

Sprite Editor User's Manual

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For using this manual

This manual dwells on using DTL-201A sprite editor version 1.7.

Composition

Part 1 Tutorial

Expounds how to actually operate the sprite editor.

Part 2 References

Sets out each of the functions supported by the sprite editor.

Appendix A Installation

Deals with a method for installing the sprite editor.

Appendix B File formats

Elucidates the file formats supported by the sprite editor.

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OVERVIEW



1 Major Features

The DTL-S210A sprite editor is the image data ending tool dedicated to the PlayStation unit. It provides the capability to interactively create data as sprite and BG picture components on Windows.

Painting function

This function creates and edits pixel images. It is capable of concurrently editing four banks.

The created image (TIM file) can also be used as texture for the 3D graphics tool.

Note: Data in the 256-color mode and data in the 16-color mode cannot be edited concurrently. Concurrently editing two or more pieces of data requires that the same color mode be applied.

Map creation function

This function locates cells cut out of an image to create a map. The size of a cell to be cut out must be 8 x 8, 16 x 16, 24 x 24, 32 x 32 or 64 x 64 pixels. The maximum map size is 256 x 256 cells. Each of the cells located in a map can be assigned an attribute value. Four maps can be edited concurrently.

Animation creation function

This function cuts a sprite out of an image to create a sprite group and an animation.

Graphics display function

Graphic artist board DTL-H201A allows graphic data having the same color and resolution as the PlayStation unit to be checked by the video monitor.

Note: With graphic data displayed on the video monitor screen, the processing speed is lowered compared with such data not displayed.

Remarks

- The Windows video driver for 256 colors should be used. Any drivers for other than 256 colors cannot be used.

- Up to 236 colors can be displayed concurrently on the Windows screen. Thus, all colors at the palette display window bottom and the most right four colors on the second bottom line cannot be edited. When data based on colors of this part has been loaded, colors displayed on the Windows screen may be different from colors displayed on the NTSC screen.
- When ABOARD.EXE is not used to set the I/O address of the graphic artist board again, the region of 0x1340 to 0x134f is used as the I/O address.

2 Operating Environment

Hardware

IBM PC/AT compatible machine

The hardware satisfying the following requirements is needed.

- CPU operated under 486DX2 (66 MHz) or higher version
- More than 4 M-bytes of empty memory
- Video board of 1024 x 768 (recommended) or more that can display (required) 256 colors
- Hard disk

Graphic artist board DTL-H201A

This board is fitted on a PC/AT ISA bus slot to connect a video monitor applicable to NTSC.

Color display for PC/AT

Windows is operated and sprites are edited on a color display for PC/AT.

Video monitor applicable to NYSC

This video monitor allows the inspection of data currently created by the sprite editor.

Mouse

The mouse is used to operate the sprite editor.

Note

The factory set graphic artist board uses the region of 0x1340 to 0x124F as the I/O address. This means that the graphic artist board cannot be used along with a board which uses the region of 0x340 to 0x34F as the I/O address. Change the duplicate I/O address of another board, or use ABOARD.EXE supplied together with 3D graphics tool DTL-S220A to change the I/O address of the graphic artist board.

Software

MS-DOS of version 5.0/V or later version

Windows 3.1

Operated on Japanese Windows 3.1

3 File Formats

The sprite editor supports the following file formats.

 **TIM**

This image format allows data to be transferred directly to the VRAM of the PlayStation unit. It is composed of color palette data and pixel data.

 **PXL**

This file stores only the pixel data section of a TIM file.

 **CLT**

This file stores only the color palette data section of a TIM file.

 **CEL**

This is a table of cells constituting a BG plane. The table can also store attributes. Each cell is composed of a combination of image coordinates on the VRAM and a palette used.

 **BGD**

This file stores information on the arrangement of cells defined in the CEL file.

 **ANM**

This format is used to create animations from image data. It is composed of sprite definitions for each frame and of a time table.

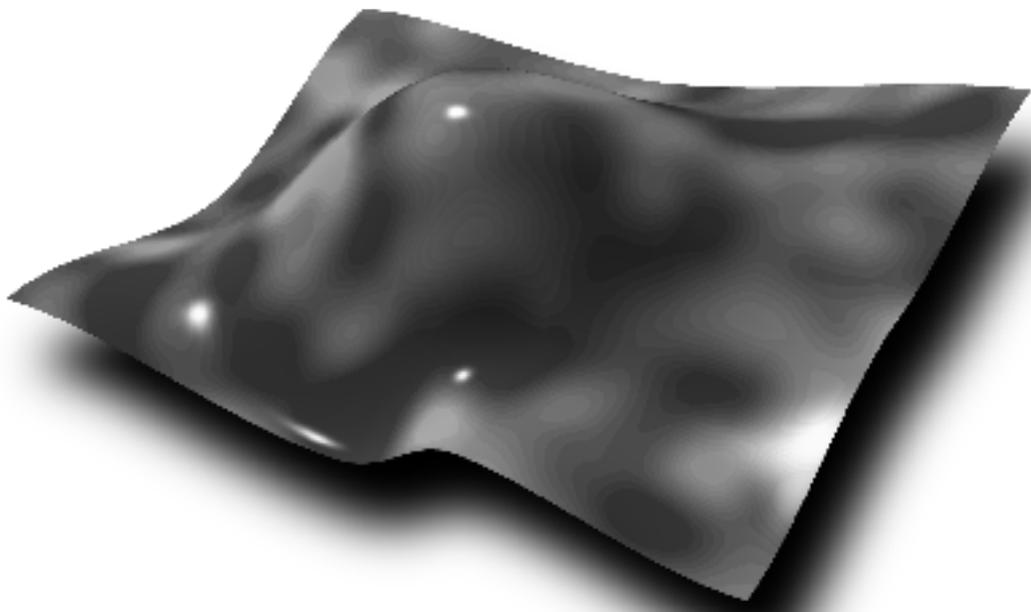
 **TSQ**

This file stores only the time table section in the ANM file.



PART **1**

TUTORIAL



CHAPTER 1

EDITING IMAGES

This chapter explains the functions used to render images.

Drawing images involves the use of a whole TIM display window, a paint window, and a palette display window (see Figure 1-1-1). A rendering color is determined by the color palette on a palette display window, and a tool on a tool palette is used to edit images on a paint window. A whole rendered image is displayed on the whole TIM display window,

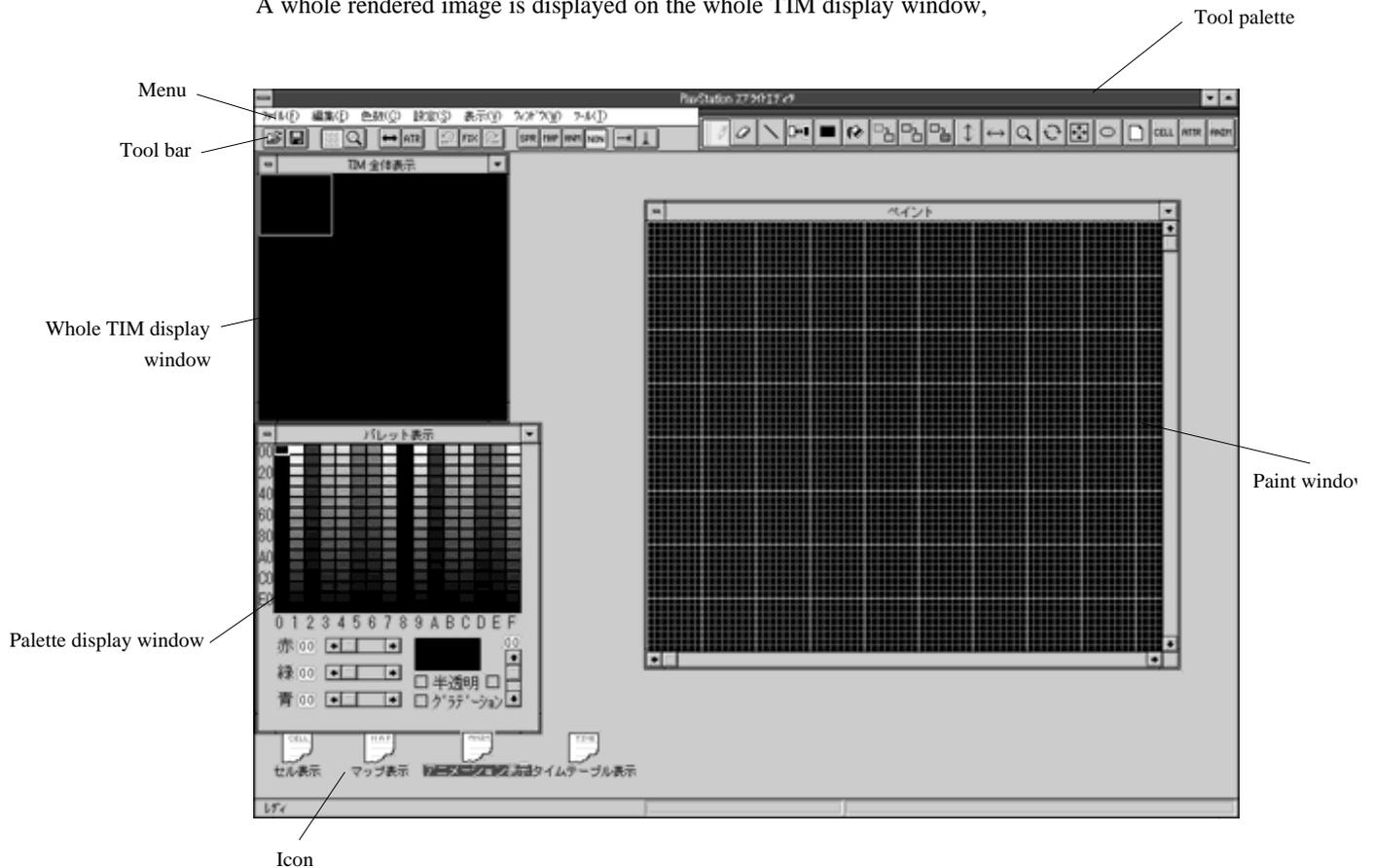


Figure 1-1-1 During Image Editing

1 How to Draw Images

1. Press the F5 function key on the keyboard to open the whole TIM display window, the paint window and the palette display window.
2. Set the number of colors used in the color count menu.

3. Select “TIM bank coordinate setting” in the setting menu to open the coordinate setting dialogue box in the TIM bank. Then, specify coordinates of the image on the VRAM, palette coordinates, and the number of colors set.
4. Select the bank in the display menu. Open the bank setting dialogue box and specify a TIM bank to be used.
5. Select and create a rendering color on the palette display window.
6. Use a tool on the tool palette to edit images on the paint window.
7. After having edited images, select “saving under name” in the file menu to save the image as a TIM file.

The sprite editor supports the following image editing functions.

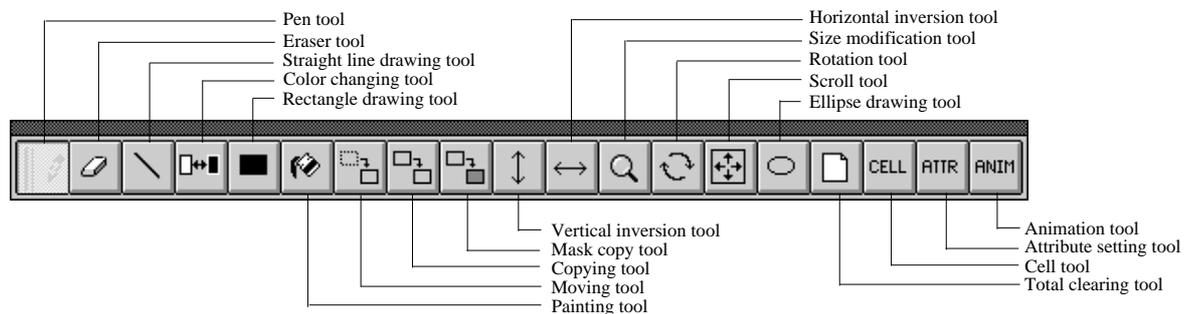


Figure 1-1-2 Tool Palette

1.1 Drawing Curves

1. Select the pen tool on the tool palette (Figure 1-1-2).
2. Select the rendering color on the palette display window.
3. Clicking (dragging) the left button on the paint window enables rendering in the rendering color. Dragging with the Caps Lock key pressed enables a dashed line to be drawn.

1.2 Erasing Images

1. Select the eraser tool on the tool palette.
2. Clicking (dragging) the left button on the paint window enables rendering in the background color (color of palette zero).

1.3 Drawing Straight Lines

1. Select the straight line drawing tool on the tool palette.
2. Select a rendering color on the palette display window.
3. Dragging on the paint window with the left mouse button pressed enables rendering in the rendering color.

1.4 Replacing Color

A color in a certain area of image data can be replaced with another color in the same palette.

1. Select the color change tool on the tool palette.
2. Specify by left dragging an area whose color is to be changed on the paint window. The default is the whole image in the bank.
3. Select a color to be replaced on the palette display window and click the right button.
4. Select a new color on the palette display window and click the left button.

1.5 Drawing Rectangles

1. Select the rectangle drawing tool on the tool palette.
2. Left dragging on the paint window leads to the drawing of the rectangle where the start and end points of the dragging are the edge points of the diagonal.

1.6 Coloring Area

1. Select the coloring tool on the tool palette.
2. Click by the left button the pixel to be colored on the paint window.

1.7 Moving Images

1. Select the moving tool on the tool palette.
2. Specify an area to be moved by left dragging on the paint window (whole TIM display window).
3. Locate the rectangular frame at the destination position and click the left button.

1.8 Copying Images

1. Select the copying tool on the tool palette.
2. Specify an area to be copied by left dragging on the paint window (whole TIM display window).
3. Locate the rectangular frame at the destination position and click the left button.

1.9 Copying Part other than Specified Color

1. Select the mask copy tool on the tool palette.
2. Specify an area to be copied by left dragging on the paint window (whole TIM display window).
3. Locate the rectangular frame at the position to be copied. Then, click the left button with the shift key pressed. The rendering color becomes white, with the other parts copied. Clicking the left button without pressing the shift key causes the background color to become white.

1.10 Vertical Inversion

1. Select the vertical inversion tool on the tool palette.
2. Specify an area to be inverted vertically by left dragging on the paint window.

1.11 Horizontal Inversion

1. Select the horizontal inversion tool on the tool palette.
2. Specify an area to be inverted horizontally by left dragging on the paint window.

1.12 Extension and Reduction

1. Select the size modification tool on the tool palette.
2. Specify an area to be extended or reduced by left dragging on the paint window.
3. Locate the cursor at the intended position, followed by left dragging for the desired size.

1.13 Rotation

1. Select the rotation tool on the tool palette.
2. Specify an area to be rotated by left dragging on the paint window.
3. Click the arrow button on the scroll bar to rotate the rectangular frame to the desired angle.
4. Pointing to a position in the paint window, click the left button.

1.14 Making Image Scroll

1. Select the scroll tool on the tool palette.
2. Specify an area to be made to scroll by left dragging on the paint window.
3. Click the arrow button on the scroll bar for scrolling to the desired position. With the Caps Lock key pressed, the image out of the rectangular frame is not displayed on the opposite side.

1.15 Drawing Ellipses

1. Select the ellipse drawing tool on the tool palette.
2. Select a rendering color on the palette display window.
3. On the paint window, carry out left dragging from the center of the ellipse toward the outside.

1.16 Initializing Data

1. Select the total clearing tool on the tool palette.
2. Click the left button on the paint window (whole TIM display window).

1.17 Changing Pen Size

With the Num Lock key pressed, activate the paint window to press numeric keys 1, 2 and 3. The pen size is changed to 1 x 1, 2 x 2 and 3 x 3.

1.18 Selecting TIM Bank

The appropriate TIM bank can be selected by the following three methods.

1. Select display menu “bank” and open the bank setting dialogue box (see Figure 1-1-3). Then, select the number of the desired TIM bank.
2. Use the bank selection tool on the tool bar to open the bank setting dialogue box. Then, select the number of the desired TIM bank.
3. Press function keys F1 to F4 (banks 0 to 3) on the keyboard.



Figure 1-1-3 Bank Setting Dialogue Box

1.19 Changing Snaps

During area specification, the snap can be changed by the following method.

1. In the setting menu, select `Åsnap settingÅh`.
2. Select the desired snap size in the pull-down menu.

- | | | |
|---------|---------|----------------------------------------------------------|
| 1 x 1 | Ctrl+1: | Allows an area to be specified in units of one pixel. |
| 4 x 4 | Ctrl+2: | Allows an area to be specified in units of four pixels. |
| 8 x 8 | Ctrl+3: | Allows an area to be specified in units of eight pixels. |
| 16 x 16 | Ctrl+4: | Allows an area to be specified in units of 16 pixels. |

1.20 Compressing Character

The sprite editor supports a character compression function for erasing duplicate characters on one piece of TIM (rectangular area of the specified size) and embedding characters in sequence. The function can also be used to create the cell corresponding to a compressed image, and map data constituting the original picture.



Figure 1-1-4 Character Compression Dialogue Box

1. Select **Character compression** in the editing menu, and open the TIM character compression dialogue (see Figure 1-1-4).
2. Select the TIM bank containing an image to be compressed from the pre-compression TIM bank in the dialogue box.
3. Select the TIM bank that will store the compressed image from the post-compression TIM bank in the dialogue box.
4. Select the MAP bank that will store the map data corresponding to the compressed image from the post-compression MAP bank in the dialogue box.
5. Select the character size. When inserting one blank character around the compressed image, press the edge character suspension button.
6. Press the OK button. Compression may take about two minutes.

1.21 Releasing Specified Area Selection

The specified area selection can be released by clicking the right button.

1.22 Specifying Rendering Color

The rendering color can be specified by the following two methods.

- Click the left button at the desired color on the palette display window.
- Click the right button at the desired color pixel on the paint window.

1.23 Undoing

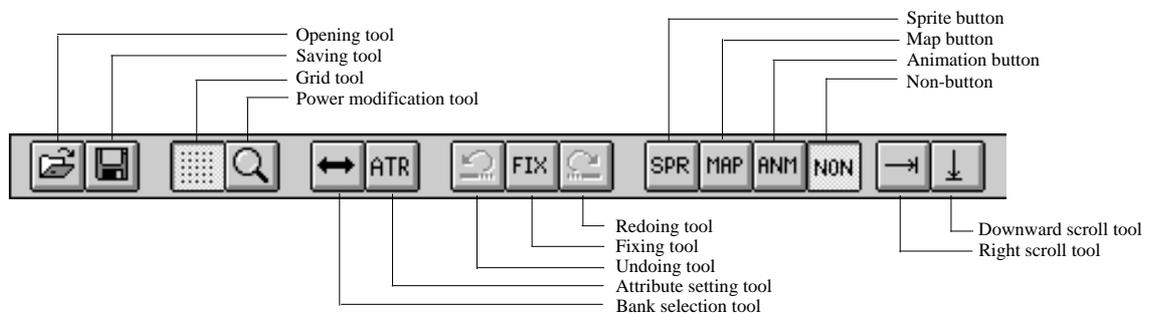


Figure 1-1-5 Tool Bar

The sprite editor defaults to selecting a tool on the tool palette and saving the status right after the first operation into the undo buffer. Thus, undoing after a series of operation following tool selection sets up the status for tool selection. Pressing the FIX button on the tool bar (see Figure 1-1-5) causes the current status to be saved in the undo buffer. Use the FIX button if needed.

1.24 Output to Video Monitor

Selecting the sprite button on the tool bar enables image data currently edited (contents of the whole TIM display window) to be output from graphics artist board DTL-H201A to the video monitor. Further, the resolution of the video monitor can be modified in the pull-down menu by selecting the “artist board screen mode” in the setting menu. If coordinates of images and palettes in the TIM bank occupy an area on the VRAM needed for display at the specified resolution, however, the resolution cannot be modified. IN such a case, set coordinates of the TIM bank in the setting menu so that coordinates of images and palettes do not share the display area and, then, specify the desired resolution.

1.25 Grid Indication

The grid can be displayed and grid display can be suppressed by clicking the grid tool on the tool bar. Opening the grid color setting dialogue box with “grid color setting” selected in the setting menu enables the display colors of the main grid and sun-grid to be changed.

1.26 Saving only Part of Image

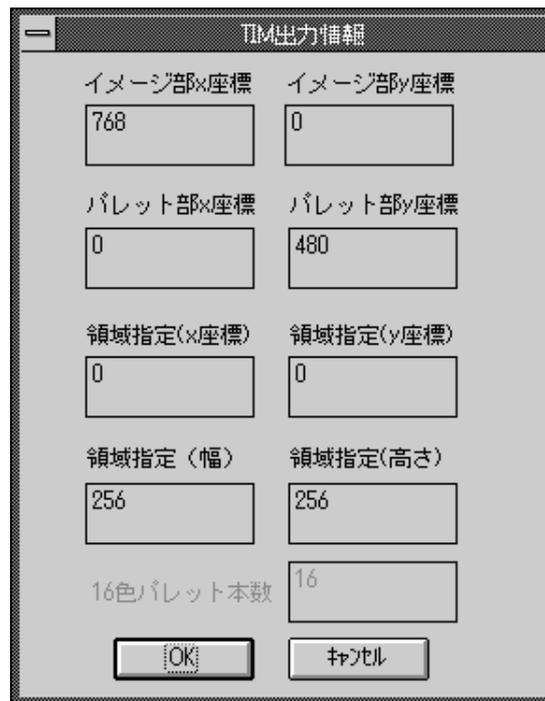


Figure 1-1-6 TIM Output Information Dialogue Box

When a TIM file is saved, the TIM output information dialogue box (see Figure 1-1-6) is opened. Specifying coordinates and size in image data in the dialogue box enables the TIM file for only the specified area to be saved.

