

# SONY®

# MSX<sup>2</sup>

## HOME COMPUTER **HB-F9P**

### **OPERATING INSTRUCTIONS** page 2

Before operating the unit, please read this manual thoroughly, and retain it for future reference.

### **GEBRUIKSAANWIJZING** blz. 24

Lees deze gebruiksaanwijzing aandachtig door alvorens het apparaat in gebruik te nemen.

Bewaar de gebruiksaanwijzing voor eventuele naslag.

### **ISTRUZIONI PER L'USO** pagina 46

Prima di usare l'apparecchio leggete con attenzione questo manuale e conservatelo per riferimenti futuri.



# HIT BIT

**WARNING**

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

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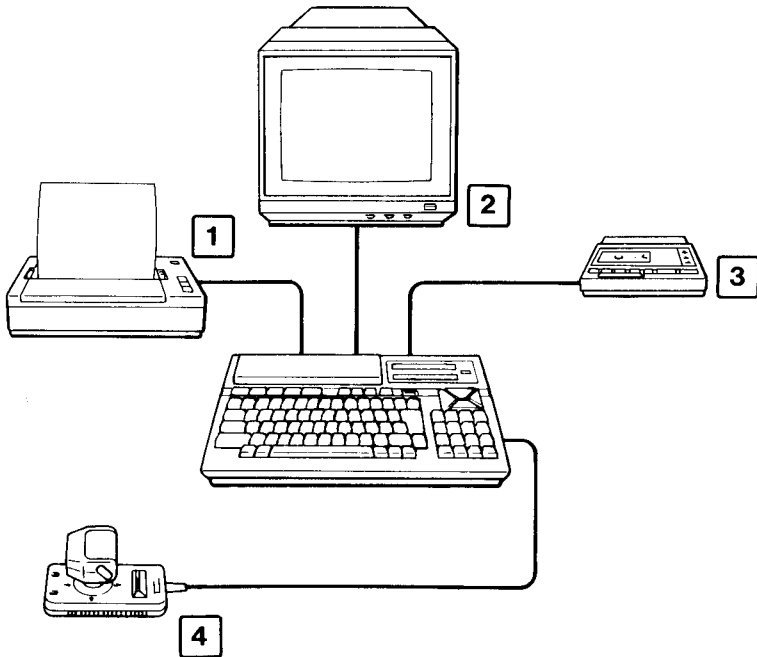
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Use this computer only with peripherals and software having the **MSX** mark.

**MSX** is a trademark of ASCII Corporation.

# FEATURES

- Home computer with MSX-BASIC Version 2.0\* incorporated.
- Using the built-in software:
  - personal data such as address and telephone lists, schedule, notes, etc. can be saved.
  - the calendar of the desired month and year can be displayed.
  - an alarm can be set to warn you within a period of 24 hours.
  - various functions of the computer such as setting the clock, printing, etc. can be done simply by following the instructions on the display.
- Various connectors for up-grading the system:
  - for a printer [1]
  - for a color monitor to create high resolution picture [2]
  - for a tape recorder used as an external memory device [3]
  - for a joystick [4]



The numbers in the illustration is keyed to that in the descriptive text.  
\*In this manual, MSX-BASIC Version 2.0 is referred to as MSX2-BASIC.

# PRECAUTIONS

## On safety

- Operate the unit only on 220 V AC.
- Should any solid object or liquid fall into the cabinet, disconnect the AC power cord and have the unit checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time.
- Do not place or drop heavy objects on the power cord. Use of a damaged cord is dangerous. To disconnect the cord, pull it out by the plug—never pull the cord itself.
- The nameplate indicating operating voltage, power consumption, etc. is located on the bottom.
- The caution label is located on the bottom of the unit and the operation switch is located on the left side.

