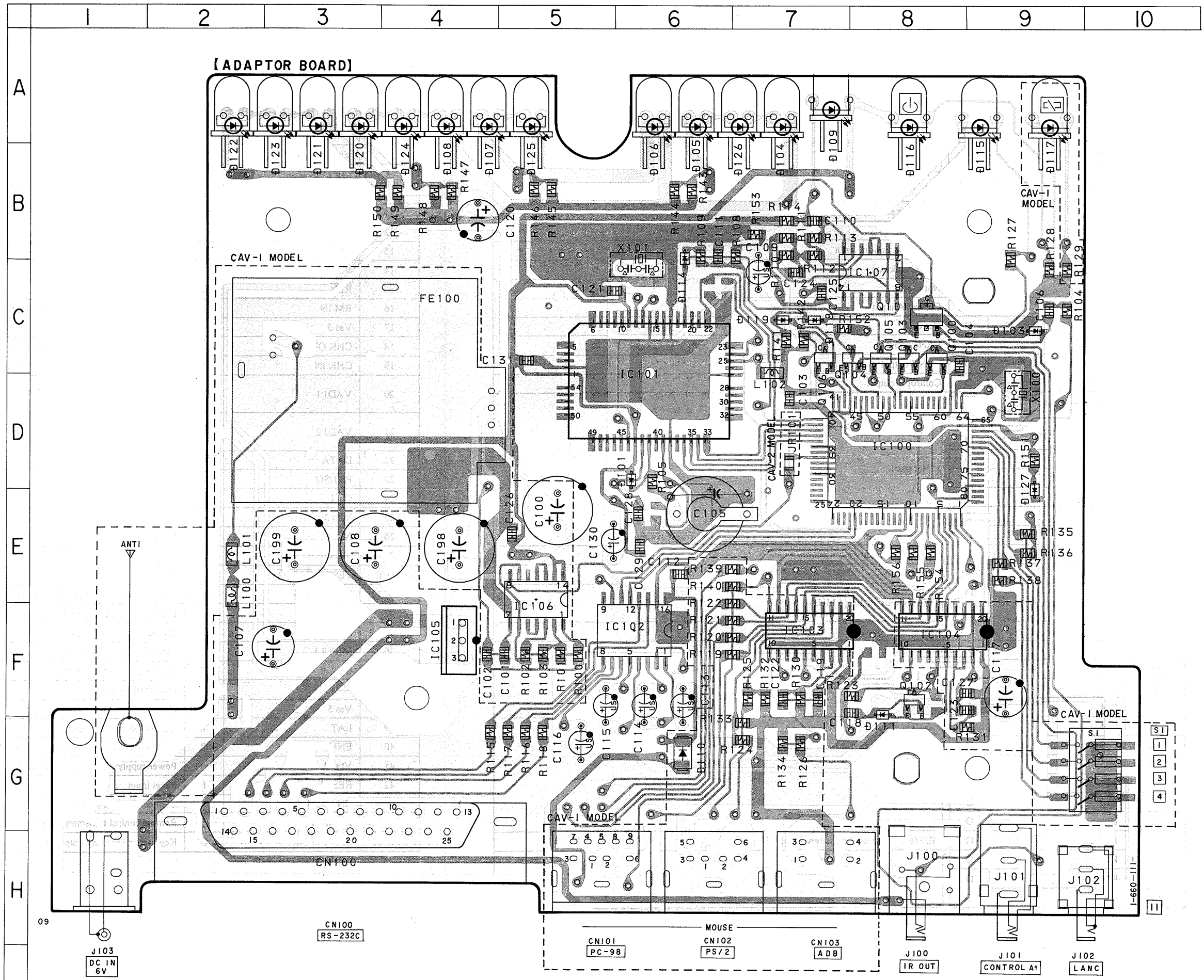
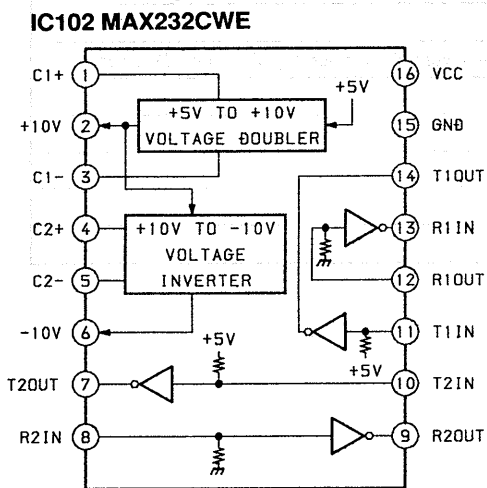
• Semiconductor Location