1.27 Power of Displaying Paint Window

The following three methods can be used to change the power of displaying the paint window.

- Select “power” in the display menu, open the display power setting dialogue box, and set the display power.
- Select the power changing tool on the tool palette, open the display power setting dialogue box, and set the display power.
- Press function key F9 (high extension rate) or F9 (low extension rate) along with the shift key on the keyboard.

The area extended in the paint window is displayed as the rectangular frame on the whole TIM display window. The area can be moved to the position specified by clicking the right button on the whole TIM display window.

2 Editing Color Palette

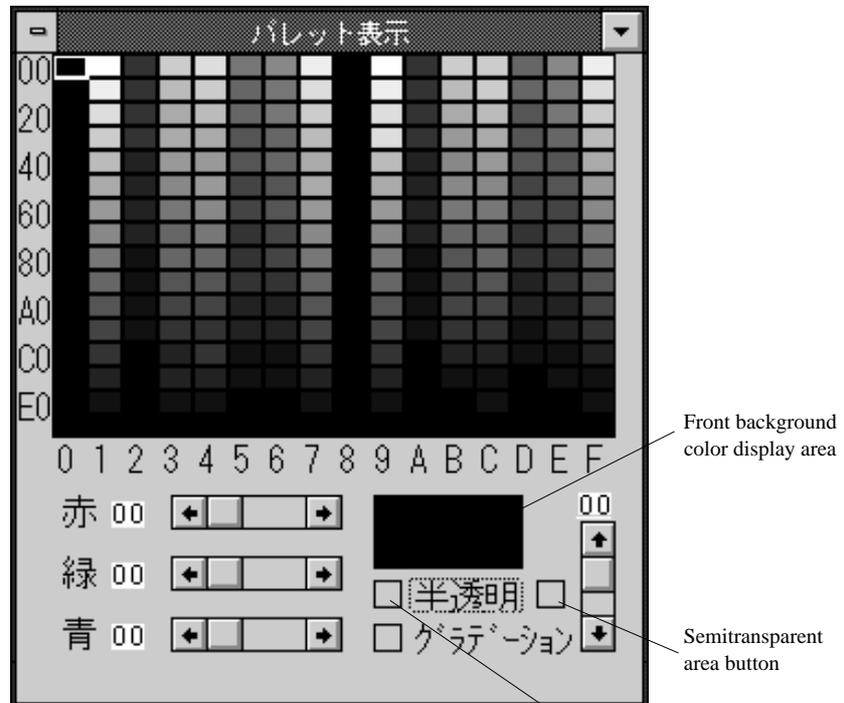


Figure 1-1-7 Palette display window

The color palette is edited on the palette display window (see Figure 1-1-7). The red, green and blue scroll bars are used to set colors. In the sprite editor, the color of number zero on the palette provides the background color. In the 256-color mode, the top left color provides the background color. In the 16-color mode, the left edge color on the palette provides the background color. The rendering color can be specified by clicking the left button. In the 256-color mode, the whole palette display window provides one palette. In the 16-color mode, the lateral row provides one palette.

2.1 Replacing Colors on Palette

In the palette, a color can be replaced by another color.

1. Select the color change tool on the tool palette.
2. Click the right button on the palette display window to select the rendering color to be replaced.
3. With the shift (or Ctrl) key pressed, click the left button on the palette display window to specify the other rendering color to be substituted. Specification with the shift key pressed leads to the swapping of color information in the TIM image. The image on the paint window is not changed. Specification with the Ctrl key pressed does not lead to the swapping of color information in the TIM image. Thus, image appearance on the paint window is changed.

2.2 Replacing Palette

In the 16-color mode, the palette can be replaced.

1. Select the color change tool on the tool palette.
2. Click the right button on the palette display window to select one color in the palette to be replaced.
3. With the shift and Ctrl keys pressed, click the left button at one color in the palette to be substituted.

2.3 Copying Color Palette

1. Select the copying tool on the tool palette.
2. Specify the area to be copied by left dragging on the palette display window.
3. Locate the rectangular frame at the destination position and click the left button.

2.4 Initializing Data

1. Select the total clearing tool on the tool palette.
2. Click the left button on the palette display window.

2.5 Developing Gradation

1. Click the left button on the palette display window to select the rendering color to be subjected to gradation.
2. Press the gradation button on the palette display window.
3. Click the left button at the other color to be subjected to gradation on the palette display window. If a line or column on the palette display window does not contain the first selected rendering color and the other selected color, no gradation is developed.

2.6 Setting Semitransparency

Setting the transparency control bit (STP bit in the CLUT entry for TIM data) at one in the color palette involves the following operation.

1. Click the left button at the color whose STP bit is to be made one on the palette display window for selection.
2. Turn on the semitransparency button on the palette display window.

Dragging the palette display window by the left button with the semitransparent area button turned on sets the status of the semitransparency button at the color in the area.

CHAPTER 2

EDITING CELL MAP

This chapter explains a procedure for combining cells to create map data on the background plane.

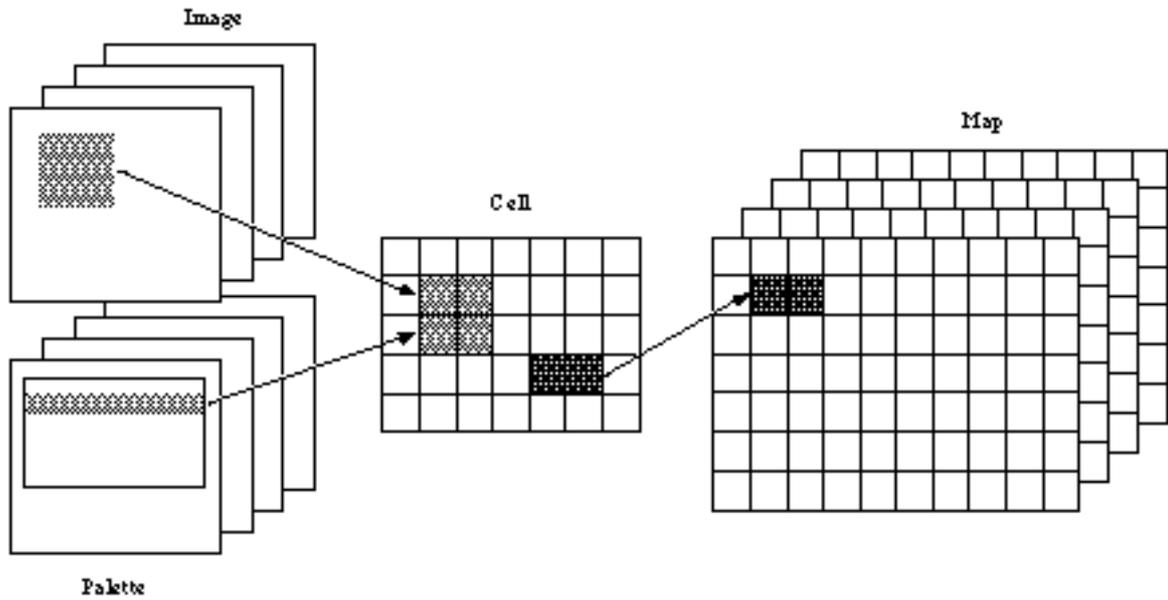


Figure 1-2-1 Data Flow during Cell Map Editing

The sprite editor creates palette information and coordinate information of images laid on the map on the VRAM, as cell data. Coordinate information is cataloged as cell data by specifying areas on four TIM banks. Palette information is cataloged as cell data by specifying a palette. Cataloging coordinate and palette information requires that an area be selected on the whole TIM display window, a desired color in the palette be selected on the palette display window, and the area in the cell display window be clicked. Information on how the created cell data is arranged is generated as map data. Selecting the area to be pasted onto the map in the cell display window and clicking the pasting position on the map display window lead to the cataloging of the information (see Figure 1-2-1).

1 Developing Cell Data

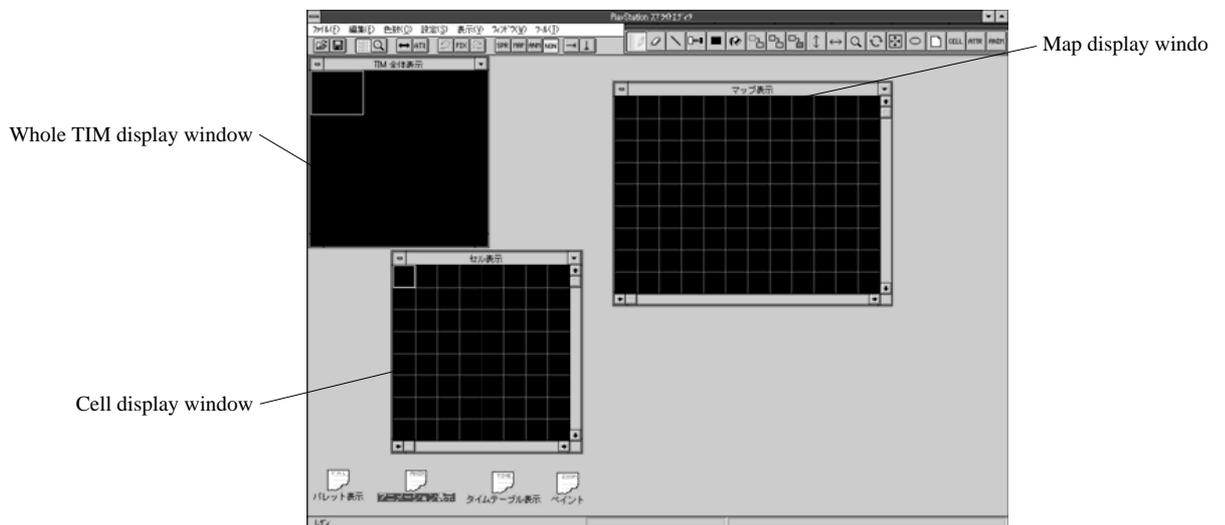


Figure 1-2-2 Location during Cell Map Editing

The following detailed explanation is based on sample data.

1. Press the F6 function key on the keyboard to open the whole TIM display window, the cell display window and the map display window to be located properly (see Figure 1-2-2).
2. Set the size of the cell to be cut out by “cell size” in the setting menu, at 32 x 32.
3. Select “map size” in the setting menu, open the map cell specification dialogue box, and set X size in the cell file at 16 and Y size at 16.
4. Select “cell tool” on the tool palette.
5. Select “bank” in the display menu and, then, TIM bank 0 for the image to be cataloged as the cell.
6. Use the opening tool on the tool bar to load C:\¥PSXGRAPH¥TUTORIAL ¥SPRITE¥MAP.TIM.
7. Click by the left button the top left edge of the rectangular area to be cut out in the whole TIM display window, or drag the area to be cut out by the left button.

8. Click the left button at the position where the cell cut out in the cell display window is to be located (see Figure 1-2-3). (For the cataloged cell data, refer to the palette covering the rendering color used when the left button is clicked.)

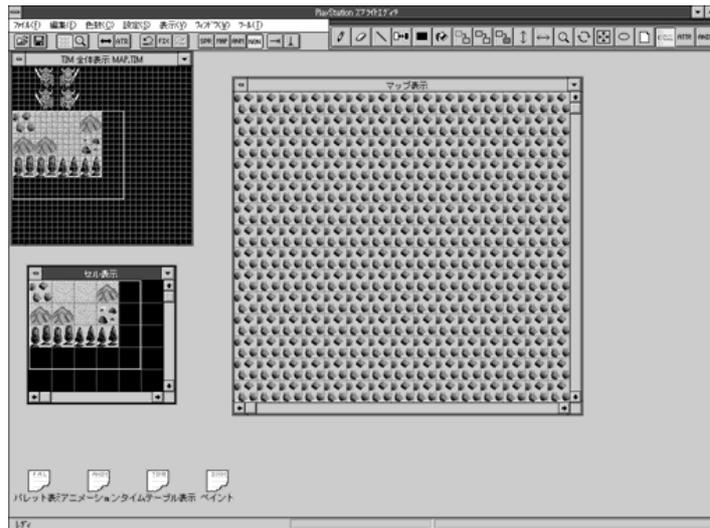


Figure 1-2-3 Cell Data Creation

Now, cell data has been created. Data at the left top on the cell display window is laid on the map display window. This is because the initial map data value is based on the first cell. The following describes the operation applicable to the cell data.

1.1 Displaying Reduced Cell Window

The default is such that the cell display window is displayed in a somewhat large scale. Checking “reduced cell display” in the setting menu allows the cell to be reduced and displayed.

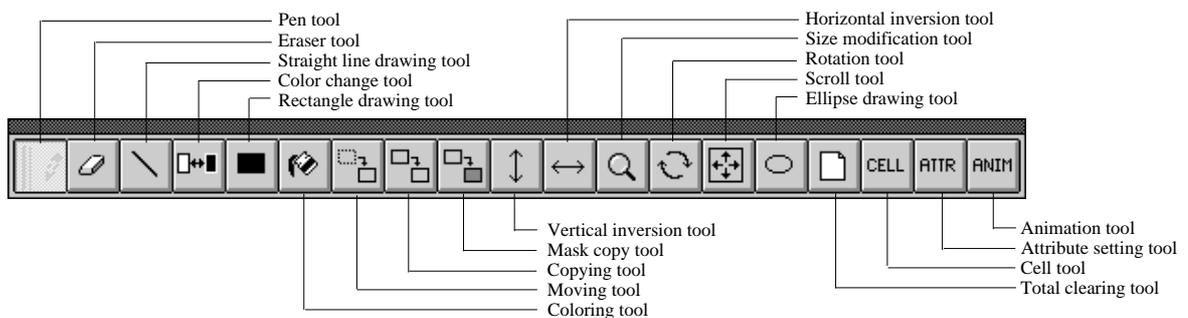


Figure 1-2-4 Tool Palette

1.2 Copying Cell Data

1. Select the copying tool on the tool palette (see Figure 1-2-4).
2. Specify an area to be copied by left dragging on the cell display window.
3. Locate the rectangular frame at the destination position and click the left button.

1.3 Vertical Inversion

1. Select the vertical inversion tool on the tool palette.
2. Specify an area to be inverted vertically by left dragging on the cell display window.

1.4 Horizontal Inversion

1. Select the horizontal inversion tool on the tool palette.
2. Specify an area to be inverted horizontally by left dragging on the cell display window.

1.5 Initializing Data

1. Select the total clearing tool on the tool palette.
2. Click the left button on the cell display window. The initial cell data value refers to the cell beginning with (0, 0) in TIM bank 0.

1.6 Displaying Image Area Given by Cell Data

The image area pointed to by the cataloged cell data can be indicated. The following gives the procedure for this indication.

1. Select the cell tool on the tool palette.
2. Clicking the right button on the cell display window leads to the display of the area corresponding to the cell on the whole TIM display window. Also, the following information is displayed at the center of the status bar.

PALETTE: Palette number

TIMBANK: Bank number (x and y coordinates)

1.7 Updating Palette for Cataloged Cell Data

Palette information cataloged as cell data can be updated. This updating involves the following operation.

1. Select the pen tool on the tool palette.
2. Select the cell whose palette is to be updated, by left dragging on the cell display window.
3. Clicking the right button at a color in the desired palette on the palette display window causes the palette information to be cataloged as cell data.

1.8 Replacing Order of Cell Data

On the cell display window, cell numbers are arranged from the top left to the right. Because the cell numbers are cataloged as map data, the map is changed if cell data location has been updated. By the following operation, however, the position on the cell display window can be changed without updating the map.

1. Select the color change tool on the tool palette.
2. Click the left button at the cell to be replaced on the cell display window.
3. Click the left button at the cell to be substituted on the cell display window.

1.9 Cell Compression

A cell compression function is supported for erasing duplicate cells cataloged as cell data and arranging the other cells from the start of cell data. The function allows cell information for the corresponding map data to be updated so that the map data is not destroyed.

1. Select “cell compression” in the editing menu. The compression may take about two minutes.

2 Developing Map Data

This section explains a method of developing map data from created cell data. This explanation is based on sample data.

1. Press the F6 function key on the keyboard to open the cell display window and the map display window to be located properly.
2. Select “map size” in the setting menu, open the map cell size specification dialogue box, and set the map file size at 128 x 128.
3. Select “bank” in the display menu and, then, map bank 0 to be used.
4. With TIM bank 0 selected, use the opening tool on the tool bar to load C:\¥PSXGRAPH¥TUTORIAL¥SPRITE¥MAP.TIM and C:\¥PSXGRAPH¥TUTORIAL¥SPRITE¥MAP.CEL.
5. Select “pen tool” on the tool palette.
6. Click the left button at the cell to be located as map data on the cell display window, or drag the area by the left button.
7. Click the left button at the position where the cell is to be located, on the map display window.

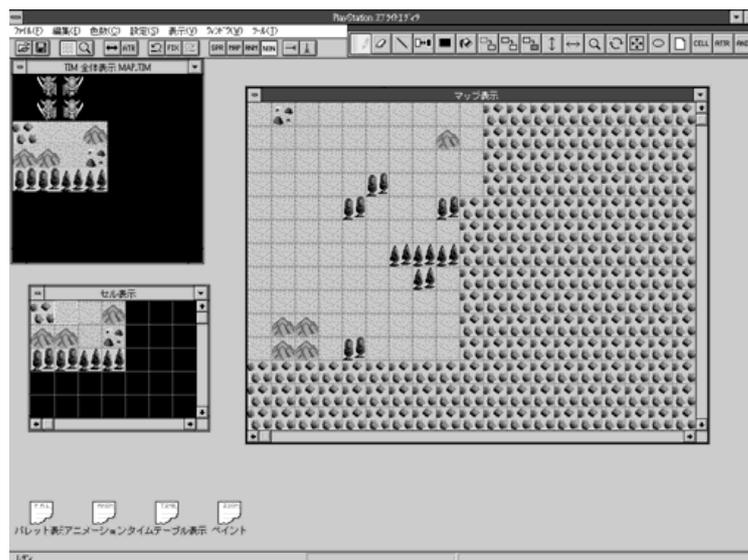


Figure 1-2-5 Map Data Creation

Now, map data has been created. The following explains the operation applicable to such map data.

2.1 Displaying Reduced Map Window

The default is such that the map display window is displayed in a somewhat large scale. Checking “reduced map display” in the setting menu enables the map window to be displayed at a reduced scale.

2.2 Copying Map Data

1. Select the copying tool on the tool palette.
2. Specify an area to be copied by left dragging on the map display window.
3. Click the left button with the rectangular frame located at the destination position.

2.3 Initializing Data

1. Select the total clearing tool on the tool palette.
2. Click the left button on the map display window. The initial map data value refers to the cell of cell data 0.

2.4 Displaying Image Area Given by Map Data

The cell data and image region pointed to by cataloged map data can be indicated. This indication involves the following operation.

1. Select the cell tool on the tool palette.
2. Clicking the right button on the map display window allows the display of the area corresponding to the cell on the whole TIM display window. Also, the cell corresponding to the cell display window is displayed, and the following information is given at the center of the status bar.

CellNo.: Cell number (x and y coordinates on the cell display window)

2.5 Map Output to Video Monitor

Map data currently edited can be output to the video monitor by selecting the map button on the tool bar. But this output requires that the transfer MAP BANK button have been turned on in the bank setting dialogue box (see Figure 1-2-6) that can open the bank selection tool on the tool bar. The bank numbers are displayed in ascending order away from yourself.



Figure 1-2-6 Bank Setting Dialogue Box

3 Setting Attributes and Semitransparency Attributes

The sprite editor can assign attributes to cell data and map data. Also, cell data can be assigned semitransparency attributed.

3.1 Setting Attributes

1. Select "attribute setting tool" on the tool palette.



Figure 1-2-7 Attribute and Semitransparency Attribute Setting Dialogue Box

2. Select “map attribute” in the setting menu to open the attribute and semitransparency setting dialogue box (see Figure 1-2-7).
3. Turn on the attribute setting button.
4. Turn on the “attributed supported” button for the desired data. Setting an attribute value of more than 255 requires that the “16-bit attribute” button be turned on. Entering an attribute value to be displayed in a decimal number requires that the decimal number button be pressed. For a hexadecimal number, press the hexadecimal number button.
5. Enter an attribute value.
6. On the window which displays the desired data (cell or map display), click the left button at the cell where the entered attribute is to be set, or drag the area to be set by the left button.
7. For termination, click the close button by the left button to close the dialogue box.

3.2 Setting Semitransparency

1. Select “attribute tool” on the tool palette.

-
2. Select “map attribute” in the setting menu to open the attribute and semitransparency setting dialogue box.
 3. Turn on the semitransparency setting button.
 4. Turn on the button for the desired semitransparency rate.
 5. Click the left button at the cell whose semitransparency rate is to be set on the cell display window, or drag the area to be set by the left button.
 6. For termination, click the close button by the left button to close the dialogue box.



CHAPTER 3

EDITING ANIMATIONS

This chapter explains a procedure for creating sprite animation data.

Animation creation calls for opening the whole TIM display window, the animation display window and the time table display window. A rectangular area is cut out of the whole TIM display window for the animation window to create animation source data and a time table that indicates display timing.

The sprite editor catalogs two or more sprites to the animation display window to create a frame of an animation. This is referred to as a sprite group. A needed number of sprite groups can be cataloged to the animation display window. Use the time table display window to set the order and timing of displaying the sprite groups.