## On installation

- The computer consists of high-precision electronic parts. Do not drop it or bump it against other objects. Do not place it in a place subject to vibration or on an unstable base.
- Do not install the unit near heat sources such as a radiator or an air duct, or in a place subject to direct sunlight, excessive dust, and/or moisture.
- Provide adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets) or near materials (curtains, draperies) that may block the ventilation slots.
- Use only the specified peripheral equipment; otherwise, trouble may result. Before connecting peripheral equipment, be sure to turn the power off or the internal IC chip may be damaged.
- Do not place an electric equipment which incorporates an electromagnet, such as a TV set or a speaker, near this unit. If affected by an electromagnetic field, it may malfunction.
- Since the computer handles high-frequency signals, use of the computer near a radio, TV, audio tuner, etc., may cause noise in the operation of such equipment.  
In such cases, move the computer and the equipment in question away from each other.

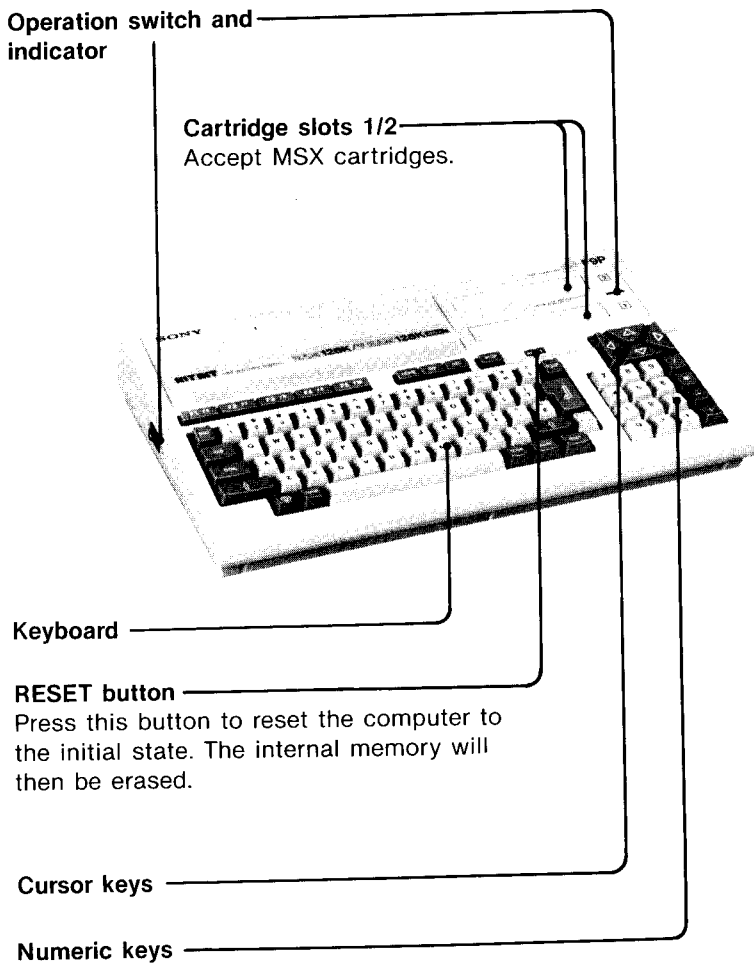
**On cleaning**

- Clean the cabinet with a soft, dry cloth or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine, which might damage the finish.

If trouble occurs, unplug the unit, and contact your designated Sony dealer.