Ref. No.	Location
D101	D-6
D103	C-9
D104	A-7
D105	A-6
D106	A-6
D107	A-4
D108	A-4
D109	A-7
D110	G-6
D111	F-8
D114	B-6
D115	A-9
D116	A-8
D117	A-9
D118	C-7
D119	C-7
D120	A-3
D121	A-3
D122	A-2
D123	A-3
D124	A-4
D125	A-5
D126	A-7
D127	D-9
IC100	D-8
IC101	D-6
IC102	F-6
IC103	F-7
IC104	F-8
IC105	F-4
IC106	E-5
IC107	C-8
Q100	C-8
Q101	C-8
Q102	F-8
Q103	C-8
Q104	C-8
Q105	C-8
Q106	C-7

Note:

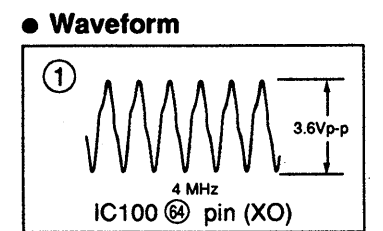
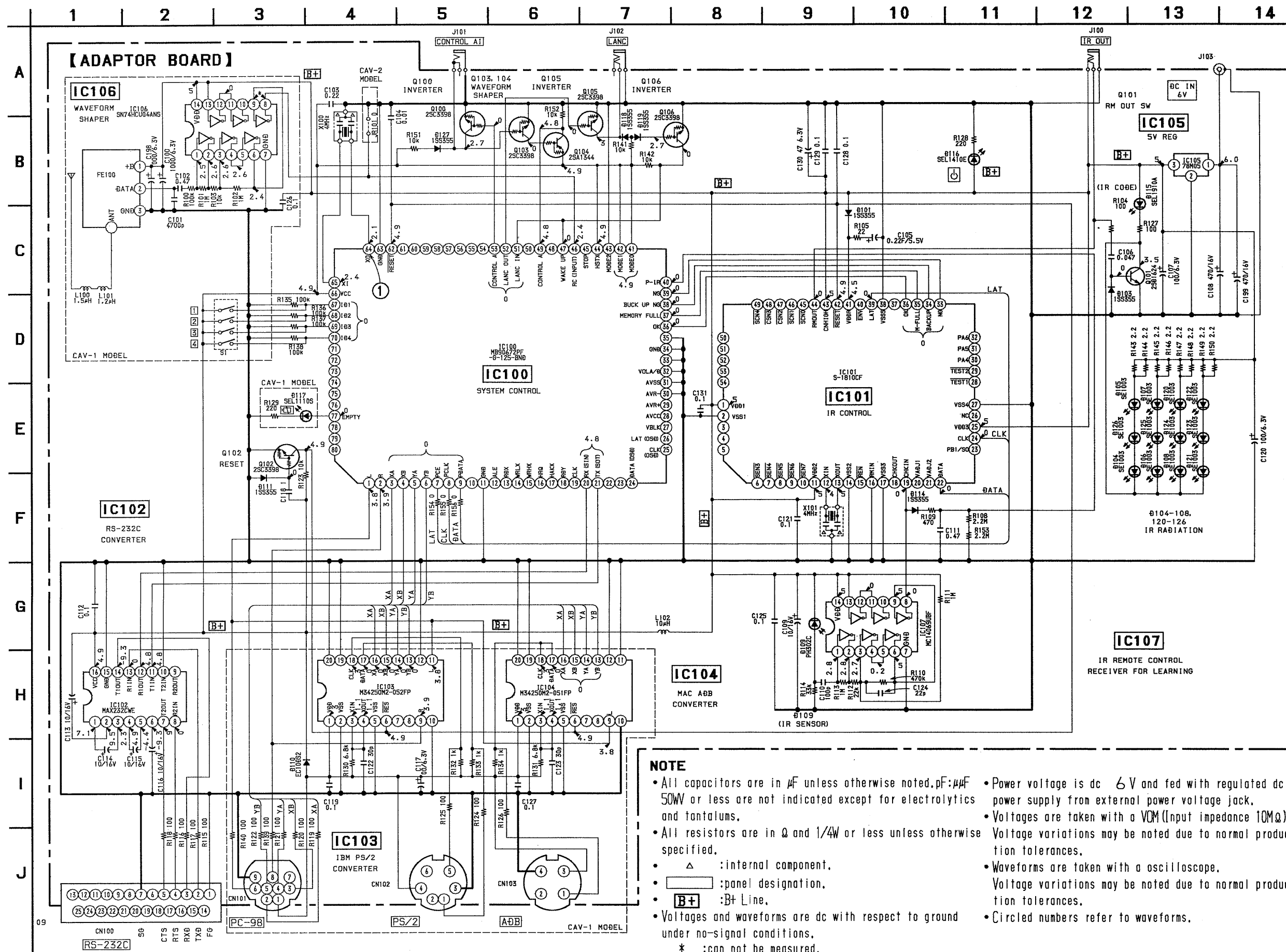
- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : Through hole.
- △ : internal component.
- : Pattern from the side which enable seeing.
- : Pattern of the rear side.