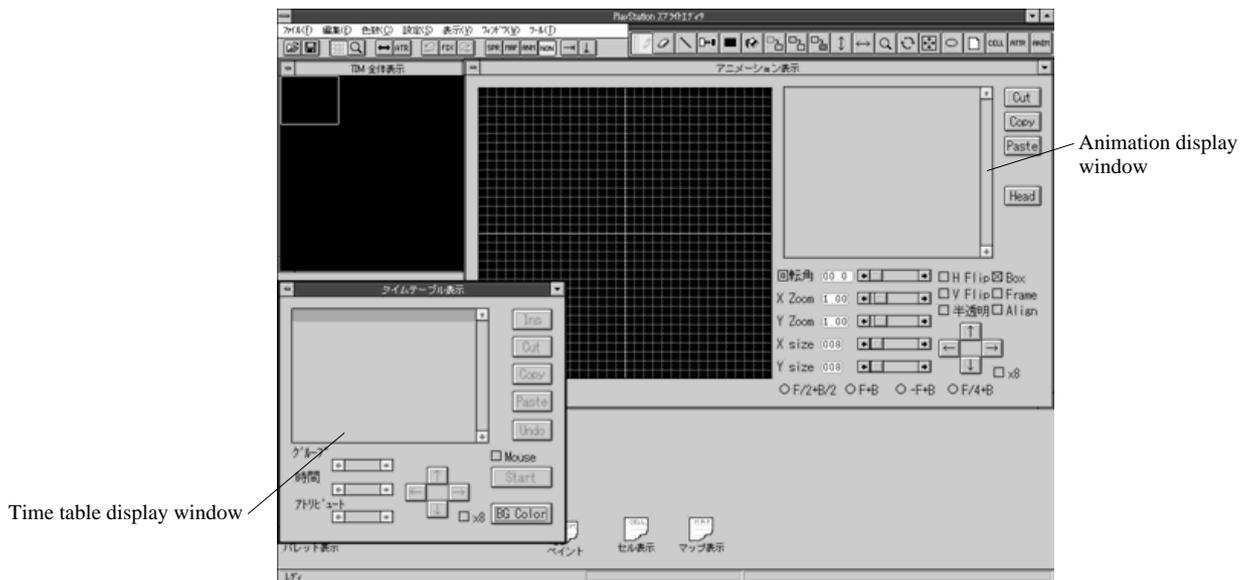


Figure 1-3-1 During Animation Editing

1 Developing Sprite Group Data

The following explanation is based on sample data.

1. Press the F7 function key on the keyboard to open the whole TIM display window and the animation display window.
2. Select the opening tool on the tool bar to load the TIM bank [0, 1, 2, 3] with C:\¥PSXGRAPH¥TUTORIAL¥SPRITE¥MAT [0, 1, 2, 3].TIM.
3. Select “animation tool” on the tool palette.
4. Press the Align button on the animation display window.
5. Press the F1 function key to select TIM bank 0. Then, click by the left button the grid 8 x 8 position from the top left corner on the whole TIM display window to select the rectangular area (sprite). (Now, a sprite of 64 x 64 pixels has been selected.)
6. Click by the left button the grid 7 x 7 position on the sprite display window. On the sprite group display window, information on the sprite cut out is displayed. The sprite refers to the palette covering the rendering color during sprite cataloging.

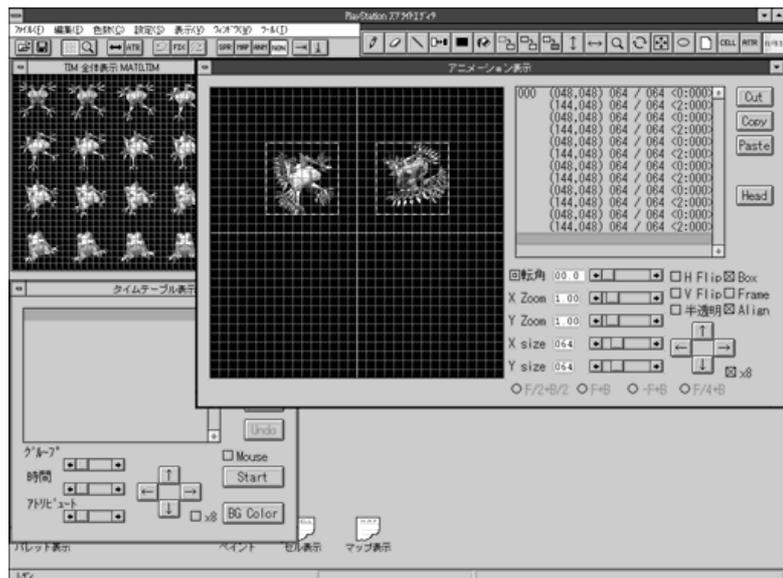


Figure 1-3-2 Cataloging Sprite

7. Locate a needed number of sprites (see Figure 1-3-2). Sprite data is cataloged as it is located on the sprite display window. The top left corner on the sprite display window provides the origin of the coordinate system. During actual rendering, the offset coordinates specified by a time table are added to the coordinate system.
8. After the needed sprites have been cataloged, isolate them for each frame. For this isolation, click by the left button the boundary sprite on the sprite group display window before pressing the Head button. A value at the left edge on the sprite group display window indicates a sprite group number, which is to be specified during time table creation. The section from the sprite assigned a sprite group number to the sprite assigned the next number is considered to be a sprite group. The number of sprite groups corresponds to the number of frames (see Figure 1-3-3).

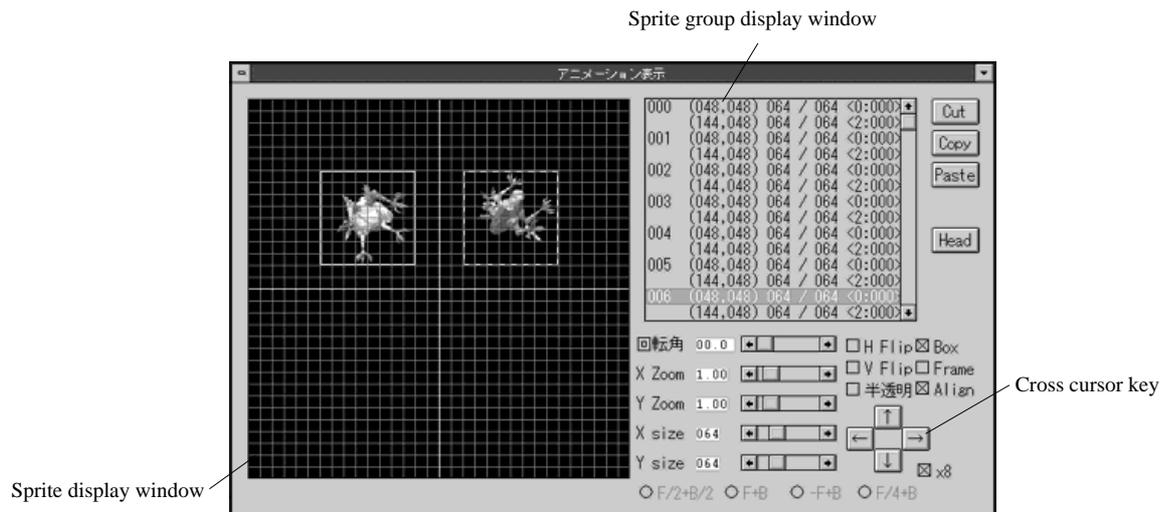


Figure 1-3-3 Cataloging Sprite Group

Now, sprite group data has been created. The following describes the operation applicable to the sprite group.

1.1 Selecting Sprite

The following two methods can be used to select a sprite.

- Click the left button on the sprite display window.
- Click the left button on the sprite group display window. The use of the left button along with the shift and Ctrl keys enables the selection of more than one sprite.

1.2 Updating Coordinates for Cataloged Sprite

1. Select the sprite to be moved on the animation display window.
2. Clicking the cross cursor button causes the specified sprite to be moved. With the x 8 button turned on, the sprite is moved in units of eight pixels.

1.3 Changing Width or Height of Cataloged Sprite

1. On the animation display window, select the sprite whose width or height is to be changed.
2. Operate the X size scroll bar to set the desired width.
3. Operate the Y size scroll bar to set the desired height.

1.4 Initializing Data

1. Select the total clearing tool on the tool palette.
2. Click the left button on the sprite display window.

1.5 Changing Palette of Cataloged Sprite

Sprite group data carries information on the palette referred to by the sprite. The stored palette covers the rendering color during sprite cataloging. Even after cataloging, the palette to be referred to can be changed as follows.

1. Select the animation tool on the tool palette.
2. On the animation display window, select the sprite for which the palette is to be changed.
3. On the palette display window, click a color in the desired palette by the right button.

1.6 Displaying Image Area Given by Sprite Data

The image area pointed to by the cataloged sprite can be indicated. This indication involves the following operation.

1. Select the animation tool on the tool palette.
2. Clicking by the right button the desired sprite on the sprite display window displays the area corresponding to the sprite on the whole TIM display window.

1.7 Displaying Sprite Semitransparently

The semitransparency mode can be turned on and off, and the semitransparency rate can be set for each sprite.

1. On the animation display window, select a sprite to be displayed semitransparently.
2. On the animation display window, turn on the semitransparency button.
3. Out of the $F/2+B/2$, $F+B$, $-F+B$ and $F/4+B$ buttons, select the desired semitransparency rate. Only on the video monitor, the sprite is displayed semitransparently. On Windows, the sprite is not displayed semitransparently.

1.8 Rotating Sprite

1. Select the sprite to be rotated on the animation display window.
2. Operate the scroll bar to set the desired rotation angle. Upon rotation, only the frame is displayed on the animation display window.

1.9 Extending/reducing Sprite

1. Select the sprite to be extended or reduced on the animation display window.
2. Operate the X Zoom scroll bar to set the rate of extension or reduction in the X direction. Operate the Y Zoom scroll bar to set the rate of extension or reduction in the Y direction

1.10 Inverting Sprite

1. Select the sprite to be inverted on the animation display window.
2. For horizontal inversion, turn on the H Flip button.
3. For vertical inversion, turn on the V Flip button.

1.11 Cataloging Sprite along Grid

With the Align button turned on, the sprites cataloged in the sprite display window are located along the grid (in units of eight pixels).

1.12 Priority of Sprite Display

In the same sprite group, the sprites below the sprite group display window are displayed nearer yourself than the sprites above the sprite group display window.

2 Editing Time Table

This section explains how to create the time table corresponding to created sprite group data.

1. After the needed sprite group has been cataloged, open the time table display window (see Figure 1-3-4) and click the [Ins] button by the left button to display the sprite group.
2. Use the scroll bar for “group”, “time” and “attribute” to set a sprite group number, display time in units of 1/60 seconds and attributes.
3. Select the animation button on the tool bar.
4. Clicking the “Start” button by the left button displays an animation on the video monitor. On Windows, no animation is displayed. Clicking the right mouse button causes the animation to be terminated.

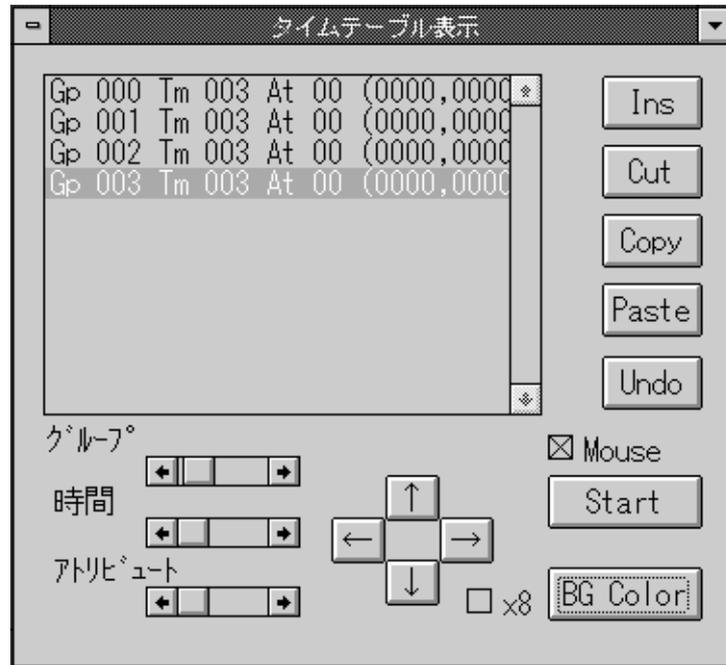


Figure 1-3-4 Cataloging Time Table

Now, the time table has been created. The following describes the operation applicable to the time table.

2.1 Modifying Offset Coordinates for Sprite Group Displayed

Display offset coordinates for the cataloged sprite group can be set. Display offset coordinates are coordinates of the origin of the sprite group in the display area. Such coordinates are displayed at the right edge of the list on the time table display window.

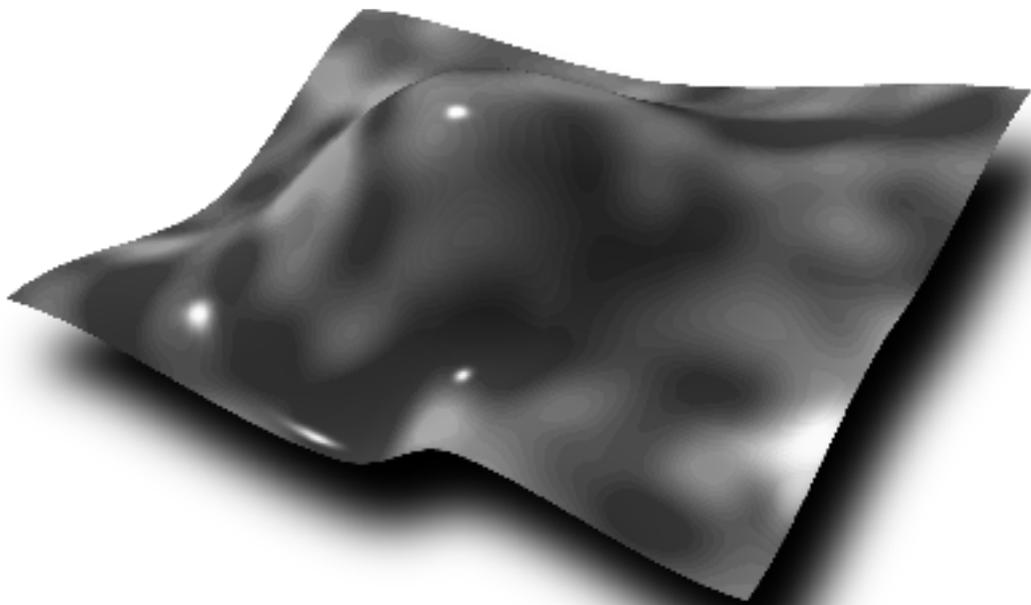
1. On the time table display window, select the sprite group to be modified.
2. Clicking the cross cursor button causes offset coordinates of the sprite group to be modified. With the x 8 button turned on, such offset coordinates are modified in units of eight pixels.

2.2 Changing Background Color for Video Monitor

Selecting the BG Color button on the time table display window enables changes in the background color displayed by the color setting dialogue box.

PART 2

REFERENCES



CHAPTER 1
SCREEN
CONFIGURATION

1 Outline

The following gives the basic screen configuration of the sprite editor.

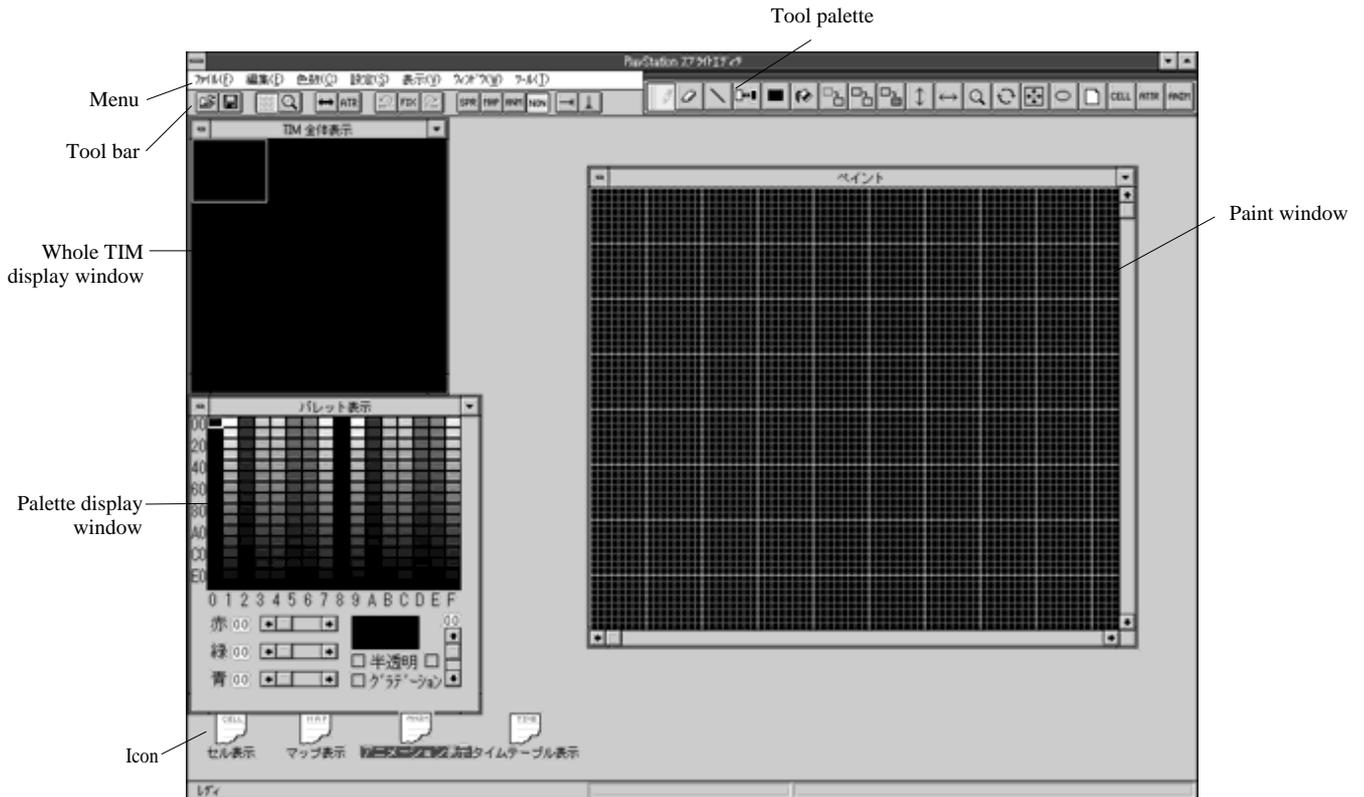


Figure 2-1-1

The screen is composed of the menu bar, the tool bar, the tool palette, the status bar, and some windows.

The windows not used can be placed as icons at the bottom of the application window. But they cannot be closed.

CHAPTER 2

MENU BAR

This chapter explains the functions of commands which can be started up from the menu bar for each menu.

1 File Menu

1.1 Opening File - Loading saved file.

1. Select "opening file".
2. Select the directory where the file is saved, and the file name.
3. Click the OK button by the left button.

Files

TIM file:	Displays a list of TIM files (*.TIM).
CELL file:	Displays a list of CEL files (*.CEL).
BGD file:	Displays a list of BGD files (*.BGD).
ANIM file:	Displays a list of ANM files (*.ANM).
CLT file:	Displays a list of CLT files (*.CLT).
PXL file:	Displays a list of PXL files (*.PXL).
CLS file:	Displays a list of CLS files (*.CLS).
TSQ file:	Displays a list of TSQ files (*.TSQ).
All file:	Displays a list of all files.

Remarks

- The selected file is not loaded into the currently active window, but into the window corresponding to the file type (extension).

Selected file	Corresponding window
TIM file (*.TIM)	Whole TIM display window Paint window Palette display window
CEL file (*.CEL)	Cell display window
BGD file (*.BGD)	Map display window
ANM file (*.ANM)	Animation display window Time table display window
CLT file (*.CLT)	Palette display window
PXL file (*.PXL)	Whole TIM display window Paint window
CLS file (*.CLS)	Palette display window
TSQ file (*.TSQ)	Time table display window

- The TIM, BGD and PXL files are loaded into the currently selected bank. When using two or more banks, make sure that the bank is for loading the file, before opening it.
- The CLT file is loaded into the palette with the current color set number.
- During editing in the 256-color mode, opening a TIM file in the 16-color mode leads to the conversion of all data being edited into the 16-color mode. Data converted into the 16-color mode cannot be returned to the 256-color mode.
- During file opening, coordinates of the current TIM bank are updated on the basis of coordinates of images and palettes in the file.
- Opening the CLS file leads to the overwriting of the color set in the currently active bank.
- When the TSQ file is opened, the dialogue box (see Figure 2-2-1) for loading the time table is opened, with the loading position checked. Selecting OVER causes the current time table to be replaced. Selecting INSERT leads to insertion into the current cursor position on the time table display window.

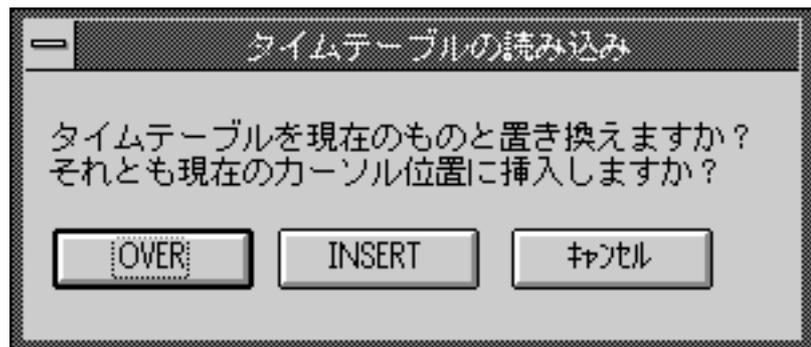


Figure 2-2-1 Dialogue Box for Loading Time Table

- During the loading of the TIM, CEL and ANM files, coordinates of the TIM bank replace coordinates stored in the file. Upon loading a file, check this replacement.

