

8.7 Pattern Data Frame

- (1) This frame stores image data and image data drawing information.
- (2) If no special importance is given to the coordinate values to be used in this chapter, the (x, y) coordinates, in which the rightward and upward directions within the relevant area are positive, is used by using the drawing pixel (Dot) on the display as the unit and using the lower-left end point of the minimum horizontal rectangular area that includes the images after expansion as the basic point (0,0).

name [Pattern Data Frame]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	B1		Image Management Distribution Header		a
2	01	B2		Palette Set Data Frame		c
3	02	B3		Color Table Data Frame		c
4	03	B4		Image Data Frame		c
5	04	B5		Extended Data		c

8.7.1 Image Management Distribution Header

name [Image Management Distribution Header]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	SWS	Size of the Image Management Distribution Header	(1)	a
2	2	2	SWS	Palette Set Record Size	(2)	c
3	4	2	N	Head Palette Set Classification	(3)	c
4	6	2	N	Head Color Table Classification	(4)	c
5	8	2	N	Head Image Data Classification	(5)	c
6	10	4	D	Offset to the Palette Set Data Frame	(6)	c
7	14	2	SWS	Size of the Palette Set Data Frame	(7)	c
8	16	4	D	Offset to the Color Table Data Frame	(6)	c
9	20	2	SWS	Size of the Color Table Data Frame	(7)	c
10	22	4	D	Offset to the Image Data Frame	(6)	c
11	26	2	SWS	Size of the Image Data Frame	(7)	c
12	28	B1		Extended Data		c

- (1) Size of the Image Management Distribution Header

If only the entity of the image management distribution header exists, 2 is set and item 2 and the subsequent items are omitted.

- (2) Palette Set Record Size

This field describes the record size of one palette set record as SWS.

- (3) Head Palette Set Classification

This field describes the head palette set classification of the palette set to be managed with the relevant management information.

(4) Head Color Table Classification

This field describes the head color table classification of the color table to be managed with the relevant management information.

(5) Head Image Data Classification

This field describes the head image data classification of the image data to be managed with the relevant management information.

(6) Offset to the Data Frame

This field describes the displacement from the head of the pattern data frame to the head of each data frame. If there is no entity, ffffffff(16) is used.

(7) Size of the Data Frame

This field describes the size of each data frame. If there is no entity, 0000(16) is used.

8.7.2 Palette Set Data Frame

name [Palette Set Data Frame]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	N	Number of Palette Sets		a
2	2	B1		Palette Set Table		a

8.7.2.1 Palette Set Table

This table describes the palette set classifications in sequential order.

name [Palette Set Table]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	B1		A Sequence of Palette Sets		a

8.7.2.1.1 Palette Set

Two or more palettes are grouped into one palette to switch between the day and night palettes or between the run and stop palettes.

name [Palette Set] (example indicating that the palette set record size is 1 (two bytes))

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	1	N	Color Table Classification used for Day Time		a
2	1	1	N	Color Table Classification used for Night Time		a

name [Palette Set] (example indicating that the palette set record size is 2 (four bytes))

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	1	N	Color Table Classification used for Day Time Driving		a
2	1	1	N	Color Table Classification used for Day Time during Pulling Over		a
3	2	1	N	Color Table Classification used for Night Time Driving		a
4	3	1	N	Color Table Classification used for Night Time during Pulling Over		a

8.7.3 Color Table Data Frame

name [Color Table Data Frame]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	N	Number of Color Table Management Information items		a
2	2	B1		A Sequence of Color Table Management Information		a
3	O1	B2		A Sequence of Color Tables		a

8.7.3.1 Color Table Management Information

name [Color Table Management Information]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	D	Offset to the Top of the Color Table	(1)	a
2	2	2	SWS	Size of the Color Table		a

(1) Offset to the Top of the Color Table

This field describes the offset from the head of the color table data frame.

8.7.3.2 Color Table

Color table Classifications are represented in sequential order.

The color codes are numbers used to specify RGB values in a single color palette. Element numbers, arranged in ascending order accompanied by the RGB value sequence within the color palette, are assigned to the color codes.

#0 RGB value → Color code 0

#1 RGB value → Color code 1

#2 RGB value → Color code 2

:

name [Color Table]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	N	Color Code in Clear Color	(1)	b
2	2	2	N	Color Code in permeable (transparent) Color	(2)	b
3	4	2	:N	Number of Color Codes	(3)	a
4	6	B1	:N:N:N	Color Palette		a

(1) Color Code in Clear Color

This field describes the color code to be handled as the color of an area that is not painted and which is the color used for deleting elements drawn in the relevant area. If the color code is not specified, FFFF(16) is accommodated.