• IC Block Diagram



2-3. SCHEMATIC DIAGRAM

• See pages 18, 25 for IC Pin Functions. (IC100, IC101, IC103, 104)



NOTE

- All capacitors are in μF unless otherwise noted, pF: μpF
- Power voltage is dc 6V and fed with regulated dc power supply from external power voltage jack.
- All resistors are in Ω and $1/4\text{W}$ or less unless otherwise specified.
- Voltages are taken with a VOM (Input impedance $10\text{M}\Omega$). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
- * : can not be measured.
- Circled numbers refer to waveforms.

2-4. IC PIN FUNCTION

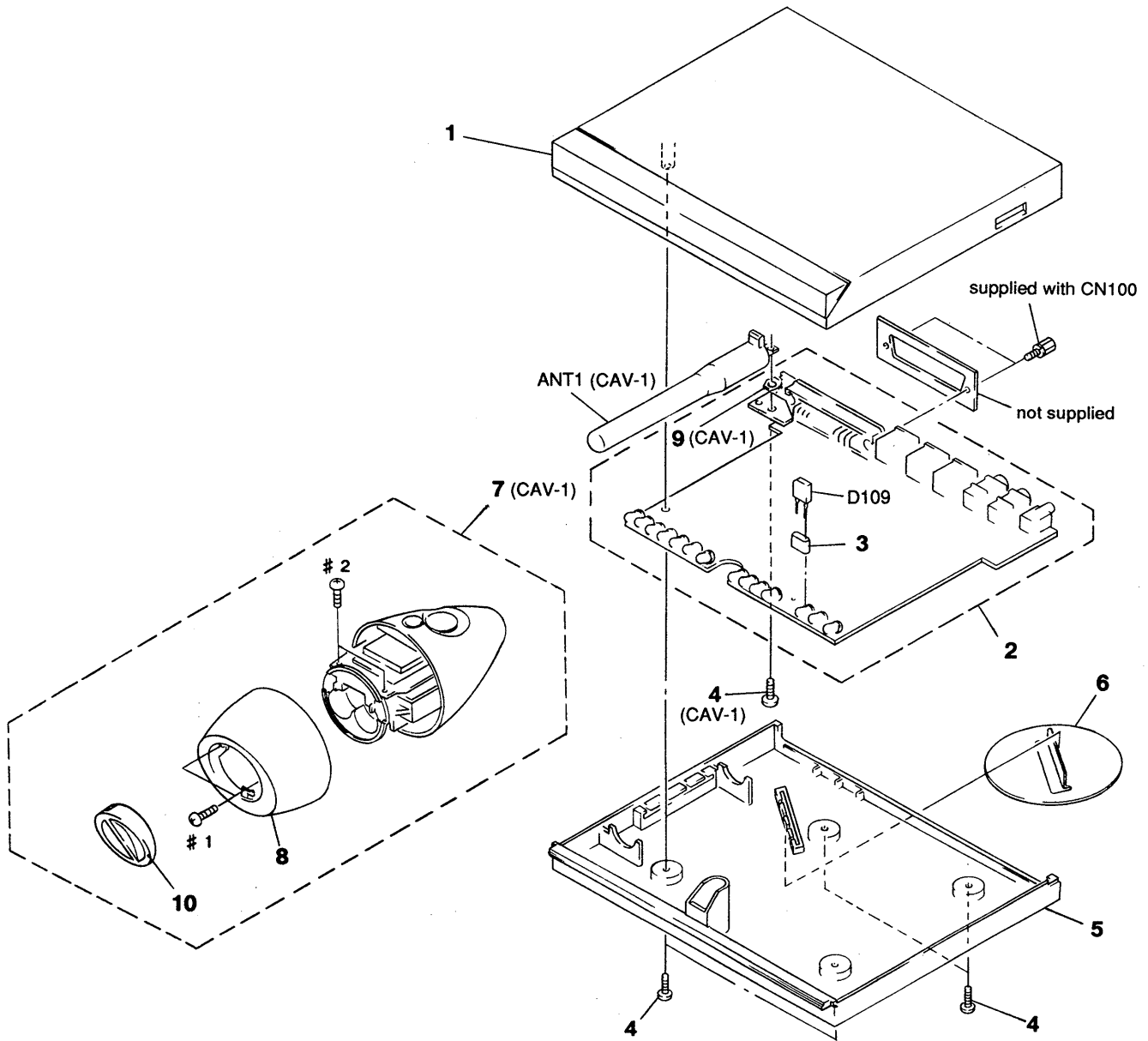
• IC103, 104 IBM PS/2, MAC ADB CONVERTER (M34250M2)