Short Cut: "Open tool" and "Ctrl+O" on tool bar

1.2 Saving under Name - Saving current contents of opened file

1. Select “saving under name”.
2. Specify a directory for saving the file and enter a file name.
3. Click the “OK” button by the left button.

Remarks

- The data saved is not data in the currently active window, but data in the window corresponding to the selected file (extension).

Selected file	Corresponding window
TIM file (*.TIM)	Whole TIM display window Paint window Palette display window
CEL file (*.CEL)	Cell display window
BGD file (*.BGD)	Map display window
ANM file (*.ANM)	Animation display window Time table display window
CLT file (*.CLT)	Palette display window
PXL file (*.PXL)	Whole TIM display window Paint window
CLS file (*.CLS)	Palette display window
TSQ file (*.TSQ)	Time table display window

- Data in the currently selected bank is saved into the TIM, BGD and PXL files. Through bank selection, save data in two or more banks. The palette with the currently selected color set number is saved into the CLT file.
- During TIM file output, the TIM output information dialogue box (see Figure 2-2-2) is opened, with the subsequent information checked.

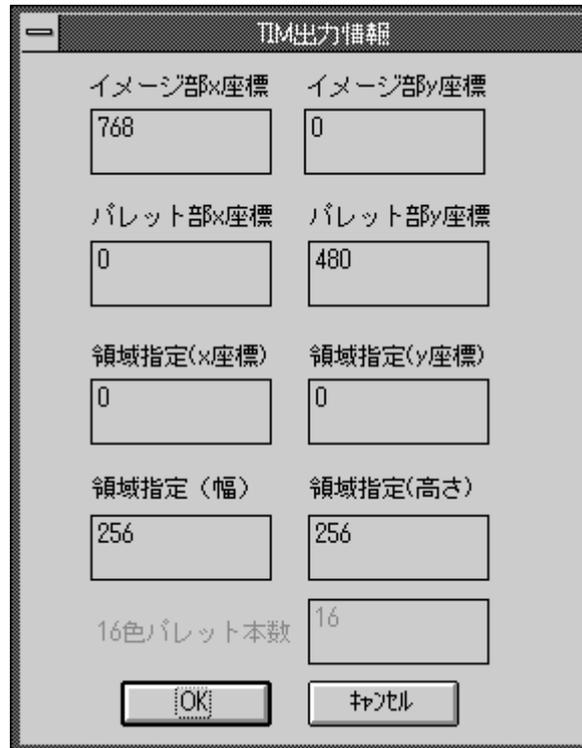


Figure 2-2-2 TIM Output Information Dialogue Box

Item	Description
x coordinate of image section	x coordinate on the VRAM of the top left edge point in the image area
y coordinate of image section	y coordinate on the VRAM of the top left edge point in the image area
x coordinate of palette section	x coordinate on the VRAM of the top left edge point in the palette area
y coordinate of palette section	y coordinate on the VRAM of the top left edge point in the palette area
Area specification (x coordinate)	x coordinate of the top left edge point of the desired file output area in current active TIM data
Area specification (y coordinate)	y coordinate of the top left edge point of the desired file output area in current active TIM data
Area specification (Width)	Width of the desired file output area in current active TIM data
Area specification (Height)	Height of the desired file output area in current active TIM data
Number of 16-color palettes	Number of 16-color palettes output (only in the 16-color mode)

Short Cut: "Save tool" and "Ctrl+S" on the tool bar

1.3 Opening Definition File - Loading project file

The sprite editor supports a group of files edited and an SDF file that stores set information. Loading the SDF file enables the setting at a tile of applicable TIM, PXL, CLT, CEL, BGD and ANM, and the artist board screen mode, the number of colors, and TIM bank coordinates. Selecting “definition file saving” in the file menu causes the above information to be saved in the SDF file. The SDF file, which is a text file, can be edited by the text editor. For the TIM, PXL, CLT, CEL, BGD and ANM files, only file names are saved. Separately save files themselves.

1. Select “definition file opening”.
2. Select the directory where the project file (SDF file) is saved, and a file name.
3. Click the “OK” button by the left button.

Remarks

- Should the project file contain an error, the description from the line where the error is detected onward is not reflected.

Short Cut: [Alt+O]

1.4 Saving Definition File - Saving current status into project file

1. Select “definition file saving”.
2. Specify the directory where the file is to be saved, and enter a file name.
3. Click the “OK” button by the left button.

Remarks

- For data in the TIM bank, the file names of PXL and CLT files are saved, only when the TIM file has not been loaded.

-
- Even though the project file has been saved, the data files are not saved. Thus, they must be saved separately.

Short Cut: [Alt+S]

1.5 Saving All Files - Saving all opened files

1. Select “all file saving”.

Remarks

- Only the opened TIM, PXL, CLT, CEL, MAP and ANM files are saved. Data having no file name is not saved.

Short Cut: [Alt+A]

1.6 Termination - Terminating sprite editor

1. Select “termination”.

Shot Cut: [Alt+X]

2 Editing Menu

2.1 Undo - Canceling last tool operation

1. Select “undo”.

Example

Executing “undo” after having used “straight line drawing tool” to consecutively draw five straight lines causes the five straight lines to disappear. Executing “undo” after having used “straight line drawing tool” to three straight lines and then using “pen tool” to draw a curve causes only the curve to disappear.

Remarks

- The default is such that the status immediately preceding the first operation after the selection of a tool on the tool palette by the sprite editor is saved in the undo buffer. Thus, executing undo after tool selection and operation sets up the status for the tool selection. Pressing the FIX button on the tool bar causes the current status to be saved in the undo buffer. It is recommended that the FIX button be used if needed.

Short Cut: “Undo tool” (Ctrl+Z) on the tool bar

2.2 Fix - Specifying status to be set up after next “undoing”

1. Select “fix”.

Remarks

- The contents of the undo buffer are updated according to the current status.

Short Cut: “Fix tool” (Ctrl+F) on the tool bar

2.3 Redo - Setting status before cancellation

1. Immediately after having executed “undo”, select “redo”.
2. The status before executing “undo” is set up.

Short Cut: “Redo tool” (Ctrl+A) on the tool bar

2.4 Cell Compression - Compressing map data by cell

1. Select “cell compression”.

Remarks

- The duplicate cells cataloged in the cell display window are erased, with the remaining cells arranged from the start of cell data. The cell number of map data is also replaced and, thus, map data is not destroyed.
- Compression may take about two minutes.

2.5 Character compression - Compressing image data by cell



Figure 2-2-3 Character Compression Dialogue Box

1. Select “character compression”.
2. Open the TIM character compression dialogue box (see Figure 2-2-3). Select the pre-compression TIM bank, the post-compression TIM bank, the post-compression MAP bank, character size, and line end character segmentation turn-off button.

Remarks

- The sprite editor can erase the duplicate characters on a TIM unit (rectangular area of the specified size), and arrange the remaining characters downward. Also, it catalogs compressed images in a TIM bank into another bank. Further, the cell corresponding to a compressed image is cataloged into the cell display window, with original component map data cataloged into the map display window.
- Post-compression TIM bank data, post-compression MAP bank data, and cell data are overwritten.
- Selecting the line end character segmentation turn-off button provides compression without using the area around the compressed TIM bank for four vertical and horizontal characters.
- Compression may take about two minutes.

3 Color Count Menu

The set number of colors is reflected in all window banks. For using the cell display window, the map display window or the animation display window for operation, the set number of colors must not be changed. Changing the number of colors during editing may destroy the past contents of operation.

3.1 256 Colors - Making 256 colors available

1. Select “256 colors”.

3.2 16 Colors - Making 16 colors available

1. Select “16 colors”.

4 Setting Menu

4.1 Artist Board Screen Mode - Setting resolution for video monitor

1. Select “artist board screen mode”.
2. Select the desired resolution in the pull-down menu.

Remarks

- Should the area used by TIM data be part of the display area, that screen mode cannot be used. The display area has the size indicated by the screen mode beginning with (0, 0) on the V-RAM. For the interlace screen mode, however, the size in the y axis direction is 480. For example, with (320, 0) specified in coordinates for a TIM bank, the available screen modes are only 256 x 240, 320 x 240, 256 x 480, and 320 x 480. The other resolution cannot be used as the area used by the TIM bank is part of the display area.

4.2 Items Transferred to Artist Board - Setting contents displayed on video monitor

1. Select “items transferred to artist board”.
2. Select the desired window contents in the pull-down menu.

Sprite: Displays the contents of the whole TIM display window.

Map: Displays the contents of the map display window.

Animation: Displays animations.

None: Displays none on the video monitor. (In this mode, data can be edited in high speed.)

Short Cut: “Sprite button”, “map button”, “animation button”, and “non-button” as screen display tools

4.3 Sprite Display X Offset

- Moving image displayed on video monitor to left

If this menu has been selected, the TIM image to the right of the currently displayed image is covered on the video monitor.

Remarks

- This menu is used when TIM data of 256 x 256 cannot be displayed on the video monitor.

Short Cut: “Right scroll tool” (Ctrl+U) on the tool bar

4.4 Sprite Display Y Offset

- Upward moving image displayed on video monitor

If this menu has been selected, the TIM image below the currently displayed image is covered on the video monitor.

Remarks

- This menu is used when TIM data of 256 x 256 cannot be displayed on the video monitor.

Short Cut: "Downward scroll tool" (Ctrl+Y) on the tool bar

4.5 Cell Size - Setting size of cell cut out of image

1. Select "cell size".
2. Select the desired size in the pull-down menu.

Remarks

- The cell size can be selected from 8 x 8, 16 x 16, 24 x 24, 32 x 32, and 64 x 64 pixels.

4.6 Map Size - Setting whole cell or map size



Figure 2-2-4 Map Cell Size Specification Dialogue Box

1. Select “map size”. The map size specification dialogue box (see Figure 2-2-4) is displayed.
2. Enter the desired size and click the “OK” button by the left button.

Remarks

- Up to 256 x 256 cells of map size can be set.
- Sizes of up to 64 x 64 cells can be set.

Short Cut: [Ctrl+M]

4.7 Map Attribute

- Setting attributes and semitransparency information in cell



Figure 2-2-5 Attribute and Semitransparency Setting Dialogue Box

- Setting attribute
 1. Select “attribute tool” on the tool palette.

2. Select “map attribute”. The attribute and semitransparency setting dialogue box (see Figure 2-2-5) is displayed.
 3. Turn on the attribute setting button.
 4. Turn on “attribute supported” for the desired data. When setting an attribute value of more than 255, turn on “16-bit attribute”. When entering and displaying a decimal attribute value, press the decimal number button. For a hexadecimal number, press the hexadecimal number button.
 5. Enter an attribute value.
 6. Click the cell for which the attribute is to be set, by the left button, or drag the setting area by the left button.
 7. Click the close button by the left button during termination.
- Setting semitransparency information
 1. Select “attribute tool” on the tool palette.
 2. Select “map attribute”. The attribute and semitransparency setting window is displayed.
 3. Turn on the semitransparency setting button.
 4. Set the desired semitransparency rate.
 5. On the cell display window, click the cell to be made semitransparent by the left button, or drag the area to be made semitransparent by the left button.
 6. During termination, click the close button by the left button.

Remarks

- With “16-bit attribute” turned on, any attribute values of 0 to 65535 can be set.
- Semitransparency settings are not displayed on the window. Thus, check such settings on the video monitor.

Short Cut: [Ctrl+C]

4.8 Displaying Reduced Cell - Displaying reduced cell window

1. Select “reduced cell display”.

Remarks

- Selecting “reduced cell display” under reduction sets the typical size.

Short Cut: [Ctrl+E]

4.9 Displaying Reduced Map - Displaying reduced map window

1. Select “reduced map display”.

Remarks

- Selecting “reduced map display” under reduction sets the typical size.

Short Cut: [Ctrl+W]

4.10 Setting Animation - Setting animation to be displayed

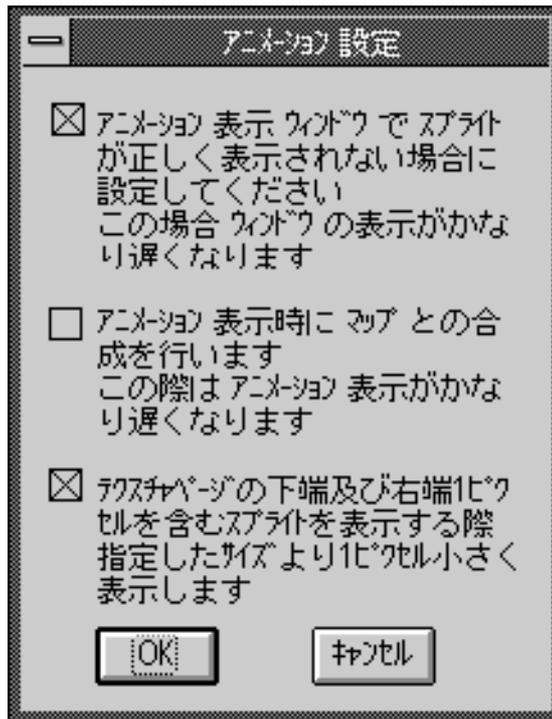


Figure 2-2-6 Animation Setting Dialogue Box

- For some video boards, the sprite cut out may not be displayed on the animation display window. In such a case, turn on the button on the animation setting window.
 1. Select “animation setting”. The animation setting dialogue box (see Figure 2-2-6) is displayed.
 2. Turn on the button on the animation setting dialogue box.
 3. Click the “OK” button by the left button.
- When an animation is displayed on the video monitor and map data is displayed at the background of the sprite, turn on the center button on the animation setting window. However, the processing speed is lowered significantly, with the whole sprite not displayed or some frames not covered.

1. Select “animation setting”. The animation setting window is displayed.
 2. Turn on the center button on the animation setting window.
 3. Click the “OK” button by the left button.
- When displaying a sprite including one pixel at the bottom or right edge in a texture page, turn on the button at the bottom of the animation setting window if the sprite is smaller than the specified size by one pixel. With the button turned off, the sprite is displayed in the specified size, but its center pixel is extended.
1. Select “animation setting”. The animation setting dialogue box is displayed.
 2. Turn on the button at the bottom of the animation setting window.
 3. Click the “OK” button by the left button.

4.11 Setting Snap - Setting snap size for area specification

1. Select “snap setting”.
2. Select the desired snap size in the pull-down menu.
 - 1×1 (Ctrl+1): The area can be specified by pixel.
 - 4×4 (Ctrl+2): The area can be specified by four pixels.
 - 8×8 (Ctrl+3): The area can be specified by eight pixels.
 - 16×16 (Ctrl+4): The area can be specified by 16 pixels.

4.12 Setting Grid Color - Setting grid color



Figure 2-2-7 Grid Color Setting Window

The colors of the main grid and sub-grid can be changed.

1. Select “grid color setting”. The grid color setting dialogue box (see Figure 2-2-7) is displayed.
2. Click “main grid change” or “sub-grid change” by the left button. The color setting dialogue box is displayed.
3. Click the desired color and the “OK” button in the color setting window by the left button.
4. Click the “OK” button in the grid color setting dialogue box by the left button.

4.13 Setting Coordinates for TIM Bank - Setting coordinates for TIM bank

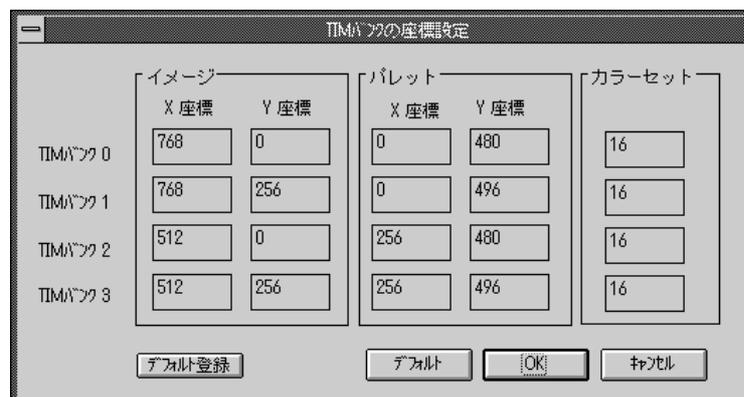


Figure 2-2-8 TIM Bank Coordinate Setting Dialogue Box

1. Select “TIM bank coordinate setting”. The TIM bank coordinate setting dialogue box (see Figure 2-2-8) is displayed.
2. Enter the desired value.
3. Click the “OK” button by the left button.

X and Y coordinates of an image: Coordinates where the image is located on the VRAM

X and Y coordinates of a palette: Coordinates where the palette is located on the VRAM

Color set: Number of color sets used (1 to 16)

Remarks

- Coordinates to be specified are coordinates of the top left edge point of the area to be used.
- For an image, a VRAM area of 64×256 words is used for one bank in the 16-color mode. In the 256-color mode, an area of 128×256 words is used.
- In the 16-color mode, one color set is composed of 16 16-color palettes. In the 256-color mode, one color set is composed of one 256-color palette.
- In the 16-color mode, an area of 16×16 words is used for one color set. In the 256-color mode, an area of 256×1 words is used.
- For more than one color set, the area is used as shown in Figure 2-2-9.

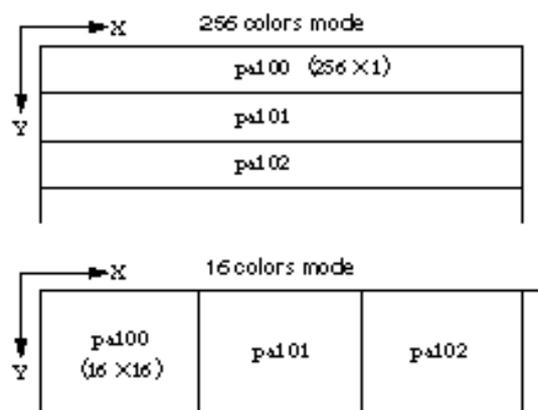


Figure 2-2-9 VRAM Area Used for Color Set

- Up to 16 color sets (including palettes in a TIM file) can be specified
- Any coordinates in the display area cannot be specified.
- A duplicate area cannot be specified.
- As coordinates of an image, only the top left edge point of the VRAM texture page can be specified. (The x coordinate is a multiple of 64, while the y coordinate is 0 or 256.)
- As the x coordinate of a palette, only a multiple of 16 can be specified. In the 16-color mode, only a multiple of 16 can be specified as the Y coordinate as well.
- In the PlayStation unit, the image used as a sprite, texture or BG is handled in units of 256×256 pixels. In the sprite editor as well, the image is handled in units of texture pages each of which is composed of 256×256 pixels. In the sprite editor, a palette covers 256 colors. (In the 16-color mode, 16 palettes are supported.) In the 16-color mode, an area of 16×16 words is used as one color set. In the 256-color mode, an area of 256×1 words is used as one color set. Cell and animation data involves image or palette coordinates on the PlayStation VRAM. Coordinates to be used must be preset. Under the constraint of a texture page for the PlayStation unit, image coordinates can be set only in intervals of 64 words in the X axis direction and of 256 lines in the Y axis direction. Further, palette coordinates can be set only in intervals of 16 words in the X axis direction and of 16 lines in the Y axis direction in the 16-color mode. For more than one color set, an area of $16 \times N$ is used in the X axis direction, where N is the number of color sets, and an area of 16 is used in the Y axis direction. In the 256-color mode, an area of 256 is used in the X axis direction and an area of N in the Y axis direction. For an image and palette, and for display, a duplicate area cannot be used.
- In the TIM bank coordinate setting dialogue box, only a TIM bank image can use two or more color sets as a sprite for a cell and animation. Selecting one color in the desired color set as the current rendering color and, then, cataloging a cell or sprite cause the cell or sprite to look into the color set.

Short Cut: [Ctrl+T]

5 Display Menu



5.1 Power - Setting power for displaying paint window

Figure 2-2-10 Display Power Setting Dialogue Box

The rectangular area on the whole TIM display window is displayed as the extended paint window. The power of extension can be set at 2 to 20.

1. Select “power”. The display power setting dialogue box (see Figure 2-2-10) is displayed.
2. Specify the desired power, and click the “OK” button by the left mouse button.

Remarks

- Turning on “whole TIM display x 2” double extends the whole TIM display window.

Short Cut: “Power changing tool” (Ctrl+R) on the tool bar



5.2 Bank - Selecting bank

Figure 2-2-11 Bank Setting Dialogue Box

The sprite editor can concurrently invoke up to four TIM files and four BGD files for operation. When invoking two or more files, select an appropriate bank for the files.

1. Select “bank”. The bank setting dialogue box (see Figure 2-2-11) is displayed.
2. Turn on the button for the desired bank, and click the “OK” button by the left mouse button.

TIM BANK	TIM file bank selection
0	Selects bank 0.
1	Selects bank 1.
2	Selects bank 2.
3	Selects bank 3.

MAP BANK	BGD file bank selection
0	Selects bank 0.
1	Selects bank 1.
2	Selects bank 2.
3	Selects bank 3.

Transfer MAP BANK	Setting of contents displayed on video monitor
0	Displays the BGD file for bank 0.
1	Displays the BGD file for bank 1.
2	Displays the BGD file for bank 2.
3	Displays the BGD file for bank 3.

Remarks

- Selecting “map” in setting menu “items transferred to artist board” allows the display on the video monitor of the contents of the bank where “transfer MAP BANK” is turned on. Turning on two or more banks leads to the superposed display of contents stored in the banks. For example, turning on banks 0 and 1 displays the contents of the BGD file for bank 0 superposed on the BGD file for bank 1. (The BGD file for the bank with a smaller bank number is displayed nearer yourself.)



- The requirement for invoking two or more files after bank selection is that they must be assigned the same number of colors set.