# LOCATION AND FUNCTION OF PARTS

## Front panel



## Rear Panel

**CONTROLLER connectors**  
(9-pin)

**TAPE connector** (8-pin DIN)  
Connect a tape recorder to enjoy programs on a cassette tape.

**PRINTER connector** (14-pin)  
Connect to an 8-bit parallel transfer printer which conforms to MSX specifications.

**RGB connector** (8-pin DIN)  
Connect to a color monitor equipped with an RGB input.

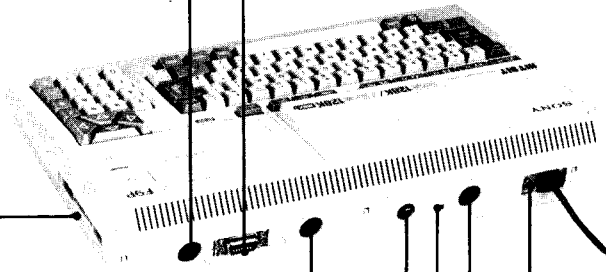
**Ground terminal**

**RF connector** (phono jack)  
Connect to the antenna terminal of a normal TV receiver using the supplied RF cable.

**AUDIO/VIDEO output connector**  
(6-pin DIN)

Connect a monitor TV equipped with an audio/video input. When the B/W switch is set to B/W, video signals from this connector are black and white.

**B/W switch**  
Set this switch to COLOR when using a color monitor connected to the AUDIO/VIDEO output connector.  
Set this switch to B/W when using a green monitor connected to the AUDIO/VIDEO output connector for better viewing.



# CONNECTIONS

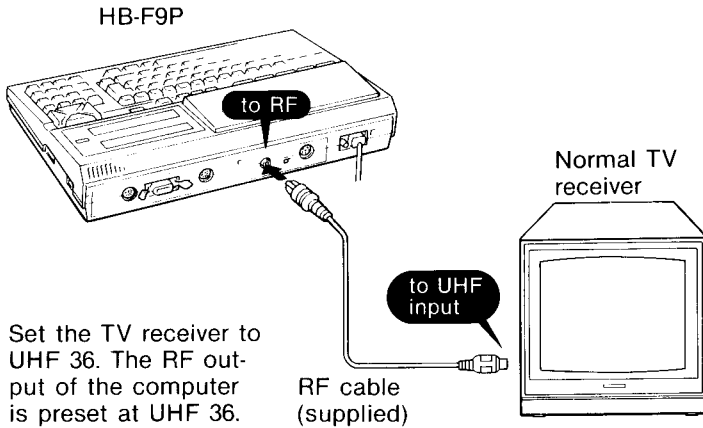
Before making connections, be sure to turn off the computer and all the devices to be connected.

## CONNECTING A MONITOR TV

A monitor TV must be connected to the computer to display characters. Connection differs according to the television set used.

## CONNECTING A NORMAL TV RECEIVER

Disconnect the TV antenna and connect the TV receiver using the supplied RF cable.