Pin No.	Pin Name	I/O	Function
1	VDD	—	+5V
2	Vss	—	Ground
3	XIN	I	System clock input
4	XOUT	O	System clock output
5	Vss	I	Connect Ground
6	$\overline{\text{RES}}$	I	Reset signal input
7	F0	I/O	LED control output
8	F1	I/O	Initial setting switch input
9	L/R	I/O	} Mouse upper part switch input
10	G1/T OUT	I/O	
11	L	I/O	
12	G3	I/O	
13	YB	I/O	} Coordinates detection input
14	YA	I/O	
15	XB	I/O	
16	XA	I/O	
17	DATA	I/O	Transmission output/data input/output
18	CLK	I/O	Clock input/output
19	D1	I/O	} Initial setting switch input
20	D0	I/O	

SECTION 3 EXPLODED VIEW

NOTE:

- Items marked “ * ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.



Ref. No.	Part No.	Description
1	X-4946-521-1	CABINET (UPPER) ASSY (CAV-1)
1	X-4946-522-1	CABINET (UPPER) ASSY (CAV-2)
* 2	A-4378-814-A	ADAPTOR BOARD, COMPLETE (CAV-2)
* 2	A-4378-815-A	ADAPTOR BOARD, COMPLETE (CAV-1)
* 3	4-981-916-01	HOLDER, LED
4	4-951-620-31	SCREW (2.6), +BVTP
5	4-978-329-01	CABINET (LOWER)

Remark	Ref. No.	Part No.	Description	Remark
	6	4-978-331-01	STAND	
	7	A-4376-313-A	RM-VP10 (CAV-1)	
	8	4-978-325-01	SHELL (L) (CAV-1)	
	* 9	4-925-530-01	PLATE, GROUND (CAV-1)	
	10	X-4946-571-1	LID ASSY, BATTERY CASE (CAV-1)	
	ANT1	1-501-703-11	ANTENNA, HELICAL (CAV-1)	
	D109	8-719-118-33	PHOTO DIODE PH302D	

SECTION 4

ELECTRICAL PARTS LIST

ADAPTOR

NOTE:

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
 Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité.
 Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
 All resistors are in ohms
 METAL: Metal-film resistor
 METAL OXIDE: Metal Oxide-film resistor
 F : nonflammable