Short Cut: "Bank selection tool" (Ctrl+B) on the tool bar

5.3 Grid - Displaying grid or no grid

1. Select “grid”.
2. The grid is displayed. With the grid displayed, the display is suppressed.

Short Cut: “Grid tool” (Ctrl+G) on the tool bar

5.4 Reloading - Re-rendering with video monitor out of order

1. Select “reload”.

Short Cut: [Ctrl+P]

6 Window Menu

6.1 Arranging Icons - Arranging iconic windows

1. Select “arranging icons”.

6.2 Whole TIM Display - Activating whole TIM display window

1. Select “whole TIM display”.
2. With the window made to be iconic, it is opened and activated.



CHAPTER 3

TOOL BAR

This chapter explains the functions of the buttons on the tool bar.

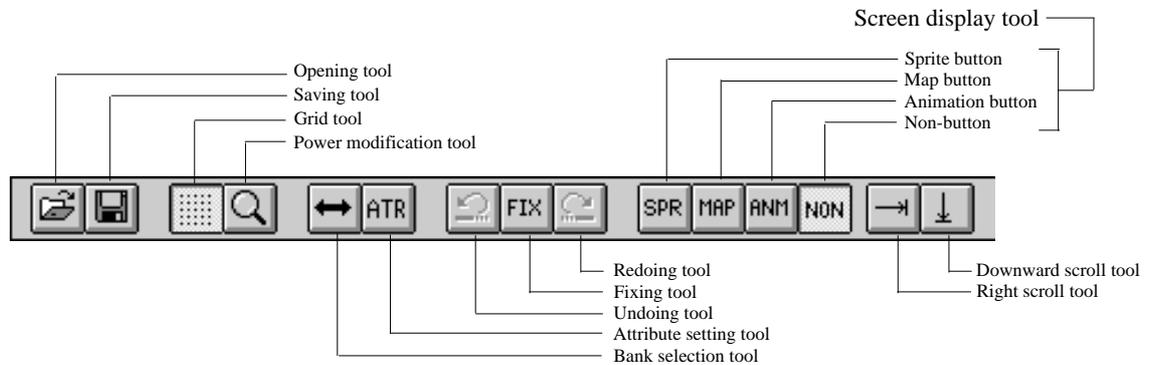


Figure 2-3-1 Tool Bar

Clicking the desired tool by the left mouse button provides the same effect as the menu item selected.

1 Opening Tool – Loading saved file

1. Click “opening tool” by the left button.
2. Select the directory where the file is saved, and a file name.
3. Click the “OK” button by the left mouse button.

Related command: “Opening file” in the file menu

2 Saving Tool – Saving current contents of opened file

1. Click “saving tool” by the left mouse button.
2. Specify the directory where the file is to be saved, and enter a file name.
3. Click the “OK” button by the left mouse button.

Related command: “Saving under name” in the file menu

3 Grid Tool – Displaying grid or no grid

1. Click “grid tool” by the left mouse button.
2. The grid is displayed. The displayed grid is hidden.

Related command: “Grid” in the display menu

4 Power Modification Tool

– Setting power of displaying paint window

The extended rectangular area on the whole TIM display window is displayed. The power of extension can be set at 3 to 20. Turning on the “whole TIM display x 2” doubles the whole TIM display window.

1. Click “power modification tool” by the left mouse button. The display power setting window is displayed.
2. Specify the desired power, and click the “OK” button by the left mouse button.

Related command: “Power” in the display menu

5 Bank selection tool – Selecting bank

1. Click “bank selection tool” by the left mouse button. The bank setting window is displayed.
2. Turn on the button for the desired bank, and click the “OK” button by the left mouse button. The bank is selected.

Related command: “Bank” in the display menu

6 Attribute Setting Tool – Setting attribute and semitransparency information in cell

- Setting attribute

1. Select “attribute tool” on the tool palette.
2. Select “map attribute”. The attribute and semitransparency setting window is displayed.
3. Turn on the attribute setting button.
4. Turn on “attribute supported” for the desired data. Setting an attribute value beyond 255 requires that “16-bit attribute” be turned on. When entering or displaying a decimal attribute value, press the decimal number button. For a hexadecimal number, press the hexadecimal number button.
5. Enter an attribute value.
6. Click the cell where the attribute is to be set, by the left mouse button, or drag the setting are by the left button.
7. For termination, click the close button by the left mouse button.

- Setting semitransparency information

1. Select “attribute tool” on the tool palette.
2. Select “map attribute”. The attribute and semitransparency setting window is displayed.
3. Turn on the semitransparency setting button.
4. Specify the desired semitransparency rate.
5. Click the cell to be made semitransparent on the cell display window by the left mouse button, or drag the appropriate area by the left button.
6. For termination, click the close button by the left mouse button.

7 Undoing Tool – Canceling last tool operation

1. Click “undoing tool” by the left mouse button.

Remarks

- The status immediately preceding the first operation by the tool on the currently selected tool palette is set up.
- Only one state is saved in the undo buffer. The status immediately preceding the first operation during new tool selection on the tool palette is saved.

Related command: “Undo” in the editing menu

8 Fixing Tool – Setting up status after next undoing

1. Click “fixing tool” by the left mouse button. The contents of the undo buffer are updated.

Remarks

- The default is such that the sprite editor saves the status immediately preceding the first operation after tool selection on the tool palette into the undo buffer. Thus, executing undo after tool selection and operation sets up status during the tool selection. Pressing the FIX button on the tool bar causes the current status to be saved in the undo buffer. Use the FIX button if needed.

Related command: “Fix” in the editing menu

9 Redoing Tool – Setting up status before undoing

1. Immediately after having executed “undo”, click “redoing tool” by the left mouse button.
2. The status before executing “undo” is set up.

Related command: “Redo” in the editing menu

10 Screen Display Tool – Setting contents to be displayed on video monitor

- Sprite button

Displays the contents of the whole TIM display window on the video monitor.

Related command: “Sprite” for “items transferred to artist board” in the setting menu

- Map button

Displays the contents of the map display window on the video monitor.

Related command: “Map” for “items transferred to artist board” in the setting menu

- Animation button

Displays an animation on the video monitor.

Related command: “Animation” for “items transferred to artist board” in the setting menu

- Non-button

Displays none on the video monitor.

Related command: “None” for “items transferred to artist board” in the setting menu

11 **Right Scroll Tool** – Moving image displayed on video monitor to left

Related command: “Sprite display X offset” in the setting menu

12 **Downward Scroll Tool** – Upward moving image displayed on video monitor

Related command: “Sprite display Y offset” in the setting menu

CHAPTER 4

TOOL PALETTE

This chapter explains the functions supported by the buttons on the tool palette.

The tool palette is composed of a line-up of 19 buttons as shown below. One of them is always selected. Some tool functions are changed and invalidated depending on the type of a window subjected to operation.

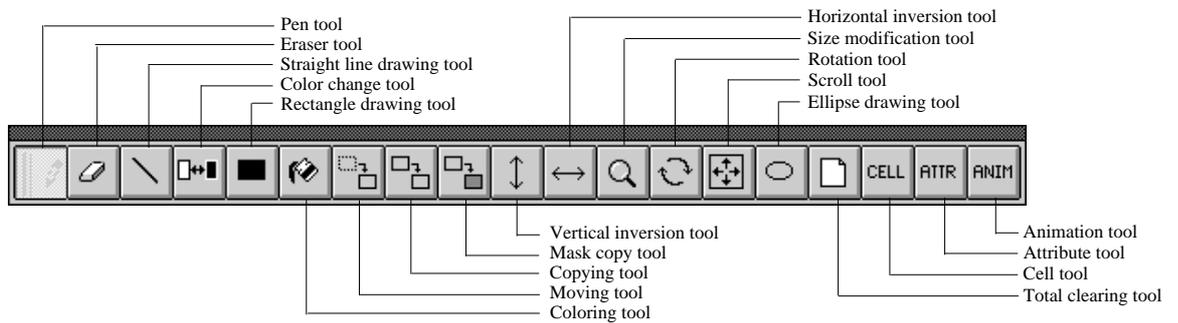


Figure 2-4-1 Tool Palette

1 Pen tool – Drawing curves

Whole TIM display window

Specify the area in the paint window for extended display by clicking the mouse left button.

Paint window

Specify the pen size with the rendering color by clicking the left mouse button.

Dragging by the left mouse button leads to the drawing of a curve in the rendering color according to mouse movement. Dragging with the Caps Lock button on the keyboard turned on allows a dashed line to be drawn.

Clicking the right mouse button leads to the adoption of the pixel color pointed to by the mouse cursor.

Cell display window

Clicking the left mouse button allows the selection of cells to be located on a map.

Dragging by the left mouse button allows the selection of the area of cells to be located on a map.

Map display window

Clicking the left mouse button allows the selected cells to be mapped.

Remarks

- Clicking the right button on the palette display window with a cell selected there causes the cell to look into the palette clicked by the right mouse button.

2 Eraser Tool – Erasing image

Paint window

Clicking the left mouse button allows the pen size to be dotted in the background color.

Dragging by the left mouse button allows a curve to be drawn in the background color according to mouse movement.

3 Straight Line Drawing Tool

– Drawing straight lines

Paint window

Dragging by the left mouse button allows a straight line to be drawn in the rendering color between the start and end points of the dragging.

4 Color Change Tool – Changing colors

Paint window

1. Replacing rendering color (A) in the specified area with rendering color (B)
 - (a) Specify the area whose color is to be changed by left dragging. The default is that rendering color (A) of the whole image in the current TIM bank is changed. Clicking the right mouse button in the paint window after area specification enables the specification to be canceled.
 - (b) Click the right mouse button on the palette display window to specify rendering color (A) to be changed.
 - (c) Click the left mouse button on the palette display window to specify new rendering color (B).
2. Replacing rendering color (A) with rendering color (B)
 - (a) Specify rendering color (A) to be replaced. The following two methods can be used to specify a color.
 - Click the desired color by the left mouse button on the palette display window.
 - Click the desired pixel on the paint window by the right mouse button.
 - (b) With the shift (or Ctrl) key pressed, specify new rendering color (B). Specifying (B) with the shift key pressed causes the palette index in the TIM image as well to be swapped. Only a row of palettes on the palette display window is changed, with the image on the paint window not modified. If (B) has been specified with the Ctrl key pressed, the palette index in the TIM image is not swapped. Thus, a row of palettes on the palette display window is changed, as well as image appearance on the paint window is modified.

 **Remarks**

- Only two colors in the same palette can be replaced with each other.
3. Replacing 16-color palette (A) with (B).
 - (a) Specify one color in palette (A) to be replaced.
 - (b) With the shift and Ctrl key pressed, specify one color in palette (B) to be substituted.

 **Cell display window**

Changing the order of cell data

1. Click cell (A) to be changed by the left mouse button.
2. Click cell (B) to be changed by the left mouse button.

 **Remarks**

- In the corresponding map data as well, cell information is changed, with the appearance of the map data not modified.

5 Rectangle Drawing Tool

– Drawing rectangle with rendering color

 **Paint window**

Dragging by the left mouse button allows the drawing of the rectangle where the start and end points of the dragging are the end points of the diagonal, with its inner area painted by the rendering color.

6 Coloring Tool – Coloring area defined by lines with rendering color

Paint window

Clicking the pixel to be painted by the left mouse button changes the same color pixel adjacent to it to the rendering color.

Remarks

- The pixel, out of the area defined by lines, having the same color as the specified pixel is also painted.

7 Moving Tool – Moving images

Paint window

1. Specify an area to be moved by left dragging.
2. With the rectangular frame located at the position to which the image is to be moved, click the left mouse button.

Whole TIM display window

1. Specify an area to be moved by left dragging.
2. With the rectangular frame located at the position to which the image is to be moved, click the left mouse button.

Remarks

- Area specification can be canceled by clicking the right button. But the contents of the area are not reset.

8 Copying Tool – Copying images

Paint window

1. Specify an area to be copied by left dragging.
2. With the rectangular frame located at the position to which the image is to be moved, click the left mouse button.

Whole TIM display window

1. Specify an area to be copied by left dragging.
2. With the rectangular frame located at the position to which the image is to be moved, click the left mouse button.

Palette display window

1. Specify an area to be copied by left dragging.
2. With the rectangular frame located at the position to which the image is to be moved, click the left mouse button.

Cell display window

1. Click the left mouse button to select a cell to be copied, or specify an area to be copied by left dragging.
2. Click the left mouse button at the position to which the image is to be copied.

Map display window

1. Click the left mouse button to select a cell to be copied, or specify an area to be copied by left dragging.
2. Click the left mouse button at the position to which the image is to be copied.

Remarks

- Area specification can be canceled by clicking the right mouse button.

9 Mask Copy Tool – Mask-copying images

Paint window

1. Specify a color to be masked.
2. Specify an area to be mask-copied by left dragging.
3. With the shift key pressed, locate the rectangular frame at the position where the image is to be mask-copied and click the left mouse button. Clicking the left mouse button without pressing the shift key causes the background color for palette number 0 to be masked.

Remarks

- Area specification can be canceled by clicking the right mouse button.

10 Vertical Inversion Tool – Vertical image inversion

Paint window

Dragging by the left mouse button allows the specification of an area to be inverted vertically.

Cell display window

Clicking the left mouse button enables the specification of a cell to be inverted vertically.

Dragging by the left mouse button enables the specification of an area to be inverted vertically.

11 Horizontal Inversion Tool

– Horizontal image inversion

Paint window

Dragging by the left mouse button allows the specification of an area to be inverted horizontally.

Cell display window

Clicking the left mouse button enables the specification of a cell to be inverted horizontally.

Dragging by the left mouse button enables the specification of an area to be inverted horizontally.

12 Size Modification Tool

– Extending/reducing and copying image

Paint window

1. Specify an area to be extended/reduced by dragging by the left mouse button.
2. Locate the cursor at the position where the image is to be copied, and set the desired size by dragging by the left mouse button.

Remarks

- Area specification can be canceled by clicking the right mouse button.

13 Rotation Tool – Rotating image

Paint window

1. Specify an area to be rotated by dragging by the left mouse button.
2. Use the arrow button on the scroll bar to rotate the rectangular frame.
Upper direction arrow or right arrow: Rotates the rectangular frame CCW.
Lower direction arrow or left arrow: Rotates the rectangular frame CW.
3. Click any position in the paint window by the left mouse button.

Remarks

- The rotated image within the rectangular frame before the rotation is rendered. The image out of the rectangular frame is not rendered.
- Area specification can be canceled by clicking the right mouse button.

14 Scroll Tool – Making image scroll

Paint window

1. Specify an area to be made to scroll by dragging by the left mouse button.
2. Use the arrow button on the scroll bar to make the image scroll to the desired position.
Left arrow: Makes the image scroll to the left in the area.
Right arrow: Makes the image scroll to the right in the area.
Upper direction arrow: Makes the image scroll upward in the area.
Lower direction arrow: Makes the image scroll downward in the area.

 **Remarks**

- Area specification can be canceled by clicking the right mouse button.
- The scrolling image out of the rectangular frame is displayed from the opposite side.
- With the Caps Lock key on the keyboard pressed, the scrolling image out of the rectangular frame is not displayed from the opposite side.

15 Ellipse Drawing Tool

– Drawing ellipses and circles

 **Paint window**

Drag the center of an ellipse or circle toward the outside by the left mouse button.

 **Remarks**

- The flatness rate of an ellipse is displayed at the center of the status bar.

16 Total Clearing Tool – Initializing data

Paint window

Clicking the left mouse button enables window contents to be initialized.

Whole TIM display window

Clicking the left mouse button enables window contents to be initialized.

Palette display window

Clicking the left mouse button enables window contents to be initialized.

Cell display window

Clicking the left mouse button enables window contents to be initialized.

Map display window

Clicking the left mouse button enables window contents to be initialized.

Animation display window

Clicking the left mouse button enables window contents to be initialized.

17 Cell Tool – Cutting out cell data

Whole TIM display window

Dragging by the left mouse button allows the selection of a cell area to be cut out of an image.

 **Cell display window**

Clicking the left mouse button allows the selected image to be cataloged as a cell.

Clicking the right mouse button allows the indication of the area corresponding to the specified cell on the whole TIM display window. The following information is displayed at the center of the status bar.

PALETTE: Palette number

TIMBANK: Bank number (x and y coordinates)

 **Map display window**

Clicking the right mouse button allows the indication of the cell corresponding to the specified cell on the cell display window, and of the area corresponding to the cell on the whole TIM display window. The following information is displayed at the center of the status bar.

CellNo.: Cell number

(x and y coordinates (X, Y) on the cell display window)

18 Attribute Tool – Setting attributes

 **Cell display window**

Clicking the left mouse button allows the setting in the specified cell of the value specified by the attribute and semitransparency setting dialogue box.

Dragging by the left mouse button allows the setting in the specified area of the value specified by the attribute and semitransparency setting dialogue box.

 **Map display window**

Clicking the left mouse button allows the setting in the specified cell of the value specified by the attribute and semitransparency setting dialogue box.

Dragging by the left mouse button allows the setting in the specified area of the value specified by the attribute and semitransparency setting dialogue box.

19 Animation Tool – Cutting out animation data

 **Whole TIM display window**

Dragging by the left mouse button allows the specification of an area of an image cataloged as animation data.

 **Palette display window**

Clicking the right mouse button causes the sprite selected on the animation display window to look into the specified palette.

 **Animation display window**

Clicking the left mouse button allows the specified area to be cataloged as animation data.

Clicking the right mouse button allows the indication of the area corresponding to the specified sprite on the whole TIM display window.

CHAPTER 5

WINDOW

This chapter explains details of the windows as components of the sprite editor screen.

1 Whole TIM Display Window



Figure 2-5-1 Whole TOM Display Window

The whole image for one bank is displayed. The extended rectangular area in the window is displayed in the paint window. Clicking the left mouse button enables the rectangular area to be moved to the desired position. The rectangular area can be double extended and displayed by selecting “power” in the display menu, opening the display power setting dialogue box, and turning of the “whole TIM display x 2” button. Selecting “cell tool” or “animation tool” on the tool palette allows the grid to be displayed in intervals of eight pixels, with images cut out along the grid.

2 Cell Display Window

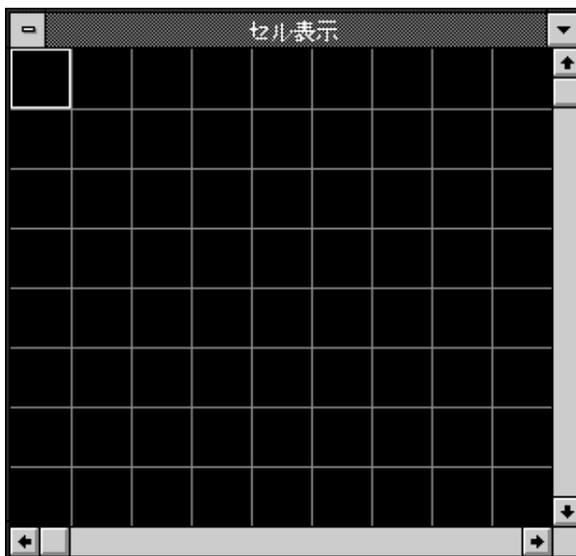


Figure 2-5-2 Cell Display Window

The cell cut out of an image in the whole TIM display window is displayed. If the window has been opened first or if “total clearing tool” on the tool palette has been used, the top left cell data in the TIM file for TIM bank 0 is initialized. Selecting “reduced cell display” in the “setting” menu causes cell data to be reduced and displayed in the cell display window. With the mouse cursor located on the cell display window, coordinates are displayed on the status bar. Clicking the right mouse button causes the following information on the cell to be displayed on the status bar.

PALETTE: Palette number

TIMBANK: TIM bank number (x and y coordinates)

Clicking the cell by the right mouse button with the cell tool on the tool palette selected allows the indication of the area corresponding to the cell on the whole TIM display window.

With the window activated, the following short cut keys can be used.

[] [] [] [] : Makes the cell display window scroll.

3 Map Display Window



Figure 2-5-3 Map Display Window

The map where cells are located is displayed. If the window has been opened first or if “total clearing tool” on the tool palette has been used, the cell for cell data of number 0 is initialized. Selecting “reduced map display” in the “setting” menu causes map data to be reduced and displayed in the map display window. With the cursor located on the map display window, coordinates are displayed on the status bar. Clicking the right mouse button displays the following information on the cell on the status bar.

CellNo.: Cell number (x and y coordinates (X, Y) on the cell display window)

Clicking the right mouse button at a cell with the cell tool on the tool palette selected displays the area corresponding to the cell on the whole TIM display window, and the corresponding cell on the cell display window.

With the window activated, the following short cut keys can be used.

[⌘] [⌘] [⌘] [⌘] : Makes the map display window scroll.

4 Palette Display Window

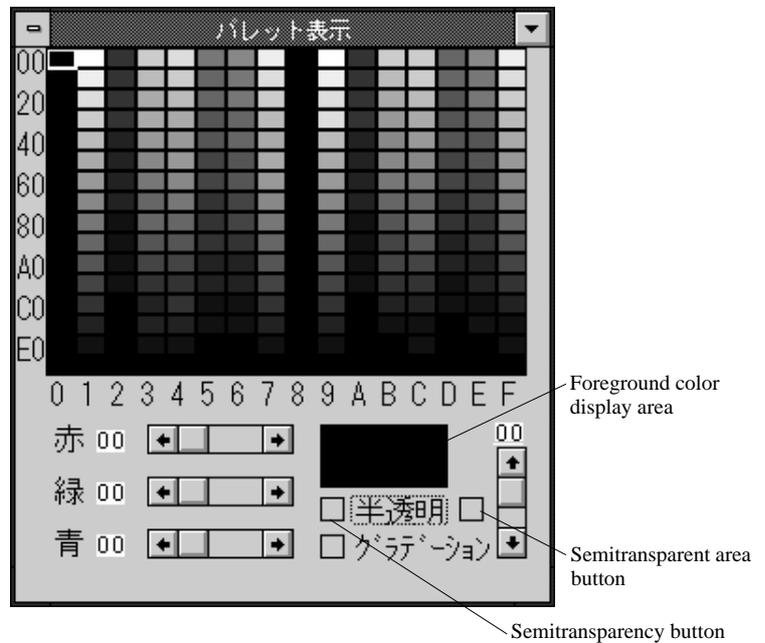


Figure 2-5-4 Palette Display Window

Color palettes are edited. In the 256-color mode, one palette is displayed in the whole window. In the 16-color mode, one row displays one palette, with the whole window displaying 16 palettes.