(2) Color Code in permeable (transparent) Color

This field describes the color code to be handled as the transparent color. If this color code is omitted, FFFF(16) is accommodated.

(3) Number of Color Codes

This field describes the number of RGB value sequences in the color palette.

8.7.3.2.1 Color Palette

RGB values are created according to the number of color codes. The color palette size is uniquely determined by the number of color codes.

For example, if 16 colors are used, the color palette size is 4 bytes x 16 colors = 64 bytes. If 32 colors are used, the color palette size is 4 bytes x 32 colors = 128 bytes.

name [Color Palette]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	B1		A Sequence of RGB Values		a

8.7.3.2.1.1 RGB Values

The R value, G value, and B value are each at the 8-bit quantum-mechanical level. The color is specified with the brightness of each of primary colors R (red), G (green), and B (blue). The white peak level is obtained by assigning FF(16) to all of RGB. The black peak level is obtained by assigning 00(16) to all of RGB. Each brightness between the white peak level and black peak level is represented with eight bits.

name [RGB Value]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	1		(RESERVED)		b
2	1	1	N	R Value		a
3	2	1	N	G Value		a
4	3	1	N	B Value		a

8.7.4 Image Data Frame

name [Image Data Frame]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	N	Number of Image Data Management Information		a
2	2	B1		A Sequence of Image Data Management Information		a
3	O1	B2		A Sequence of Image Data Records		a

(1) Image Data Classification

This field describes the first image data ID of the image data managed by the relevant management information.

8.7.4.1 Image Data Record Management Information

name [Image Data Record Management Information]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	4	D	Offset to the Image Data Record		a
2	4	2	SWS	Size of the Image Data Record		a

8.7.4.2 Image Data Record

name [Image Data Record]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	12		Image Data Attribute Header		a
2	12	B1		Image Data		a
3	O1	B2		Route Data		c

8.7.4.2.1 Image Data Attribute Header

name [Image Data Attribute Header]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	:N:B:	Image Data Type	(1)	a
2	2	4	N	Palette Set Classification	(4)	b
3	6	2	N	Size in the X-direction of Presenting Image	(5)	a
4	8	2	N	Size in the Y-direction of Presenting Image	(6)	a
5	10	2	I	X-coordinate Offset from the Lower-left Coordinate to the Reference Coordinate	(7)	a
6	12	2	I	Y-coordinate Offset from the Lower-left Coordinate to the Reference Coordinate	(8)	a
7	14	4	D	Offset to the Route Data	(9)	c

(1) Image Data Type

1) Image Data Type							
No.	bit	Description					
1	15 to 8	(RESERVED)					
2	7 to 4	Image Data Type 1	bit7	bit6	bit5	bit4	Meaning
		Pattern Data (Static Image)	0	0	0	0	CLUT image
			0	0	0	1	Vector
			0	0	1	0	GIF
			0	0	1	1	BMP(Bit Map Paint)
			0	1	0	0	TIFF
			0	1	0	1	EPSF(Encapsulated PostScript)
			0	1	1	0	RIB
			0	1	1	1	JPEG
			1	0	0	0	(1000(2) and after not defined)
3	3 to 1	Image Data Identification 2 (2)					
4	0	Route Data Existence Flag (3)	bit31	Meaning			
			0	No route data			
			1	Route data available			

(2) Image Data Identification 2

This field describes the method of compressing stored image data.

An example of the CLUT image segment is shown below.

No.	bit	Description			
1	3 to 1	CLUT Image Segment Size	bit3	bit2	bit1
			Meaning		
			0	0	0
			0	1	0
			0	1	1

(3) Route Data Existence Flag

This flag indicates whether the vector data string of the approach route on the image data is available. (Data for updating the current place)

(4) Palette Set Classification

This field defines the palette set used to expand the stored image data.

For value 0, the system palette set is specified. If a palette set classification is smaller than the top palette set classification, the palette set in Chapter 55 is specified. For other values, the palette sets in this chapter are specified.

For ffffffff(16), it is invalid and no palette set is used.