- SEMICONDUCTORS
 In each case, u: μ , for example:
 uA...: μ A..., uPA...: μ PA..., uPB...: μ PB...,
 uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
 uF : μ F
- COILS
 uH : μ H

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-4378-814-A	ADAPTOR BOARD, COMPLETE (CAV-2)		C199	1-126-941-11	ELECT 470uF 20% 16V	
		*****				< CONNECTOR >	
*	A-4378-815-A	ADAPTOR BOARD, COMPLETE (CAV-1)		CN100	1-774-519-11	CONNECTOR, (D) SUB (SOCKET) 25P (RS-232C)	
		*****		CN101	1-774-522-11	SOCKET, DIN 9P (PC-98) (CAV-1)	
*	4-925-530-01	PLATE, GROUND (CAV-1)		CN102	1-774-521-11	SOCKET, DIN 6P (PS/2) (CAV-1)	
*	4-981-916-01	HOLDER, LED		CN103	1-774-520-11	SOCKET, DIN 4P (ADB) (CAV-1)	
		< CAPACITOR >				< DIODE >	
C100	1-124-471-00	ELECT 1000uF 20%	6.3V (CAV-1)	D101	8-719-988-62	DIODE 1SS355	
C101	1-163-017-00	CERAMIC CHIP 0.0047uF 5%	50V (CAV-1)	D103	8-719-988-62	DIODE 1SS355	
C102	1-164-005-11	CERAMIC CHIP 0.47uF	25V (CAV-1)	D104	8-719-056-69	DIODE SE1003-C-TN	
C103	1-164-489-11	CERAMIC CHIP 0.22uF 10%	16V	D105	8-719-056-69	DIODE SE1003-C-TN	
C104	1-164-232-11	CERAMIC CHIP 0.01uF	50V	D106	8-719-056-69	DIODE SE1003-C-TN	
C105	1-125-486-11	DOUBLE LAYERS 0.22F	5.5V	D107	8-719-056-69	DIODE SE1003-C-TN	
C106	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V	D108	8-719-056-69	DIODE SE1003-C-TN	
C107	1-126-177-11	ELECT 100uF 20%	10V	D109	8-719-118-33	PHOTO DIODE PH302D	
C108	1-126-941-11	ELECT 470uF 20%	16V	D110	8-719-210-33	DIODE EC10DS2 (CAV-1)	
C109	1-126-157-11	ELECT 10uF 20%	16V	D111	8-719-988-62	DIODE 1SS355	
C110	1-163-117-00	CERAMIC CHIP 100PF 5%	50V	D114	8-719-988-62	DIODE 1SS355	
C111	1-164-005-11	CERAMIC CHIP 0.47uF	25V	D115	8-719-302-79	DIODE SEL1910A-C	
C112	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	D116	8-719-302-53	DIODE SEL1410E-C (Δ)	
C113	1-126-157-11	ELECT 10uF 20%	16V	D117	8-719-056-68	DIODE SEL1110S-CD-TP3 (Δ) (CAV-1)	
C114	1-126-157-11	ELECT 10uF 20%	16V	D118	8-719-988-62	DIODE 1SS355	
C115	1-126-157-11	ELECT 10uF 20%	16V	D119	8-719-988-62	DIODE 1SS355	
C116	1-126-157-11	ELECT 10uF 20%	16V	D120	8-719-056-69	DIODE SE1003-C-TN	
C117	1-126-177-11	ELECT 100uF 20%	10V (CAV-1)	D121	8-719-056-69	DIODE SE1003-C-TN	
C118	1-164-346-11	CERAMIC CHIP 1uF	16V	D122	8-719-056-69	DIODE SE1003-C-TN	
C119	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V (CAV-1)	D123	8-719-056-69	DIODE SE1003-C-TN	
C120	1-126-177-11	ELECT 100uF 20%	10V	D124	8-719-056-69	DIODE SE1003-C-TN	
C121	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	D125	8-719-056-69	DIODE SE1003-C-TN	
C122	1-163-104-00	CERAMIC CHIP 30PF 5%	50V (CAV-1)	D126	8-719-056-69	DIODE SE1003-C-TN	
C123	1-163-104-00	CERAMIC CHIP 30PF 5%	50V (CAV-1)	D127	8-719-988-62	DIODE 1SS355	
C124	1-163-101-00	CERAMIC CHIP 22PF 5%	50V			< FRONTEND >	
C125	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	FE100	1-233-531-11	ENCAPSULATED COMPONENT (CAV-1)	
C126	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V (CAV-1)			< IC >	
C127	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V (CAV-1)	IC100	8-759-363-87	IC MB90672PF-G-125-BND	
C128	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	IC101	8-759-361-53	IC S-1810CF-047	
C129	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	IC102	8-759-521-15	IC MAX232CWE	
C130	1-126-154-11	ELECT 47uF 20%	6.3V	IC103	8-759-392-50	IC M34250M2-052FP (CAV-1)	
C131	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V				
C198	1-124-471-00	ELECT 1000uF 20%	6.3V (CAV-1)				