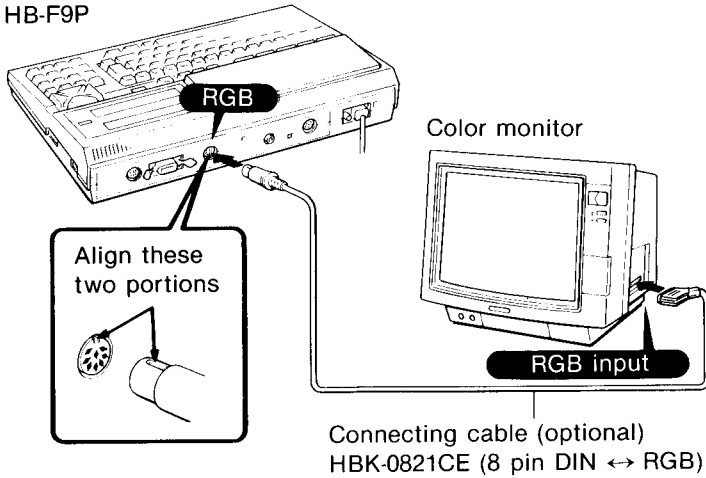


**To watch TV**, disconnect the RF cable from the UHF input of the TV receiver and connect the TV antenna.



## CONNECTING A COLOR MONITOR WITH AN RGB CONNECTOR

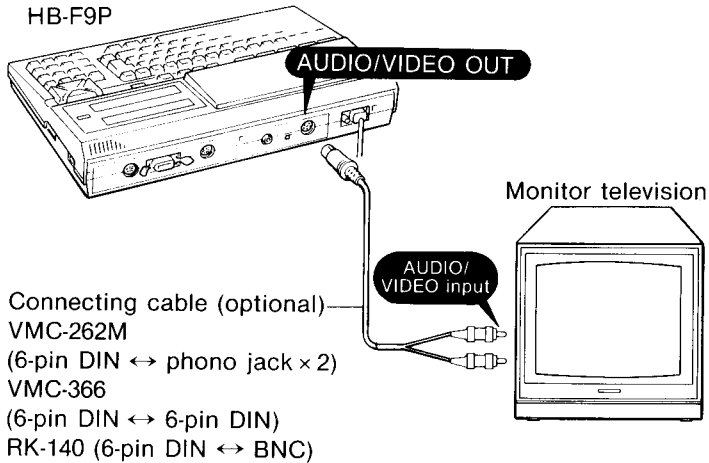
HB-F9P



### Notes

- Be careful not to connect the optional RGB connecting cable to the TAPE connector.
- With certain television sets, when the computer connected to the RGB connector is turned on, the television set will automatically switch to RGB, regardless of other equipment connected to the television set. When you want to use other equipment connected to the television set, turn the computer's power off. For further details, refer to the instruction manual of the television set.

## CONNECTING A MONITOR TV WITH AN AUDIO/VIDEO INPUT



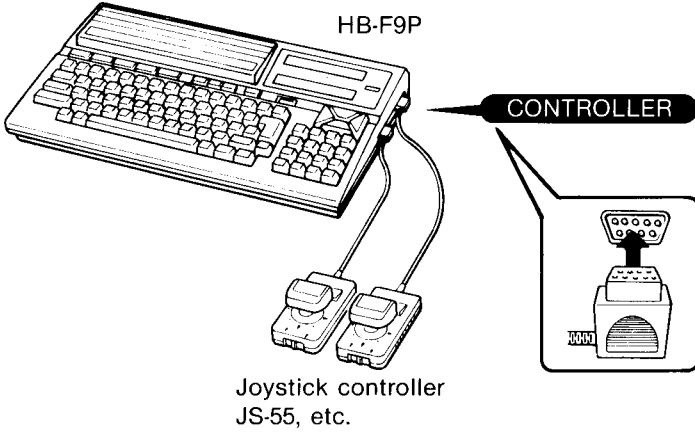
For a clear view of the display, especially when using the 80 character mode display, use of a green monitor or a color monitor with an RGB connector is recommended.

### Notes on the B/W switch

Set this switch to "color" when using a color monitor connected to the AUDIO/VIDEO OUT. Set this switch to "B/W" when using a green monitor connected to the AUDIO/VIDEO OUT. The video signals from the AUDIO/VIDEO OUT output will be black and white and will give you a better view on the green monitor.