(5) Size in the X-direction of Presenting Image

Size in the X-direction when the stored image data is expanded

(6) Size in the Y-direction of Presenting Image

Size in the Y-direction when the image data is expanded

(7) X-coordinate Offset from the Lower-left Coordinate to the Basic Coordinate

X coordinate offset from the lower-left side of the expanded image data to the basic coordinate (basic display point)

The basic coordinate is important to the display of the relevant image from a design viewpoint (for example, guidance point of the intersection guide map). It is also intended to become the basic point for pasting when the images whose drawing sizes are different are superimposed for use.

(8) Y-coordinate Offset from the Lower-left Coordinate to the Basic Coordinate

Y-coordinate offset from the lower-left side of the expanded image data to the basic coordinate

(9) Offset to the Route Data

This offset indicates the displacement from the beginning of the image data attribute header to the beginning of the route data. This field is set only when the route data existence flag (3) of the image data type shows 1 (Route data available).

8.7.4.2.2 Image Data

For CLUT images, the following image segment sequence is used according to the image data identification:

8.7.4.2.2.1 One-byte CLUT Image Segment

name [One-byte CLUT Image Segment]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	1	N:N	Color Code + Consecutive Number	(1)	a

(1) Color Code + Consecutive Number

No.	bit	Description
1	7 to 3	Color Code
2	2 to 0	Consecutive Number (2)

(2) Consecutive Number

This field describes the dot length (right direction) by which the same color continues and accommodates -1 of the actual length. For example, if the consecutive number is 0, the color moves one segment to the right.

8.7.4.2.2.2 Two-byte CLUT Image Segment

name [Two-byte CLUT Image Segment]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	N:N	Color Code + Consecutive Number	(1)	a

(1) Color Code + Consecutive Number

No.	bit	Description
1	15 to 11	Color Code
2	10 to 0	Consecutive Number (2)

(2) Consecutive Number

This field describes the dot length (right direction) by which the same color continues, and accommodates -1 of the actual length. For example, if the consecutive number is 0, the color moves one segment to the right.

8.7.4.2.2.3 Pattern Data Record (vector)

The following table shows an example in which the image data type is vector:

name [Pattern Data Record (vector)]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	4	SWS	Size of the Pattern Data Record	(1)	a
2	4	2	:N	Pattern Identification Information	(2)	a
3	6	2	N	Number of Detailed Shape Data Records	(4)	a
4	8	6		(RESERVED)		b
5	14	B1		Pattern		a

(1) Size of Pattern Data Record

This field describes the size of the pattern data record.

(2) Pattern Identification Information

No.	bit	Description
1	15 to 8	(RESERVED)
2	7 to 0	Pattern Operation Number (3)

(3) Pattern Operation Number

A pattern (pattern data record) is changed according to the ascending order of pattern operation numbers within one pattern data item. The value can be between 0 and 254.

(4) Number of Detailed Shape Data Records

This field describes the total number of detailed shape data records constituting the pattern.

(5) Pattern width (dot size of the screen width)

This field describes the screen width, in pixels.

(6) Pattern height (dot size of the screen height)

This field describes the screen height, in pixels.

8.7.4.2.2.1 Pattern

name [Pattern]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	B1		A Sequence of Shape Detail Data Records (#0 to #n)		a

8.7.4.2.2.1.1 Detailed Shape Data Record

name [Detailed Shape Data Record]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	B:N	Shape Classification + Number of Offset Coordinate Records	(1)	a
2	2	B1		Element Point Coordinate Information		a
3	01	2	N	Category Code		c

(1) Shape Classification + Number of Offset Coordinate Records

No.	bit	Description			
1	15 to 14	Shape Classification	bit15	bit14	Meaning
			0	0	(RESERVED)
			0	1	Line data
			1	0	Area data
			1	1	(RESERVED)
2	13 to 11	(RESERVED)			
3	10 to 0	Number of Offset Coordinate Records			

8.7.4.2.2.1.1.1 Element Point Coordinate Information

name [Element Point Coordinate Information]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	N:N	Start Point X-coordinate Information	(1)	a
2	2	2	:B:N	Start Point Y-coordinate Information	(4)	a
3	4	B1		A Sequence of Offset Coordinate Records		a

(1) Start Point X-coordinate Information

No.	bit	Description
1	15 to 13	Multiplication Constant (2)
2	12 to 0	Start Point X-coordinate (3)

(2) Multiplication Constant

The X coordinate offset and Y coordinate offset are multiplied by the n-th power of 2 for use. n in this n-th power of 2 is the multiplication constant. ($0 < n < 7$: where n is an integer.)