ADAPTOR

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
IC104	8-759-392-49	IC M34250M2-051FP (CAV-1)		R122	1-216-025-91	METAL GLAZE 100 5%	1/10W (CAV-1)
IC105	8-759-604-35	IC M5F78M05L		R123	1-216-073-00	METAL CHIP 10K 5%	1/10W
IC106	8-759-269-92	IC SN74HCU04ANS-E20 (CAV-1)		R124	1-216-025-91	METAL GLAZE 100 5%	1/10W (CAV-1)
IC107	8-759-009-10	IC MC14069UBF		R125	1-216-025-91	METAL GLAZE 100 5%	1/10W (CAV-1)
		< JACK >		R126	1-216-025-91	METAL GLAZE 100 5%	1/10W (CAV-1)
J100	1-507-967-11	JACK (IR OUT)		R127	1-216-025-91	METAL GLAZE 100 5%	1/10W
* J101	1-764-188-11	JACK (SMALL TYPE) (DIA. 3.5) (CONTROL A1)		R128	1-216-033-00	METAL CHIP 220 5%	1/10W
J102	1-691-258-11	JACK (LANC)		R129	1-216-033-00	METAL CHIP 220 5%	1/10W (CAV-1)
J103	1-770-443-11	JACK, DC(POLARITY UNIFIET TYPE) (DC IN 6V)		R130	1-216-069-00	METAL CHIP 6.8K 5%	1/10W (CAV-1)
		< JUMPER RESISTOR >		R131	1-216-069-00	METAL CHIP 6.8K 5%	1/10W (CAV-1)
JR101	1-216-295-91	CONDUCTOR, CHIP (2012) (CAV-2)		R132	1-216-049-91	METAL GLAZE 1K 5%	1/10W (CAV-1)
		< COIL >		R133	1-216-049-91	METAL GLAZE 1K 5%	1/10W (CAV-1)
L100	1-412-778-41	INDUCTOR 1.5uH (CAV-1)		R134	1-216-049-91	METAL GLAZE 1K 5%	1/10W (CAV-1)
L101	1-410-370-31	INDUCTOR 1.2uH (CAV-1)		R135	1-216-097-91	METAL GLAZE 100K 5%	1/10W
L102	1-410-381-11	INDUCTOR CHIP 10uH		R136	1-216-097-91	METAL GLAZE 100K 5%	1/10W
		< TRANSISTOR >		R137	1-216-097-91	METAL GLAZE 100K 5%	1/10W
Q100	8-729-805-41	TRANSISTOR 2SC3398		R138	1-216-097-91	METAL GLAZE 100K 5%	1/10W
Q101	8-729-808-42	TRANSISTOR 2SD1624-T		R139	1-216-025-91	METAL GLAZE 100 5%	1/10W (CAV-1)
Q102	8-729-805-41	TRANSISTOR 2SC3398		R140	1-216-025-91	METAL GLAZE 100 5%	1/10W (CAV-1)
Q103	8-729-805-41	TRANSISTOR 2SC3398		R141	1-216-073-00	METAL CHIP 10K 5%	1/10W
Q104	8-729-805-65	TRANSISTOR 2SA1344		R142	1-216-073-00	METAL CHIP 10K 5%	1/10W
Q105	8-729-805-41	TRANSISTOR 2SC3398		R143	1-216-298-00	METAL CHIP 2.2 5%	1/10W
Q106	8-729-805-41	TRANSISTOR 2SC3398		R144	1-216-298-00	METAL CHIP 2.2 5%	1/10W
		< RESISTOR >		R145	1-216-298-00	METAL CHIP 2.2 5%	1/10W
R100	1-216-097-91	METAL GLAZE 100K 5%	1/10W (CAV-1)	R146	1-216-298-00	METAL CHIP 2.2 5%	1/10W
R101	1-216-121-91	METAL GLAZE 1M 5%	1/10W (CAV-1)	R147	1-216-298-00	METAL CHIP 2.2 5%	1/10W
R102	1-216-121-91	METAL GLAZE 1M 5%	1/10W (CAV-1)	R148	1-216-298-00	METAL CHIP 2.2 5%	1/10W