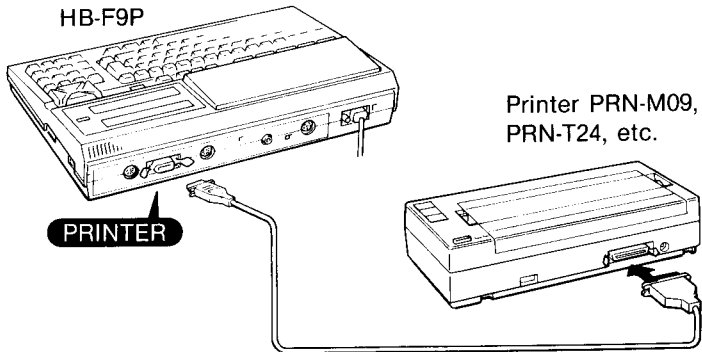
## CONNECTING OPTIONAL DEVICES

### CONNECTING A JOYSTICK CONTROLLER



## CONNECTING A PRINTER

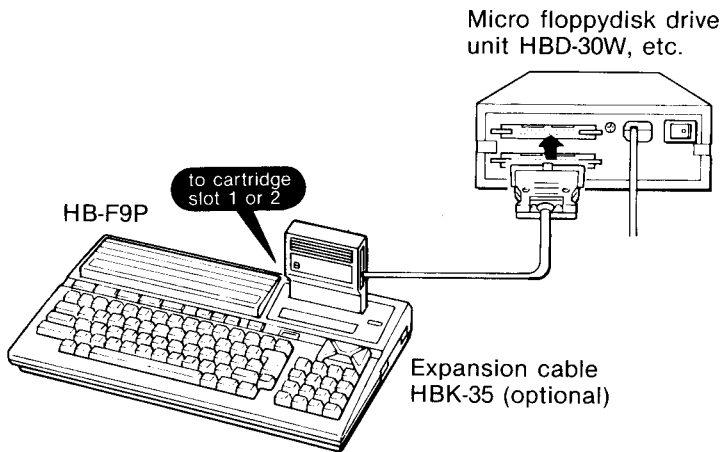
Use a printer for an MSX computer such as the Sony PRN-M09 dot matrix printer.



Cable supplied to the printer, HBK-100 (optional) or a cable appropriate for the printer.

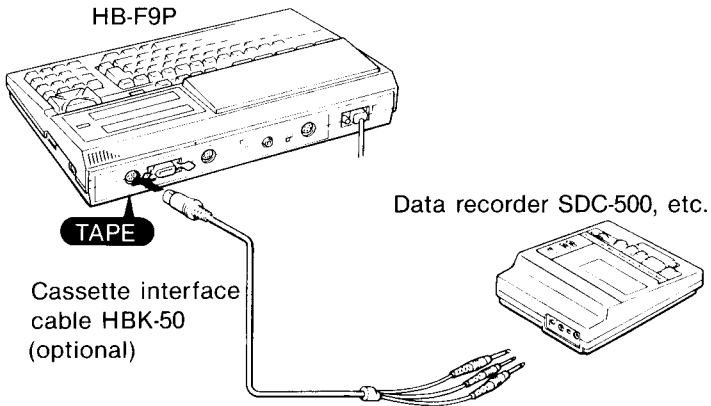
## CONNECTING A FLOPPYDISK DRIVE UNIT

Use a floppydisk drive unit having an MSX mark, such as the Sony HBD-30W micro floppydisk drive unit.



## CONNECTING A TAPE RECORDER FOR USE AS AN EXTERNAL MEMORY

You can enjoy programs on a cassette tape by using a data recorder or a cassette tape recorder.



White plug	to earphone jack
Red plug	to microphone jack
Black plug*	to remote control jack

\*If the recorder does not have a remote control jack, leave the black plug unconnected.

# HOW TO START UP

## PREPARATION

Connect the monitor TV and computer (see page 8).

When using a normal TV receiver, set the TV receiver to channel UHF 36.

## TO START UP MSX2-BASIC OR THE BUILT-IN SOFTWARE

- 1** Remove the program cartridges from the cartridge slots, if any.
- 2** Turn on the monitor TV and the computer. The main menu will appear on the monitor TV.
- 3** Press the cursor key so that the light moves to the desired function and press the space key.

For further details on the built-in software, refer to its instruction manual.

## TO START A GAME OR OTHER PROGRAMS ON AN MSX CARTRIDGE

- 1 Insert the cartridge into cartridge slot 1 or 2.
- 2 Turn on the monitor TV and computer.

The cartridge program will start.

When inserting the cartridges into both slots 1 and 2, the program of slot 1 will start.

For details, refer to the program cartridge instruction manual.

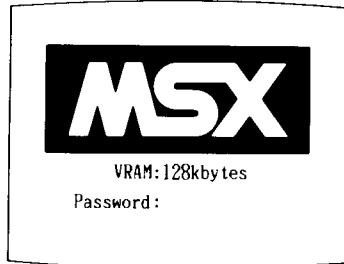
Do not insert or remove the cartridge when the computer's power is on.

## IF THE COMPUTER DOES NOT START UP

If the display below appears

Enter the correct password.

The password is a word which you choose. Once you have set your password, the system will not start up until you have entered the correct word.