- **Red, green and blue bars**

These bars can change the red, green and blue components of the rendering color currently selected.

- **Foreground color display area**

Displays the currently selected rendering color.

- **Semitransparency button**

Turning on this button makes the current rendering color semitransparent.

- **Semitransparent area button**

With this button turned on, semitransparency information on palettes in the area selected on the palette display window is made to be the same as current information provided by the semitransparency button.

- **Gradation button**

With this button turned on, gradation is created between the selected color and the current rendering color.

 **Remarks**

The bottom color on the palette display window and the right-edge four colors on the second bottom row cannot be used. For data which uses those colors, correct color information cannot be displayed on the Windows screen.

- **Position of background color**

256-color mode: The top left color on the palette is adopted as the background color.

16-color mode: The leftmost color on the palette is adopted as the background color.

- **Semitransparent and transparent colors**

The semitransparency button on the palette display window turned on and off corresponds to STP bit values of the TIM data CLUT entry of 1 and 0, respectively.

Semitransparency: off, all RGB: 00 Transparent

Semitransparency; off, any of RGB: other than 00 Opaque

Semitransparency: on Semitransparent

- If the current rendering color and the selected color are not located at the same line or row on the palette display window, no gradation is created.

5 Animation Display Window

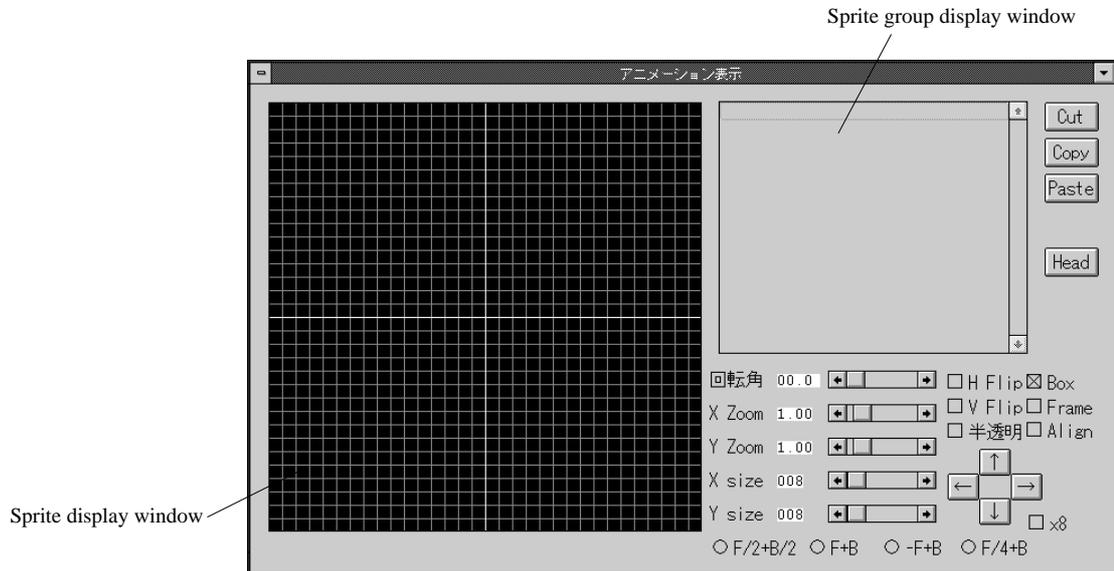


Figure 2-5-5 Animation Display Window

Sprite groups are cataloged and edited. When editing the cataloged sprite, select and specify a value on the sprite group display window. With the shift or Ctrl key pressed, more than one sprite can be selected. Up to 3072 sprites and up to 256 sprite groups can be created. With the window activated, the following short cut keys can be used.

[8][2][4][6]: Makes the animation display window scroll. (This is applicable only to the numeric keys with NumLock set.)

- **Sprite display window**

The sprite cut out of an image is located.

- **Sprite group display window**

Numeric values on the located sprite are displayed. The following are the contents of numeric values displayed:

SprGpNo (X, Y) W / H <BankNo:PaletaNo>

SprGpNo: Sprite group number

X, Y: Sprite coordinates (The top left edge on the sprite display window is (0, 0).)

W, H: Width and height of sprite

BankNo: TIM bank where the sprite has been cut out

PaletaNo: Sprite palette number

- **Cut button**

Erases the selected sprite to be stored in the buffer.

- **Copy button**

Copies the selected sprite into the buffer.

- **Paste button**

Moves the sprite stored in the buffer to the current cursor position.

- **Head button**

Creates a new sprite group. Select the desired sprite and click the “Head” button by the left mouse button. The sprites following the clicked position are created as a new group.

- **Rotation angle**

Rotates the selected sprite CW. With the scroll bar pointed to, set the desired angle.

- **X Zoom**

Extends/reduces the selected sprite in the X axis direction. With the scroll bar pointed to, set the desired power.

- **Y Zoom**

Extends/reduces the selected sprite in the Y axis direction. With the scroll bar pointed to, set the desired power.

- **X size**

Sets the number of pixels in the selected sprite along the X axis. With the scroll bar pointed to, set the desired size.

- **Y size**

Sets the number of pixels in the selected sprite along the Y axis. With the scroll bar pointed to, set the desired size.

- **Cross cursor button**

Moves the selected sprite by pixel vertically and horizontally.

- **x8 button**

Moves the cross cursor button in units of eight pixels.

- **H Flip button**

Horizontally inverts the selected sprite.

- **V Flip button**

Vertically inverts the selected sprite.

- **Box button**

Displays the selected sprite frame.

- **Semitransparency button**

Semitransparently displays the selected sprite (except for on Windows).

- **Frame button**

Displays no image and only the frame of the selected sprite. With only the frame displayed, the processing speed is enhanced compared with the display of an image.

- **Align button**

Locates sprites cataloged on the sprite display window along the grid (in intervals of eight pixels).

- **F/2+B/2 button**

Sets the semitransparency rates of a sprite and BG at $0.50xF+0.50xB$ (where F is the brightness of the sprite and B is the brightness of BG). Only with the semitransparency button turned on, this button can be selected.

- **F+B button**

Sets the semitransparency rates of a sprite and BG at $1.00xF+1.00xB$. Only with the semitransparency button turned on, this button can be selected.

- **-F+B button**

Sets the semitransparency rates of a sprite and BG at $-1.00xF+1.00xB$. Only with the semitransparency button turned on, this button can be selected.

- **F/4+B button**

Sets the semitransparency rates of a sprite and BG at $0.25 \times F + 1.00 \times B$. Only with the semitransparency button turned on, this button can be selected.

6 Time Table Display Window

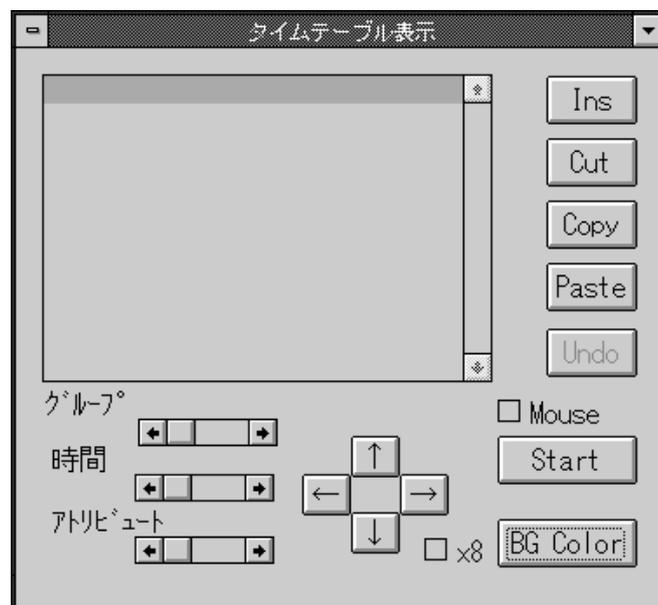


Figure 2-5-6 Time Table Display Window

A time table for animations is edited. When editing the cataloged time table, select and specify a numeric value. With the shift or Ctrl key pressed, more than one numeric value can be selected. With the window activated, the following short cut keys are available.

[8][2][4][6]: Makes the animation display window scroll. (This applies only to the numeric keys with NumLock set.)

- **The following are the contents of numeric values displayed in the window:**

SprGpNo Time (OffsetX, OffsetY)

SprGpNo: Sprite group number

Time: Display time

OffsetX, OffsetY: Amount of the movement of the origin (top left edge point) for the animation sprite display window from the origin on the display area

- **Ins button**

Catalogs a new sprite group into the cursor line.

- **Cut button**

Erases the selected sprite group to be stored into the buffer.

- **Copy button**

Copies the selected sprite group into the buffer.

- **Paste button**

Copies the sprite group stored in the buffer.

- **Undo button**

Cancels time table modification by the “Cut” or “Paste” button.

- **Mouse button**

Moves a sprite along according to mouse movement to display animations.

- **Start button**

Starts animation operation. Clicking the right mouse button terminates animation operation.

- **BG Color button**

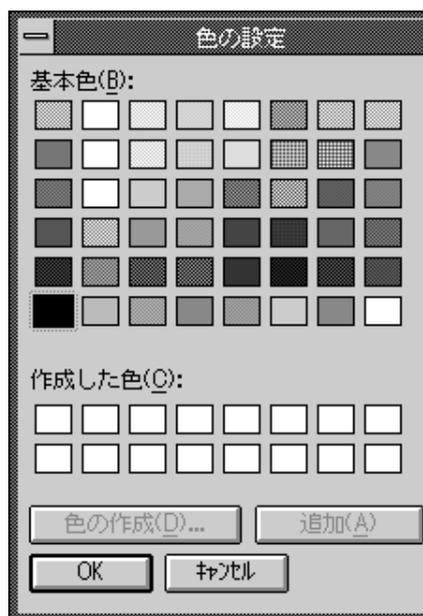


Figure 2-5-7 Color Setting Dialogue Box

Opens the color setting dialogue box (see Figure 2-5-7) to set the BG color of the video monitor.

- **Group**

Sets a sprite group number.

- **Time**

Sets the time for displaying a sprite group in units of 1/60 seconds.

- **Attribute**

Allows an attribute value to be set at that timing. The attribute value ranges from 0 to 15.

- **Cross cursor button**

Moves the coordinate axes for the selected sprite group by pixel.

- **x8 button**

Moves the cross cursor button in units of eight pixels.

7 Paint Window

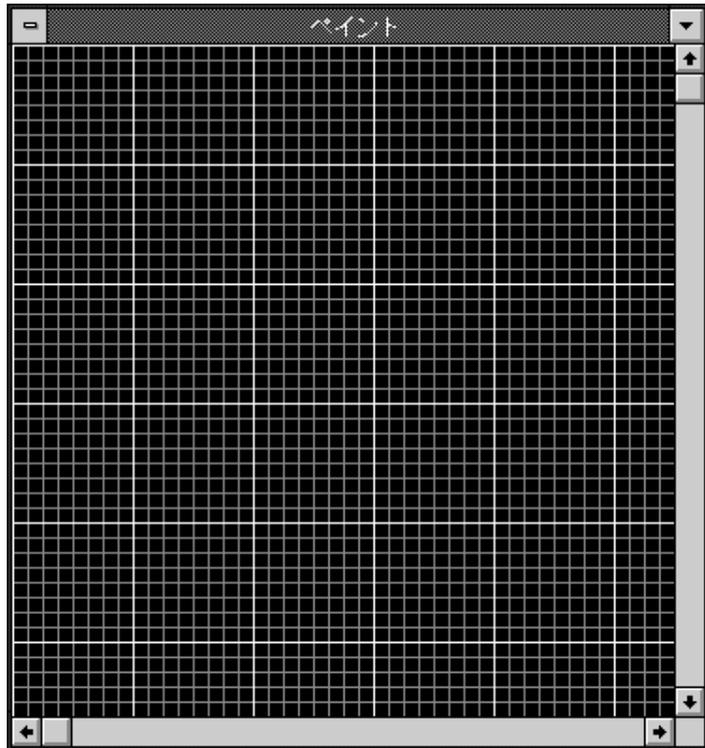


Figure 2-5-9 Paint Window

A tool on the tool palette is used to edit images. The sub-grid (power of five or more) is displayed by pixel, and the main grid is displayed by eight pixels. With the window activated, the following short cut keys are available.

[][][]: Makes the paint window scroll.

[1][2][3]: Sets the pen size of the rendering tool at 1, 2 and 3 pixels. (This is applicable only to numeric keys with NumLock set.)

8 Window Selection

The following short cut keys are supported for active window selection.

- [F5]: Sets four iconic windows for paint display window opening, cell display, map display, animation display and time table display. (Paint mode)
- [F6]: Sets three iconic windows for cell display, map display window opening, paint, animation display and time table display. (Map mode)
- [F7]: Sets three iconic windows for animation display, time table display window opening, paint, cell display and map display. (Animation mode)
- [Shift+F1]: Activates the whole TIM display window.
- [Shift+F2]: Activates the paint window.
- [Shift+F3]: Activates the cell display window.
- [Shift+F4]: Activates the map display window.
- [Shift+F5]: Activates the palette display window.
- [Shift+F6]: Activates the animation display window.
- [Shift+F7]: Activates the time table display window.

CHAPTER 6

MISCELLANEOUS

This chapter explains notes on operation and short cut by the keyboard.

1 List of Short Cut Keys

[F1]:	Sets the TIM bank at address 0.
[F2]:	Sets the TIM bank at address 1.
[F3]:	Sets the TIM bank at address 2.
[F4]:	Sets the TIM bank at address 3.
[F5]:	Sets four iconic windows for paint display window opening, cell display, map display, animation display and time table display.
[F6]:	Sets three iconic windows for cell display, map display window opening, paint, animation display and time table display.
[F7]:	Sets three iconic windows for animation display, time table display window opening, paint, cell display and map display.
[F8]:	Selects the display power for whole TIM display window.
[F9]:	Increases the display power for the paint window.
[Shift+F1]:	Activates the whole TIM display window.
[Shift+F2]:	Activates the paint window.
[Shift+F3]:	Activates the cell display window.
[Shift+F4]:	Activates the map display window.
[Shift+F5]:	Activates the palette display window.
[Shift+F6]:	Activates the animation display window.
[Shift+F7]:	Activates the time table display window.
[Shift+F9]:	Lowers the display power for the paint window.
[PageUp]:	Increases the color set number
[PageDown]:	Lowers the color set number.
[Ctrl+1]:	Sets the snap at 1 x 1.
[Ctrl+2]:	Sets the snap at 4 x 4.
[Ctrl+3]:	Sets the snap at 8 x 8.
[Ctrl+4]:	Sets the snap at 16 x 16.
[Ctrl+A]:	Redo
[Ctrl+B]:	Opens the “bank setting” dialogue box.
[Ctrl+C]:	Opens the “attribute setting” dialogue box.
[Ctrl+E]:	Selects the display power for the cell display window.
[Ctrl+F]:	Fix
[Ctrl+G]:	Selects grid display or grid display suppression.
[Ctrl+I]:	Opens the “grid color setting” dialogue box.
[Ctrl+J]:	Displays the contents of the whole TIM display window on the video monitor.
[Ctrl+K]:	Displays the contents of the map display window on the video monitor.
[Ctrl+L]:	Displays an animation on the video monitor.
[Ctrl+M]:	Opens the “map cell size setting” window.
[Ctrl+N]:	Displays none on the video monitor.
[Ctrl+O]:	Opens the “file opening” dialogue box.
[Ctrl+P]:	Re-renders the video monitor.

[Ctrl+R]:	Opens the display power dialogue box.
[Ctrl+S]:	Opens the “saving under name” dialogue box.
[Ctrl+T]:	Opens the “TIM bank coordinate setting” dialogue box.
[Ctrl+U]:	Moves the image displayed on the video monitor to the left.
[Ctrl+W]:	Selects the display power for the map display window.
[Ctrl+Y]:	Downward moves the image displayed on the video monitor.
[Ctrl+Z]:	Undo
[Alt+O]:	Opens the “file opening” dialogue box for opening SDF.
[Alt+S]:	Opens the “saving under name” dialogue box for saving SDF.
[Alt+X]:	Terminates the sprite editor.
[1]*:	<ul style="list-style-type: none">• Sets the pen size at one pixel only when the paint window is active.
[2]*:	<ul style="list-style-type: none">• Sets the pen size at two pixels only when the paint window is active.• Functions as the lower direction arrow cross cursor key, only when the animation and time table display windows are active.
[3]*:	<ul style="list-style-type: none">• Sets the pen size at three pixels only when the paint window is active.
[4]*:	<ul style="list-style-type: none">• Functions as the left arrow cross cursor key, only when the animation and time table display windows are active.
[6]*:	<ul style="list-style-type: none">• Functions as the right arrow cross cursor key, only when the animation and time table display windows are active.
[8]*:	<ul style="list-style-type: none">• Functions as the upper direction arrow cross cursor key, only when the animation and time table display windows are active.
[]:	<ul style="list-style-type: none">• Makes the active paint, cell display or map display window scroll.
[]:	<ul style="list-style-type: none">• Makes the active paint, cell display or map display window scroll.
[]:	<ul style="list-style-type: none">• Makes the active paint, cell display or map display window scroll.
[]:	<ul style="list-style-type: none">• Makes the active paint, cell display or map display window scroll.

Note: The key with an asterisk is a numeric key with NumLock set.

2 Notes

Palettes for cell and animation

In the TIM bank coordinate setting dialogue, some TIM bank images can use two or more color sets as sprites for cells and animations. Selecting one color in the desired color set as the current rendering color in the palette display window before cataloging a cell and sprite causes the cell and sprite to look into the color set. The cataloged color set to be looked into can be changed as follows:

- **Cell**

After having selected an area to be changed by the pen tool on the cell window by dragging, click one color in the desired color set on the palette display window by the right mouse button.

- **Animation**

After having selected a sprite to be changed by the animation tool from a list of sprite groups, click one color in the desired color set on the palette display window by the right mouse button.

Display color

The Windows system reserves 20 colors (for displaying the window frame, etc.). Thus, only 236 colors can be displayed at a time. In the 256-color mode as well, the last 20 colors on the palette cannot be displayed correctly. Because one window can use only one palette, cells and sprites cut out of two or more TIM bank images during cell, map or animation display look into the currently active palette. Whether colors are correct can be checked on the TV display. In the 16-color mode, display on the paint window looks into the currently active 16-color palette.

 **Semitransparency display**

The PlayStation unit incurs the following restrictions on semitransparency display.

STP	A/G/B	Sprite semitransparency attribute	Rendering color
OFF	0,0,0	ON/OFF	Transparent
OFF	Other than 0,0,0	ON/OFF	Opaque
ON	All	ON	Semitransparent
ON	All	OFF	Opaque

Table 2-5-1 Relationships between Semitransparency Display and STP Bit

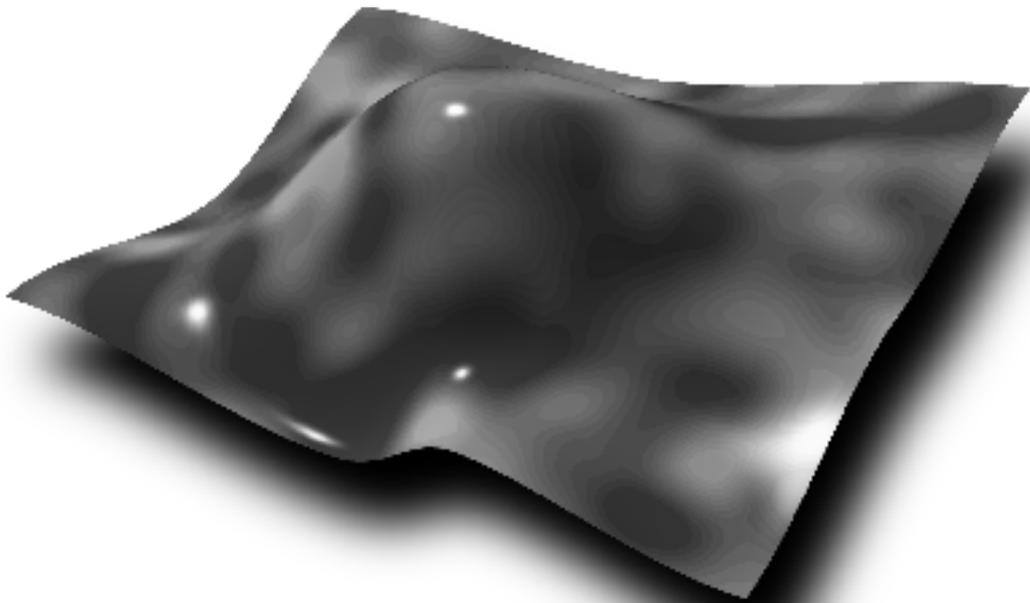
The STP bit is set by turning on and off the semitransparency button on the palette display window. The sprite semitransparency attribute is set at off by selecting the “not supported” button in the attribute and semitransparency setting dialogue box, and at on by selecting any of the other buttons. Animation data is set by turning on and off the semitransparency button in the animation display window.