R103	1-216-073-00	METAL CHIP 10K 5%	1/10W (CAV-1)	R149	1-216-298-00	METAL CHIP 2.2 5%	1/10W
R104	1-216-025-91	METAL GLAZE 100 5%	1/10W	R150	1-216-298-00	METAL CHIP 2.2 5%	1/10W
R105	1-216-009-00	METAL CHIP 22 5%	1/10W	R151	1-216-073-00	METAL CHIP 10K 5%	1/10W
R108	1-216-129-00	METAL CHIP 2.2M 5%	1/10W	R152	1-216-073-00	METAL CHIP 10K 5%	1/10W
R109	1-216-041-00	METAL CHIP 470 5%	1/10W	R153	1-216-129-00	METAL CHIP 2.2M 5%	1/10W
R110	1-216-113-00	METAL CHIP 470K 5%	1/10W	R154	1-216-295-91	CONDUCTOR, CHIP	
R111	1-216-121-91	METAL GLAZE 1M 5%	1/10W	R155	1-216-295-91	CONDUCTOR, CHIP	
R112	1-216-081-00	METAL CHIP 22K 5%	1/10W	R156	1-216-295-91	CONDUCTOR, CHIP	
R113	1-216-121-91	METAL GLAZE 1M 5%	1/10W			< SWITCH >	
R114	1-216-085-00	METAL CHIP 33K 5%	1/10W	S1	1-692-771-11	SWITCH, DIP (4P) (1/2/3/4) (CAV-1)	
R115	1-216-025-91	METAL GLAZE 100 5%	1/10W			< VIBRATOR >	
R116	1-216-025-91	METAL GLAZE 100 5%	1/10W	X100	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	
R117	1-216-025-91	METAL GLAZE 100 5%	1/10W	X101	1-577-358-21	VIBRATOR, CERAMIC (4MHz)	
R118	1-216-025-91	METAL GLAZE 100 5%	1/10W			*****	
R119	1-216-025-91	METAL GLAZE 100 5%	1/10W (CAV-1)			MISCELLANEOUS	
R120	1-216-025-91	METAL GLAZE 100 5%	1/10W (CAV-1)			*****	
R121	1-216-025-91	METAL GLAZE 100 5%	1/10W (CAV-1)	ANT1	1-501-703-11	ANTENNA, HELICAL (CAV-1)	
				D109	8-719-118-33	PHOTO DIODE PH302D	

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
		ACCESSORIES & PACKING MATERIALS *****					
△	1-473-461-11	ADAPTOR, AC (AC-971U)					
	1-759-252-11	COMPACT DISC (CD ROM)					
	1-777-038-11	CABLE, CONNECTION (for MOUSE) (CAV-1)					
	3-800-860-11	MANUAL, INSTRUCTION (ENGLISH)					
*	4-978-654-01	CUSHION R1 (UPPER) (CAV-1)					
*	4-978-655-01	CUSHION R1 (LOWER) (CAV-1)					
*	4-978-656-01	INDIVIDUAL CARTON (CAV-1)					
*	4-978-656-11	INDIVIDUAL CARTON (CAV-2)					
*	4-978-658-01	CUSHION R2 (UPPER) (CAV-2)					
*	4-978-659-01	CUSHION R2 (LOWER) (CAV-2)					

		***** HARD WARE LIST *****					
#1	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT (CAV-1)					
#2	7-685-102-19	SCREW +P 2X4 NON-SLIT TYPE2 (CAV-1)					

<p>The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.</p>	<p>Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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