(3) Start Point X-coordinate

This field describes the coordinate value (dot size of the screen width) in the horizontal direction of the screen. The value can be between 0 and the pattern width -1.

(4) Start Point Y-coordinate Information

No.	Bit	Description		
1	15 to 14	(RESERVED)		
2	13	Category Code Fag (5)	bit13	Meaning
			0	No category code information
			1	Category code information available
3	12 to 0	Start Point Y-coordinate (6)		

(5) Category Code Flag

This field describes the setting status of the category code in the applicable detailed shape data record. If the category code flag indicates that the category code information is available, the category code accommodation field is allocated. If this flag indicates that there is no category code information, the fields allocation is omitted.

(6) Start Point Y coordinate

This field describes the coordinate value (dot size of the screen height) in the vertical direction of the screen. The value can be between 0 and the pattern height -1.

8.7.4.2.2.1.1.1.1 Offset Coordinate Record

name [Offset Coordinate Record]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	1	I	X-coordinate Offset	(1)	a
2	1	1	I	Y-coordinate Offset	(2)	a

(1) X-coordinate Offset

This field describes the offset from the X coordinate of the preceding element point to the X coordinate of the relevant element point.

(2) Y-coordinate Offset

This field describes the offset from the Y coordinate of the preceding element point to the Y coordinate of the relevant element point.

The X coordinate and Y coordinate offsets are obtained by dividing the offsets for the coordinates (dot sizes of the screen) in the horizontal and vertical directions of the screen, by the n-th power of 2 (n is the multiplication constant). The value can be between -128 and 127. For the area data, the coordinates of the data string start point and data string end point are assumed to be the same. Therefore, the result is $X_1 + X_2 + \dots + X_p = 0$, $Y_1 + Y_2 + \dots + Y_p = 0$.

If the shape classification is the line data, the line representation is suspended (specification of displaying the split of one line data) from when both the X coordinate and Y coordinate offsets are 00(16) (pen-up) until both of these values become 00(16) (pen-down). If the shape classification is the area data, only the polygon-shaped frame line representation is suspended from when both the X coordinate and Y coordinate offsets are 00(16) (pen-up) until both of these values become 00(16) (pen-down). For the polygon shape, an offset in the pen-up status is also handled as valid.

8.7.4.2.3 Route Data

name [Route Data]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	2	B:N:N	Route Attribute	(1)	a
2	2	2	I	X-coordinate Offset from the Lower-left Coordinate to the Route Start Point	(4)	a
3	4	2	I	Y-coordinate Offset from the Lower-left Coordinate to the Route Start Point	(5)	a
4	6	B1		A Sequence of Offset Coordinate Records		a

(1) Route Attribute

No.	bit	Description			
1	15 to 14	Distance Unit Flag	bit15	bit14	Meaning
			0	0	Unit for each bit (type 1)
			0	1	Unit for each bit (type 2)
			1	0	Unit for each bit (type 3)
			1	1	Unit for each bit (type 4)
2	13 to 7	Distance (2)			
3	6 to 0	Number of Element Points (3)			

(2) Distance

The handling is as follows:

Distance unit flag (bit15,bit14)	(0,0) Type 1	(0,1) Type 2	(1,0) Type 3	(1,1) Type 4
Unit	5m	10m	50m	100m
Range of the value to be used	0 to 630m	0 to 1260m	0 to 6300m	0 to 12600m

For the distance, fractions less than the specified unit are rounded off. The distance is undefined for 7F(16).

(3) Number of Element Points

This field describes the total number of route data items in the image data.

(4) X coordinate Offset from the lower-left coordinate to the route start Point

X coordinate offset from the lower-left side of the expanded image data to the route data start coordinate

(5) Y coordinate Offset from the lower-left coordinate to the route start Point

Y coordinate offset from the lower-left of the expanded image data to the route data start coordinate

8.7.4.2.3.1 Offset Coordinate Record

A shape point must be stored for each distance indicated by the attribute. (The distance between shape points is equal.)

name [Offset Coordinate Record]

No.	offset	Data length	Data type	Item name	Remarks	Classification
1	0	1	I	X-coordinate Offset	(1)	a
2	1	1	I	Y-coordinate Offset	(2)	a

(1) X-coordinate Offset

This field describes the offset from the X coordinate of the preceding element point to the relevant element point. The value can be between -128 and 127.

(2) Y-coordinate Offset

This field describes the Y coordinate of the preceding element point to the relevant element point. The value can be between -128 and 127.