 **Use of image data**

When polygon rendering is used instead of sprite rendering, the PlayStation unit incurs the following restrictions. During polygon rendering, the line below and to the right of the specified polygon is not drawn. For example, displaying a texture of 16 x 16 requires that a texture of 17 x 17 be pasted on a polygon of 17 x 17. For the texture including the line below or to the right of the texture page, however, the texture larger by one line cannot be specified. This means that a texture of 16 x 16 is pasted onto a polygon of 17 x 17. Thus, the polygon extended by pixel is rendered. For rendering involving reliability of one pixel, therefore, the texture including the right edge and the bottom cannot be used. Further, rotation incurs the same restrictions for the texture including the top and the left edge.



APPENDIX A



CHAPTER 1
INSTALLATION



1 Installation

Install the sprite editor in the hard disk of a personal computer. The sprite editor program and sample data for the tutorial are stored in the (attached) sprite editor setup disk.

1. Insert the setup disk into a disk drive (drive A in the following example).
2. Start up Windows.
3. Select “specification of file name and execution” in the icon menu for the program manager.
4. Enter A:SETUP into the command line box, and click the OK button.
5. Upon the startup of the installation program, the following dialogue box is displayed.

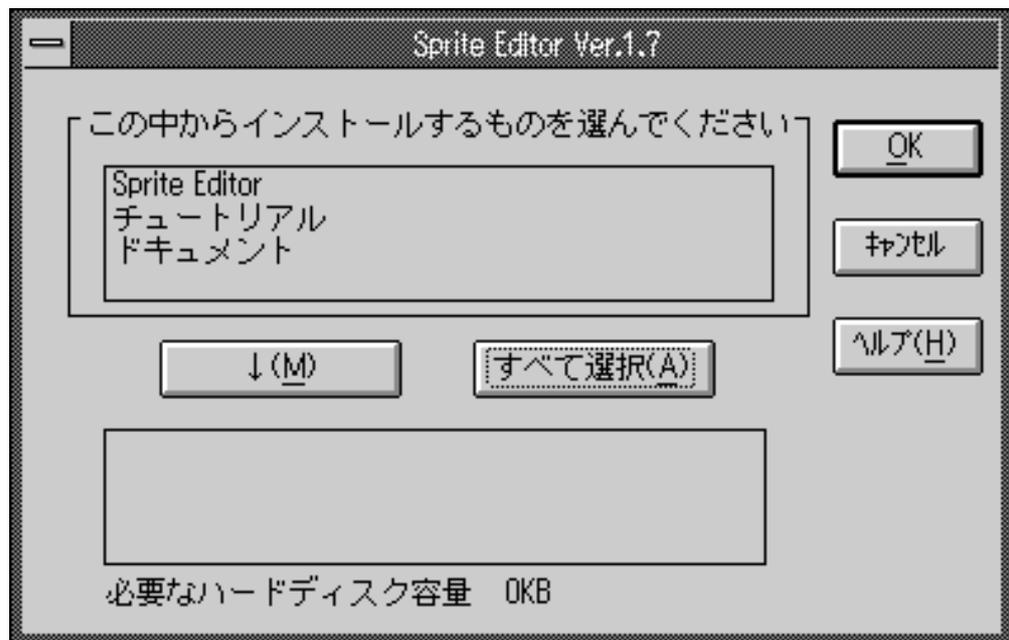


Figure A-1-1 Installation Inspection

6. Select an item to be installed from the list in the top of the dialogue box, and press the downward arrow button. After all the contents to be installed have been cataloged into the list at the bottom of the dialogue box, click the OK button. The following are the contents which can be installed:

Sprite Editor: Executable file for the sprite editor
Tutorial: Sample data for the tutorial
Documents: Instruction manual and format description

The following dialogue box is displayed.



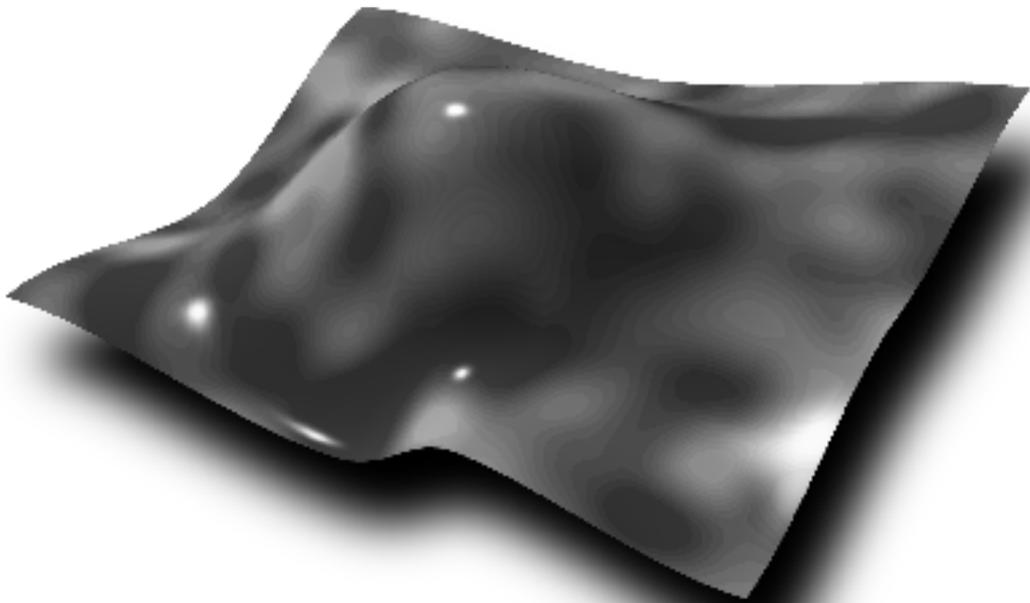
Figure A-1-2 Path Setting

7. Specify the destination directory, and click the OK button.

Now, the sprite editor has been installed. Catalog groups and icons if needed.



APPENDIX B



CHAPTER 1
SPECIFICATIONS OF
IMAGE DATA (TIM FILE)

1 Image Data File

The TIM file covers standard images handled by the PlayStation unit, and can be transferred directly to its VRAM. It can be used commonly as sprite patterns and 3D texture mapping materials.

The following are the image data modes (color counts) handled by the PlayStation unit.

- A. 4bit CLUT
- B. 8bit CLUT
- C. 16bit Direct color
- D. 24bit Direct color

The VRAM supported by the PlayStation unit is based on 16 bits. Thus, only 16- and 24-bit data can be transferred directly to the frame buffer for display. Use as sprite pattern or polygon texture mapping data allows the selection of any of 4-bit, 8-bit and 16-bit modes.

2 Whole File Configuration

The TIM file has the header file at its start and is composed of a few blocks.

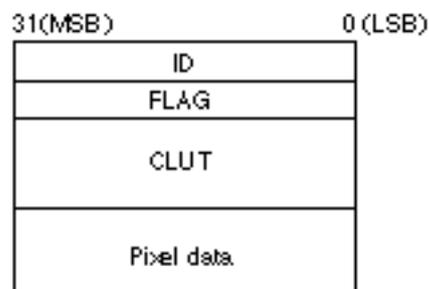


Figure B-1-1 Whole TIM File Configuration

Data is of a 32-bit binary format. Because of LittleEndian, bytes are arranged in ascending order. (See Figure B-1-2.)

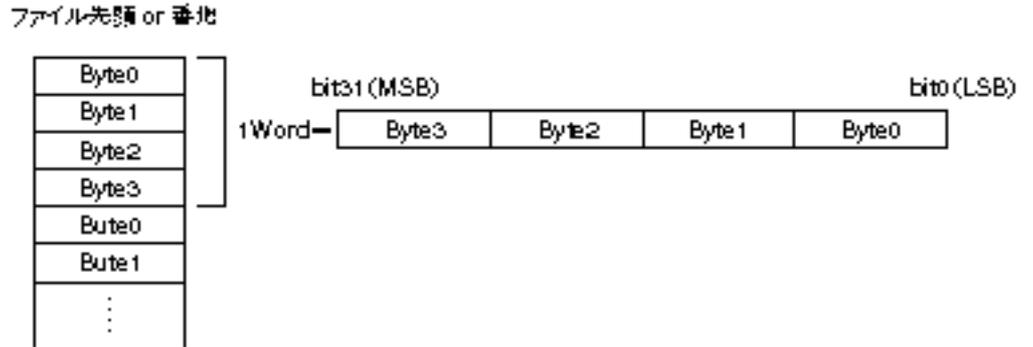


Figure B-1-2 Byte Order in File

2.1 ID

The file ID is composed of one word, having the following bit configuration.

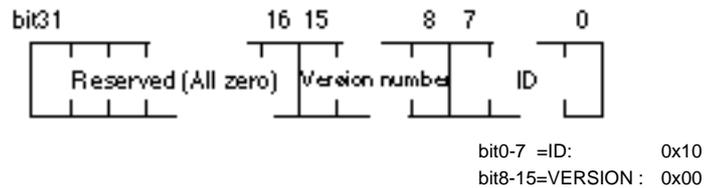


Figure B-1-3 Structure of TIM File Header

2.2 Flag

FLAG is 32-bit length data carrying information on data structure. The following gives the bit configuration.

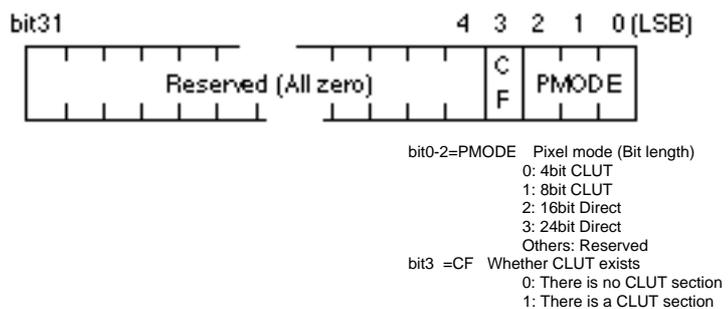


Figure B-1-4 FLAG Bit Configuration

2.3 CLUT Section

Image data put in the 4-bit/8-bit color mode uses CLUT. If the value of the CF flag in the header is '1', the TIM file has CLUT (color palette). The CLUT section begins with byte count information (bnum), followed by inner-VRAM positional information, image size and the main data body.

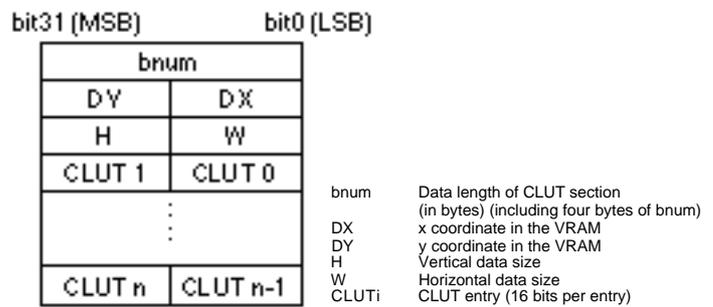


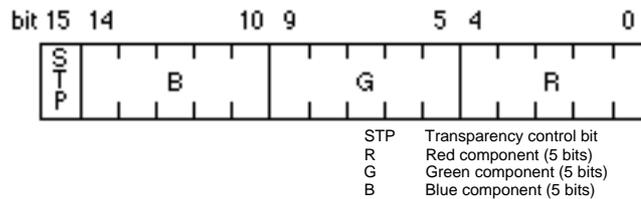
Figure B-1-5 Structure of CLUT Section

In the 4-bit mode, one CLUT set is composed of 16 CLUT entries. In the 8-bit mode, one CLUT set is composed of 256 CLUT entries. As CLUT is located on the VRAM, the PlayStation unit handles a CLUT section in the TIM file as a rectangular VRAM image. This means that one CLUT entry is equivalent to one pixel. Thus, one CLUT set is dealt with as rectangular image data with a height of 1 and a width of 16 in the 4-bit mode, and with a height of 1 and a width of 256 in the 8-bit mode.

One TIM file can contain two or more CLUT sets. The area where two or more CLUT sets are located is handled as a piece of image data and written in the CLUT section.

One CLUT entry expressing one color has the following configuration.

Figure B-1-6 CLUT Entry



The transparency control bit is applicable to sprite and texture data. If all of R, G, B and STP are zero, the color is considered to be transparent. If not, the color is considered to be opaque.

For semitransparency processing, the color is regarded as being semitransparent when the STP value is 1. If not, the color is regarded as being opaque. (Only under all zeros, the color is considered to be transparent.)

STP/R,G,B	Semitransparency processing turned on	Semitransparency processing turned off
0,0,0,0	Transparent	Transparent
0,X,X,X	Opaque	Opaque
1,X,X,X	Semitransparent	Opaque

Table A-1-1 Role of STP Bit

2.4 Pixel Data Section

The pixel data section is the main body of image data. Because the VRAM supported by the PlayStation system is based on the 16-bit configuration, image data is composed of units of 16 bits.

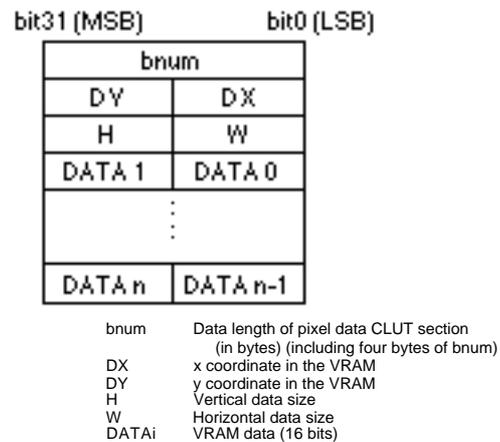
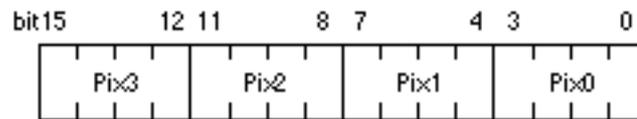


Figure B-1-7 Configuration of Pixel Data Section

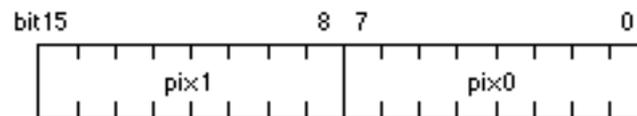
The configuration of a piece of VRAM data (16 bits) depends on the mode. The following gives the configuration in each mode.

(4-bit mode)



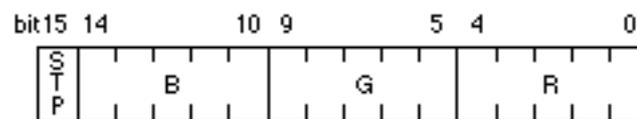
pix0-3 Pixel value (CLUT No.)
 Pixels 0, 1, 2 and 3 are arranged from the left in that order.

(8-bit mode)



pix0-1 Pixel value (CLUT No.)
 Pixels 0 and 1 are arranged from the left in that order.

(16-bit mode)



STP Transparency control bit
 R Red component (5 bits)
 G Green component (5 bits)
 B Blue component (5 bits)

(24-bit mode)

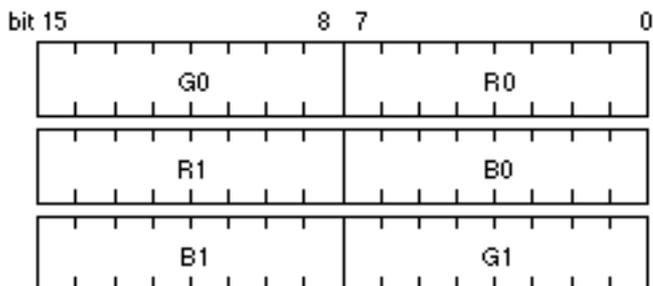


Figure B-1-8 VRAM Data (Pixel Data)

As the VRAM coordinate system is based on 16 bits/pixel, note coordinate/size values in TIM data. In the 4-bit mode, a value of 1/4 in the X axis direction is H and, in the 8-bit mode, a value of 1/2 is H. Thus, in the 4-bit mode, the image size must be a multiple of 4, while, in the 8-bit mode, the image size must be even.

CHAPTER 2

SPECIFICATIONS OF PIXEL IMAGE DATA (PXL FILE)

1 PXL Format

The PXL file saves 8-bit or 4-bit pixel images of index color edited by the PlayStation sprite editor.

2 Whole File Configuration

The PXL file has the file header at the start, and is composed of a few blocks.

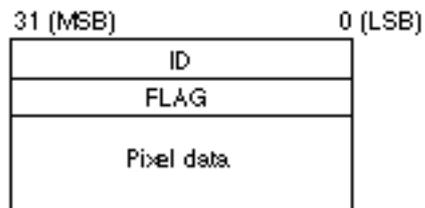


Figure B-2-1 Whole PXL File Configuration

Data is of the 32-bit binary format. Because of LittleEndian, bytes are arranged in ascending order. (See Figure B-2-2.)

File start or address

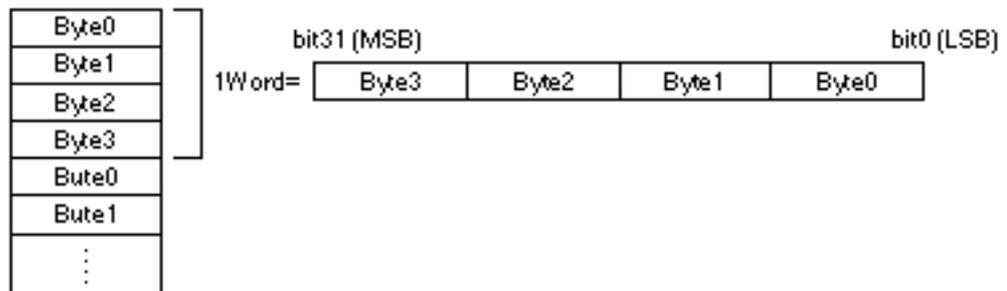


Figure B-2-2 Byte Order in File

2.1 ID

The file ID is composed of one word, having the following bit configuration.

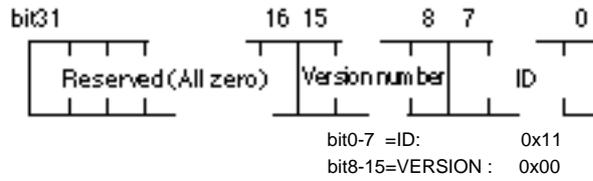


Figure B-2-3 Structure of PXL File Header

2.2 FLAG

FLAG is 32-bit length data, carrying information of data structure. It has the following bit configuration.

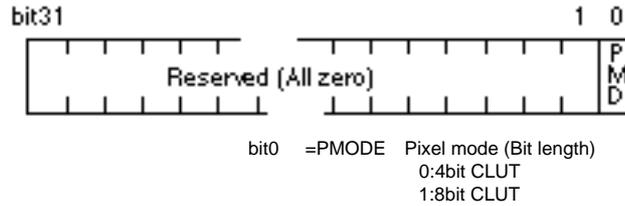


Figure B-2-4 FLAG Bit Configuration

2.3 Pixel Data Section

The pixel data section is the main body of image data.

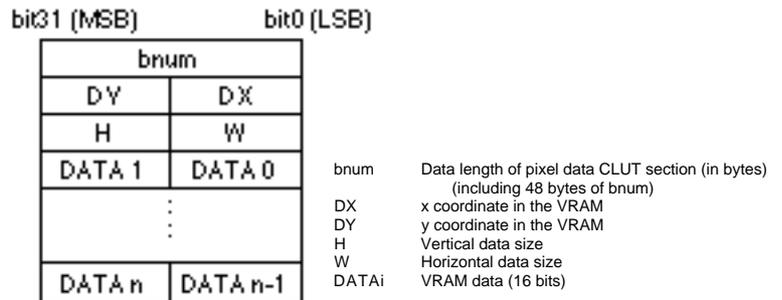
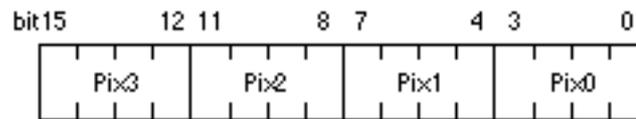


Figure B-2-5 Configuration of Pixel Data Section

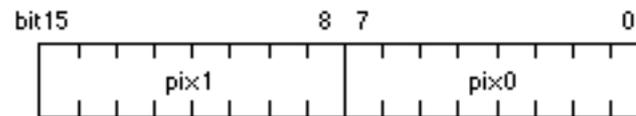
The configuration of a piece of VRAM data (16 bits) depends on the mode. The following gives the configuration in each mode.

(4-bit mode)



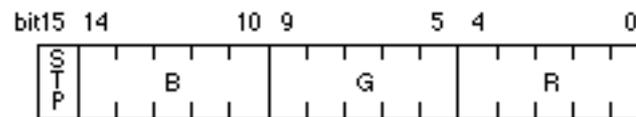
pix0-3 Pixel value (CLUT No.)
 Pixels 0, 1, 2 and 3 are arranged from the left in that order.

(8-bit mode)



pix0-1 Pixel value (CLUT No.)
 Pixels 0 and 1 are arranged from the left in that order.

(16-bit mode)



STP Transparency control bit
 R Red component (5 bits)
 G Green component (5 bits)
 B Blue component (5 bits)

Figure B-2-6 VRAM Data (Pixel Data)

The coordinate system for the VRAM is based on 16 bits per pixel. Thus, note coordinate/size values in TIM data. In the X axis direction, a value of 2/4 is H in the 4-bit mode, and a value of 1/2 is H in the 8-bit mode. This means that, in the 4-bit mode, the image size must be a multiple of 4 and, in the 8-bit mode, the image size must be even.