If you have forgotten the password

While holding down **GRAPH** and **STOP**, press the **RESET** button until the display changes.









# KEYBOARD

## TO ENTER A CHARACTER

Use the keyboard to enter characters.

For example:


Type of character	Character	Key to press
Capital letter	A	 + <b>A</b> *
Small letter	a	<b>A</b>
Symbol on the upper part of keytop	”	 + 
Symbol on the lower part of keytop	,	

\* + **A** indicates pressing **A** while pressing .

### To enter only capital letters







Lock . The indicator on the key lights up.

The 26 alphabet letters will be entered in caps, but numbers and symbols will be entered in normal.

Press the  key again to disengage.

### To place an accent mark

1 Enter the appropriate accent mark.

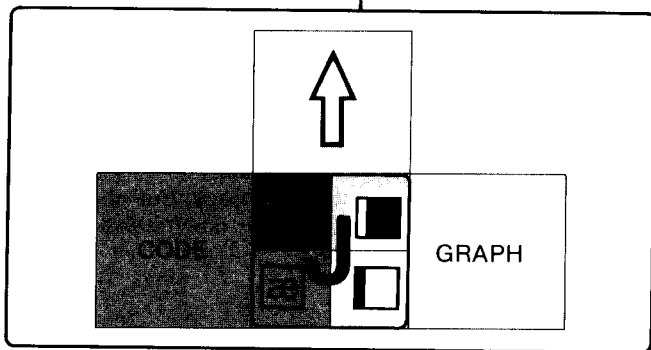
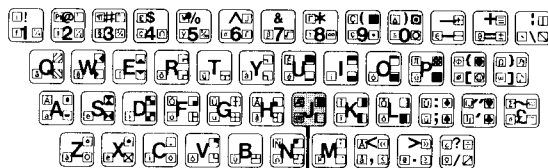
Accent	Key to press
´	 + 
`	
¨	 + <b>CODE</b> + 
^	<b>CODE</b> + 

2 Press the letter needing the accent mark.

The character with an accent mark will be entered.

## TO ENTER A GRAPHIC CHARACTER OR SYMBOL



The following graphic characters and symbols can be entered.

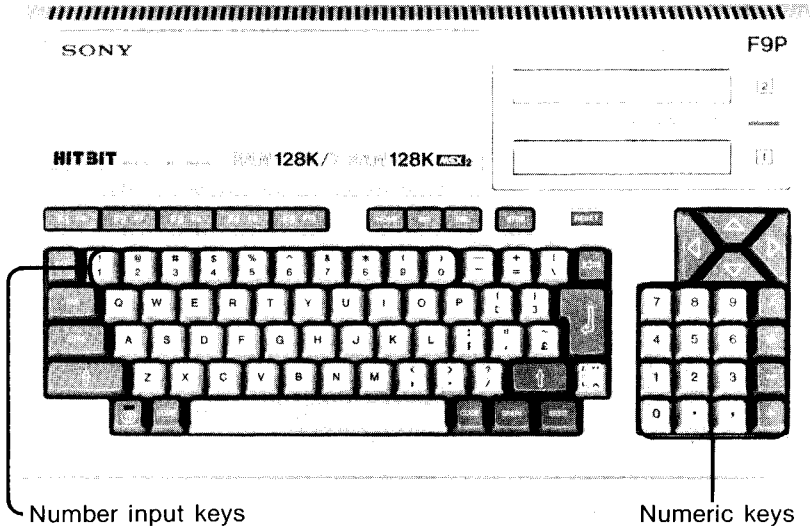


For example:

Graphic character or symbol	Key to press
Æ	+ <b>CODE</b> + <b>J</b>
æ	<b>CODE</b> + <b>J</b>
■	+ <b>GRAPH</b> + <b>J</b>
▮	<b>GRAPH</b> + <b>J</b>

## TO ENTER NUMERIC CHARACTERS

By using the numeric keys, characters on the numeric keys can be entered whether  or  is pressed or not.

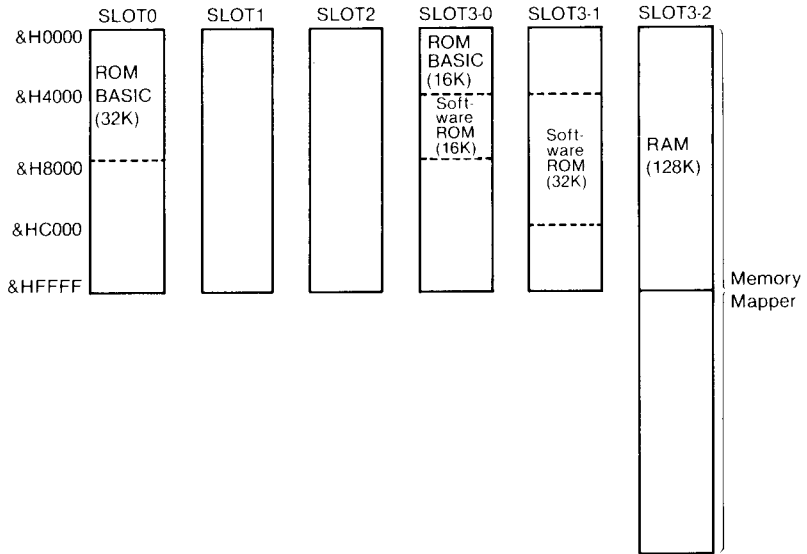


### Note

In some cases, the numeric keys cannot be used with commercially available programs.

For example, when playing a game, you may not be able to enter the number of players with the numeric keys. In this case, use the **number input keys**.

# MEMORY MAP



# SPECIFICATIONS

## CPU

Processor used	Z80A
Clock frequency	3.58 MHz
WAIT	1 WAIT at CPU M1 cycle
Interrupt	Maskable interrupt Z80A mode 1
Resetting	Automatic at power on/Manual (Memory contents are not maintained.)

## Memory

ROM	96K bytes (BASIC 48K bytes, Built-in software 48K bytes)
MAIN RAM	128K bytes
VRAM	128K bytes

## CRT display

CRT controller	V9938
Display screen	Character/graphic display and border area Initial state: Screen 0: 37 characters × 24 lines
Character display	Screen 0: Max 80 characters × 24 lines 16 colors out of 512 colors Screen 1: Max 32 characters × 24 lines 16 colors out of 512 colors
Graphic display	Screen 2: 256(horizontal) × 192(vertical) dots 16 colors out of 512 colors Screen 3: 64 × 48 dots 16 colors out of 512 colors Screen 4: 256 × 192 dots 16 colors out of 512 colors Screen 5: 256 × 212 dots, 16 colors out of 512 colors, 4 pages Screen 6: 512 × 212 dots, 4 colors out of 512 colors, 4 pages Screen 7: 512 × 212 dots, 16 colors out of 512 colors, 2 pages Screen 8: 256 × 212 dots, 256 colors, 2 pages
Border area	16-color display
Character font	5 × 7 dot matrix/character

## Keyboard

Scanning method	Software scanning
Total number of keys	90
	Control keys: 12
	Function keys: 5
	Edit keys: 8
	Numeric keys: 16

## Input/Output

RF output	phono jack adjusted to TV channel UHF 36 Audio: -5dBs
RGB output	8-pin DIN RGB video: 0-0.7V, 75 ohms Audio: -5dBs (0dBs = 0.775V)
AUDIO/VIDEO output	6-pin DIN Composite video: 1Vp-p, Color/black and white selectable with B/W switch, 75 ohms, sync negative Audio: -5dBs
Sound generator	8-octave, 3 tones and 1 noise output
Audio cassette interface	8-pin DIN jack Baud rate: 1200/2400 bps Remote control function provided
Printer interface	14-pin connector TTL level Standard 8-bit parallel transfer
General purpose interface	9-pin connector (2) For connection of joystick, etc.
MSX cartridge slot	2