CHAPTER 3

SPECIFICATIONS OF PALETTE DATA (CLT FILE)



1 CLT Format

The CLT file saves 8-bit or 4-bit palette data edited by the PlayStation sprite editor.

2 Whole File Configuration

The CLT file has the file header at the start, being composed of a few blocks.

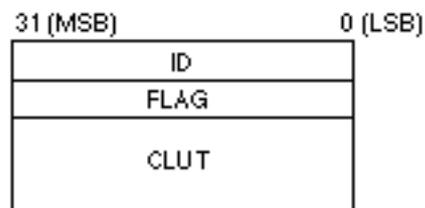


Figure B-3-1 Whole CLT File Configuration

Data is of the 32-bit binary format. Because of LittleEndian, bytes are arranged in ascending order. (See Figure B-3-2.)

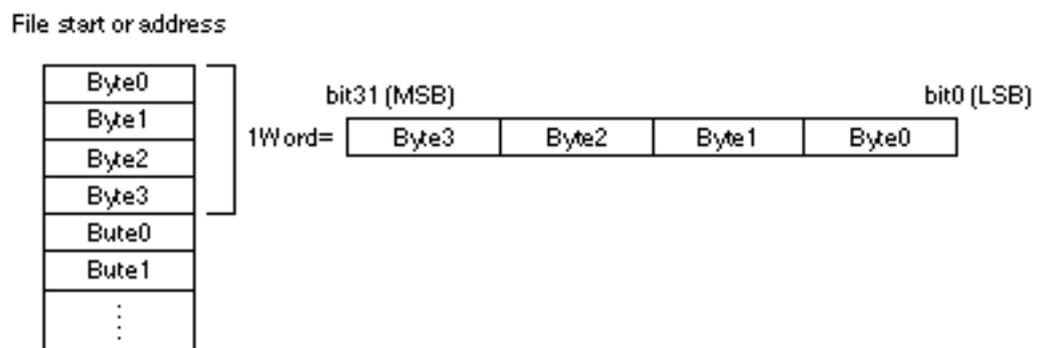


Figure B-3-2 Byte Order in File

One CLUT set is composed of 16 CLUT entries in the 4-bit mode and of 256 CLUT entries in the 8-bit mode. (However, one file is composed of 16 sets of CLT data output from the sprite editor in the 4-bit mode.)

As CLUT is located on the VRAM, the PlayStation system handles the CLUT section in a TIM file as a rectangular VRAM image. This means that one CLUT entry is equivalent to one pixel in the VRAM. Thus, one CLUT set is handled as rectangular image data having a height of 1 and a width of 16 in the 4-bit mode and a height of 1 and a width of 256 in the 8-bit mode. (CLUT data output from the sprite editor is a rectangular image with a height of 16 and a width of 16 in the 4-bit mode.)

One TIM file can contain two or more CLUT sets. The area composed of two or more CLUT sets is considered to be a piece of image data and written in the CLUT section.

A CLUT entry, which expresses one color, has the following configuration.

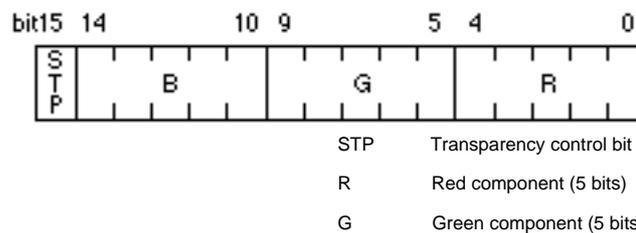


Figure B-3-6 CLUT Entry

The transparency control bit is applicable to sprite and texture data. If all of R, G, B and STP are zero, the color is regarded as being transparent. If not, the color is considered to be opaque.

For semitransparency processing, if the STP value is 1, the color is considered to be semitransparent. If not, the color is regarded as being opaque. (Only in all zeros, the color is considered to be transparent.)

STP/R,G,B	Semitransparency processing turned on	Semitransparency processing turned off
0,0,0,0	Transparent	Transparent
0,X,X,X	Opaque	Opaque
1,X,X,X	Semitransparent	Opaque

Table A-3-1 Role of STP Bit

CHAPTER 4
SPECIFICATIONS
OF CELL DATA
(CEL FILE)

1 CEL Format

The CEL file provides a table of VRAM pointers to cells constituting the BG plane.

2 File Format

The CEL file has the header file at the start, being composed of three blocks.

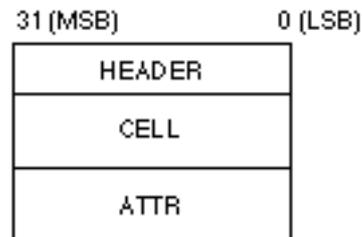


Figure B-4-1 Whole CELL Data Configuration

2.1 HEADER

The file header has the following configuration.



FLAG	Described later
ID	0x22
VERSION	0x04
NCELL	Cell data count (in cells)
CELL_W	Horizontal size of cell display window (in cells) (Sprite editor)
CELL_H	Vertical size of cell display window (in cells) (Sprite editor)

Figure B-4-2 HEADER

FLAG has the following bit configuration.

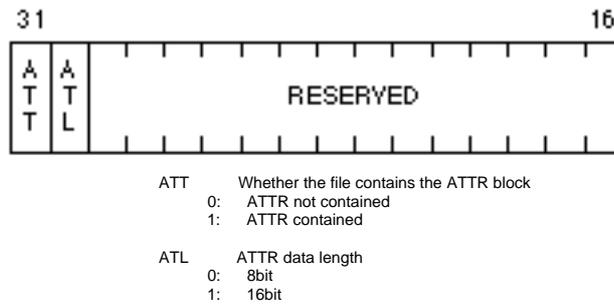


Figure B-4 FLAG

2.2 CELL

Cell data provides a table of VRAM pointers to cells constituting BG. Four bytes form one cell.

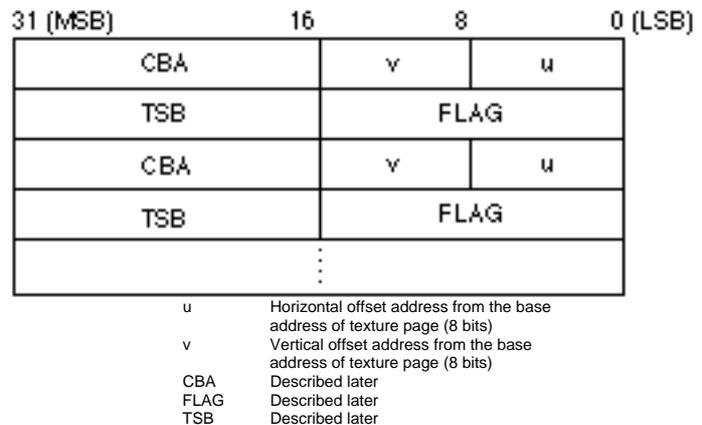


Figure B-4-4 CELL Data Section

CBA has the following bit configuration.

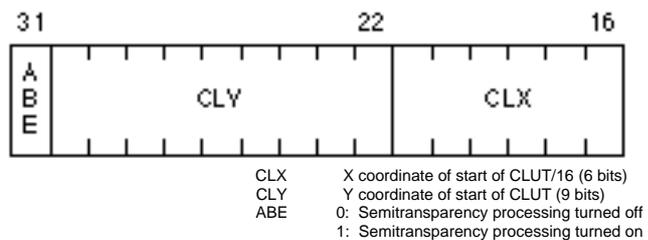


Figure B-4-5 CBA

CHAPTER 5

SPECIFICATIONS OF MAP DATA (BGD FILE)

1 BGD Format

The BGD file provides data constituting the BG plane used in the 2D system. BG refers to any row of rectangular pixel data. The BGD file is used along with the TIM and CEL files having the same name. Actual pixel images are carried by the TIM file.

2 File Format

The BGD file has the header file at the start, being composed of three blocks. However, the ATTR section can be omitted.

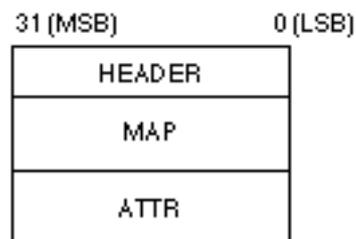


Figure B-5-1 Whole BG Data Configuration

2.1 HEADER

The file head has the following configuration.



FLAG: Described later
 ID: 0x23
 VERSION: 0x00
 MAPW: Horizontal size of BG map data (in pixels)
 MAPH: Vertical size of BG map data (in pixels)
 CELL_W: Horizontal size of cell data (in pixels)
 CELL_H: Vertical size of cell data (in pixels)

Figure B-5-2 HEADER

FLAG has the following bit configuration.

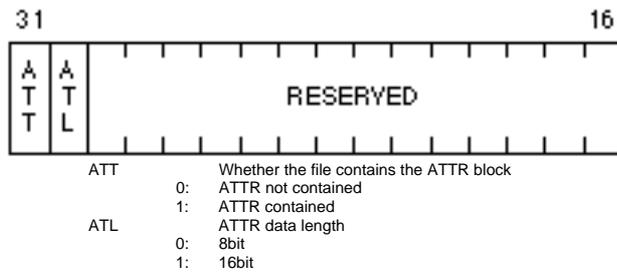


Figure B-5-3 FLAG

2.2 MAP

If one BG section is assumed to be composed of a set of MAPH x MAPW cells, the map describes the order of cell arrangement.

0	1	2	3	4	5	6	7
8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31
32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63

Figure B-5-4 Cell Arrangement in Map (8 x 8)

Map data is a set of cell numbers arranged in the above number order. A cell number indicates the position of the cell in a cell file described later.

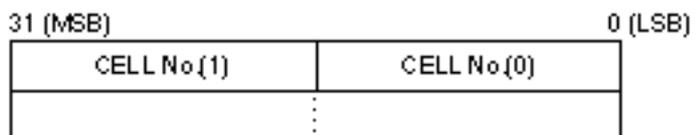


Figure B-5-5 MAP

2.3 ATTR

Attribute data is information added to MAP, being arranged in the same order as MAP.

(8-bit mode)



(16-bit mode)

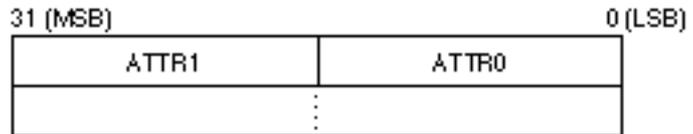


Figure B-5-6 ATTR

CHAPTER 6

SPECIFICATION OF ANIMATION DATA (ANM FILE)



1 ANM Format

The ANM file stores information for image data animations. It is used along with a TIM file, which carries actual pixel images.

2 File Format

The ANM file has the header file at the start, being composed of four blocks.

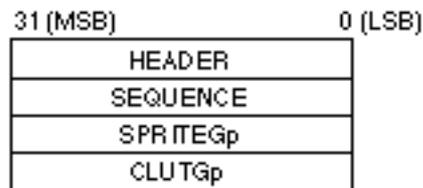
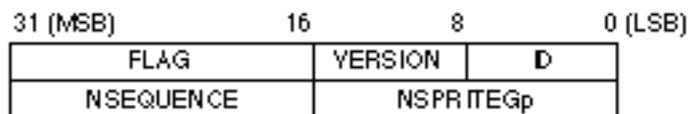


Figure B-6-1 Whole ANM Data Configuration

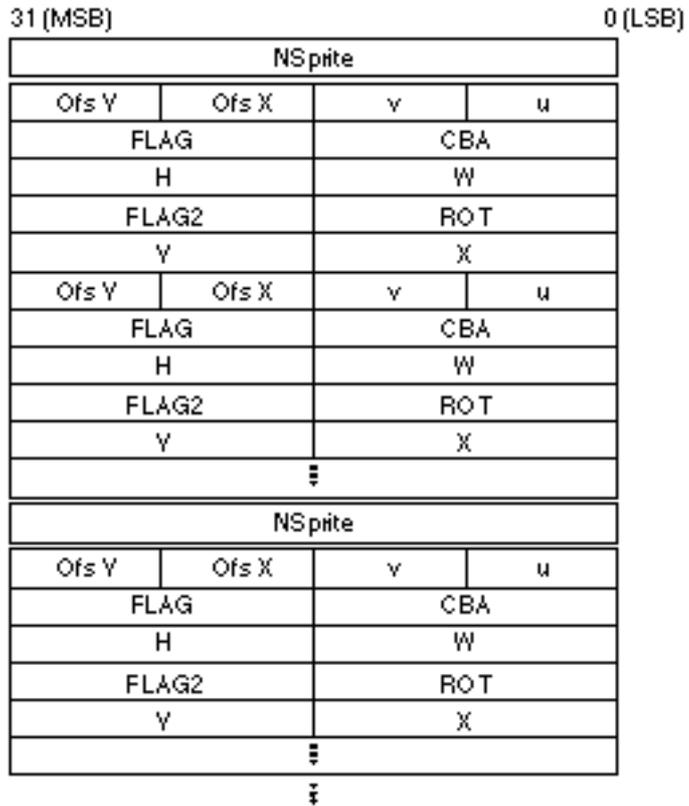
2.1 HEADER

The file header has the following configuration.



FLAG: Described later
 ID: 0x21
 VERSION: 0x03
 NSPRITEGp: Sprite group count
 NSEQUENCE: Sequence data count

Figure B-6-2 HEADER



- NSprite Number of sprites in a sprite group
- u Horizontal offset from base address of texture page
- v Vertical offset from base address of texture page
- Ofs X Horizontal offset from hot spot in a frame
- Ofs Y Vertical offset from hot spot in a frame
- CBA Described later
- FLAG Described later
- W Sprite width (Omitted if FLAG's THW is not zero)
- H Sprite height (Omitted if FLAG's THW is not zero)
- ROT Rotation angle (360 degrees = 4096)
- FLAG2 Described later
- X,Y Rate of extension or reduction (Power of 1.0 = 4096).
(A negative sign indicates inversion.)

Figure B-6-5 SPRITEGp

FLAG has the following bit configuration.

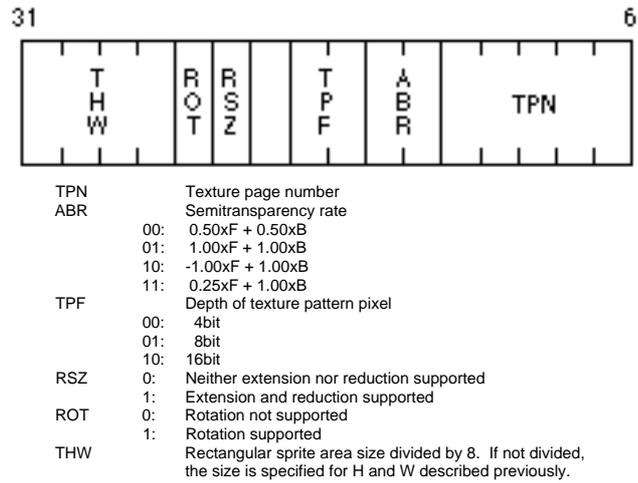


Figure B-6-6 FLAG

CBA has the following bit configuration.

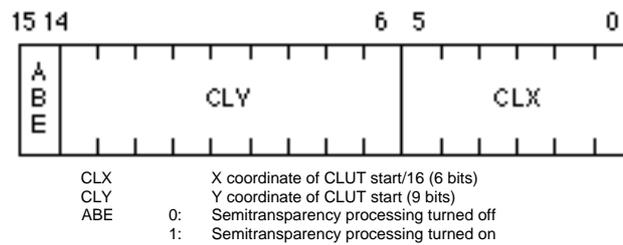


Figure B-6-7 CBA

FLAG2 has the following bit configuration.

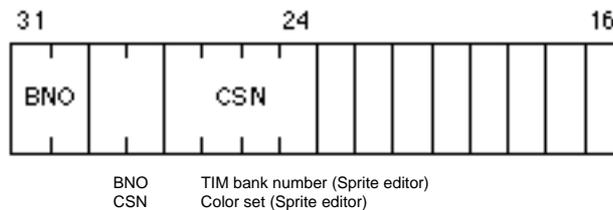


Figure B-6-8 FLAG2

2.4 CLUTGp

CLUTGp is a set of CLUT groups for color animations. (CLT of HEADER FLAG is used to specify the number of CLUT groups.)

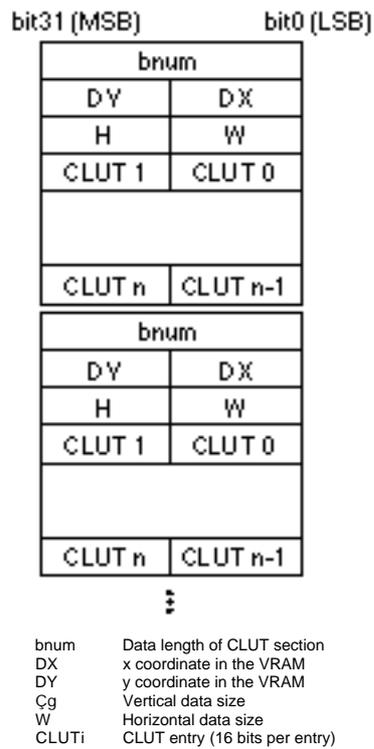


Figure B-6-9 CLUTGp

CHAPTER 7

ANIMATION TIME SEQUENCE FILE (TSQ FILE)

1 TSQ Format

The TSQ file stores time sequence data for sprite animations edited by the PlayStation sprite editor.

2 File Format

The TSQ file has the header file at the start, being composed of two blocks.

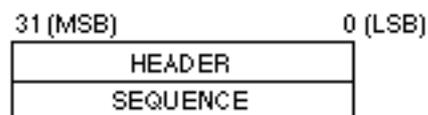


Figure B-7-1 Whole SEQ Data Configuration

2.1 HEADER

The file header has the following configuration.

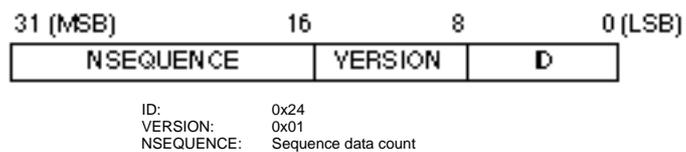
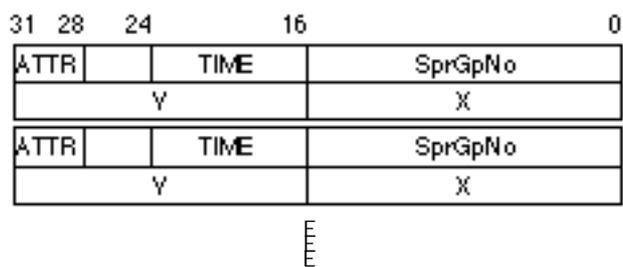


Figure B-7-2 HEADER

2.2 SEQUENCE

Sequence data is a set of coordinates of the hot spots in the frames, display time, and sprite group numbers.



SprGpNo Number of sprite group to be displayed
 TIME Display time
 ATTR Attribute
 X X coordinate of hot spot
 Y Y coordinate of hot spot

Figure B-7-3 SEQUENCE



CHAPTER 8

SPRITE EDITOR
PROJECT FILE
(SDF FILE)

1 SDF Format

The SDF file stores file groups and setting information edited by the PlayStation sprite editor. The file enables all files to be loaded at a time.

2 File Format

The SDF file is composed of the following seven blocks.

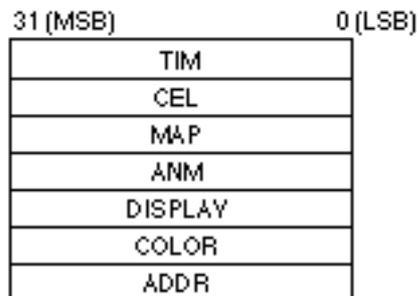


Figure B-8-1 Whole SDF File Configuration

The block is composed of lines assigned key word values.

2.1 TIM

The key word of the TIM block is “TIM” plus a bank number.

The value provides a file name. As the file name, only the TIM file or a combination of PXL and CLT files is accepted.

Example

```
TIM0 file0.tim  
TIM1 file1.pxl file1.clt  
TIM2  
TIM3
```

Note

The key word of a bank not used must not be omitted, but assigned an item having no value.

2.2 CEL

The key word of the CEL block is CEL0, and the value is a file name.

Example

```
CEL0 file2.cel
```

2.3 MAP

The key word of the MAP block is “MAP” plus a bank number, and the value provides a file name.

Example

```
MAP0 file3.bgd  
MAP1 file4.bgd  
MAP2  
MAP3
```

Note

The key word of a bank not used must not be omitted, but assigned an item having no value.

2.4 ANM

The key word of the ANM block is ANM0, and the value provides a file name.

Example

ANM0 file5.anm

2.5 DISPLAY

A DISPLAY block specifies an artist board screen mode.

Image mode	VALUE
256×240	0
320×240	1
512×240	2
640×240	3
256×480	4
320×480	5
512×480	6
640×480	7

The key word is DISPLAY. VALUE depends on the screen mode.

Example

DISPLAY1

2.6 COLOR

Color mode	VALUE
16	0
256	1

A COLOR block specifies a color mode. The key word is DISPLAY. The value depends on the color mode.

Example

COLOR0

2.7 ADDR

An ADDR block specifies coordinates of images set by a TIM bank, palette coordinates, and the number of color sets.

The following gives the specification format.

ADDR? :X Y CX CY N

ADDR?: KEYWORD (“ADDR” plus bank number)

X: X coordinate of TIM image

Y: Y coordinate of TIM image

CX: X coordinate of palette

CY: Y coordinate of palette

N: Number of color sets

Example

ADDR0 768 0 0 480 16

ADDR1 768 256 0 496 16

ADDR2 512 0 256 480 16

ADDR3 512 256 256 496 16



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Sprite Editor User's Manual
for Sprite Editor Version1.7

PlayStation Artist Tool

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