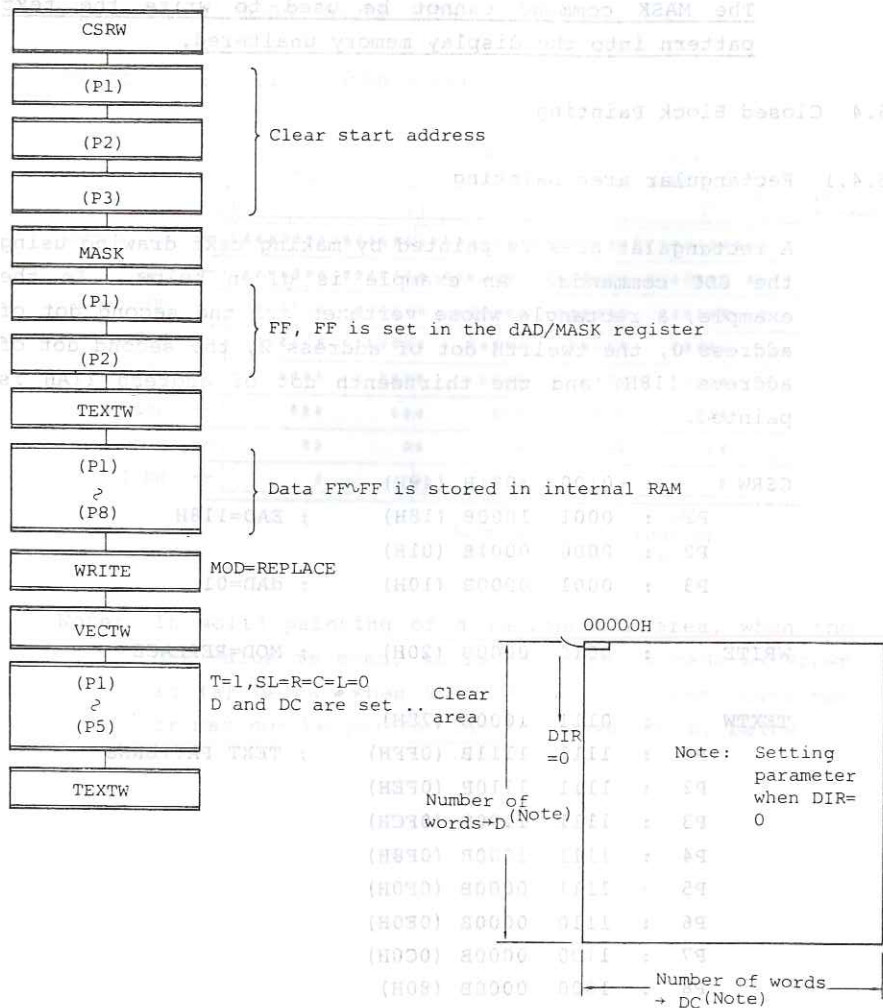


(2) Two-dimensional clear
 Set the clear start address in EAD, the number of clear words in the first drawing direction in D, and (number of word - 1) in the second drawing direction in DC.



If this flowchart is used, data written into the display memory is all 0FFFFH. If all the text patterns are set to 00, the data written into the display memory is 0000.

The MASK command cannot be used to write the text pattern into the display memory unaltered.

6.4 Closed Block Painting

6.4.1 Rectangular area painting

A rectangular area is painted by making text drawing using the GDC commands. An example is given below. In the example, a rectangle whose vertexes are the second dot of address 0, the twelfth dot of address 2, the second dot of address 118H, and the thirteenth dot of address 11AH is painted.

```

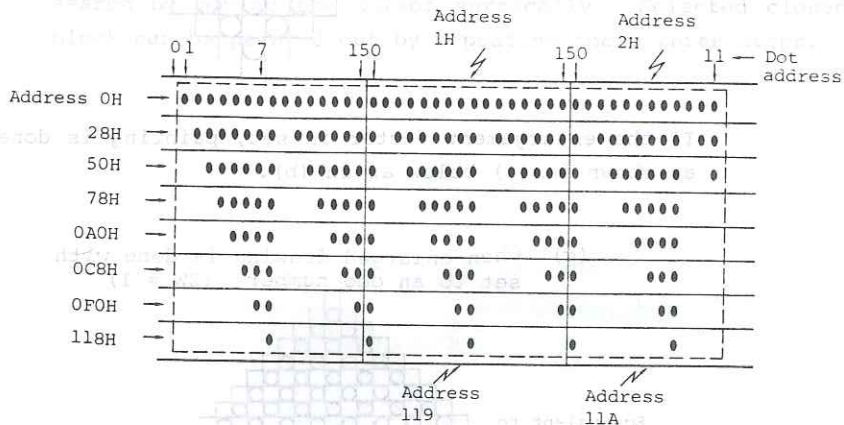
CSRW      : 0100 1001B (49H)
P1       : 0001 1000B (18H)      ; EAD=118H
P2       : 0000 0001B (01H)
P3       : 0001 0000B (10H)      ; dAD=01

WRITE     : 0010 0000B (20H)      ; MOD=REPLACE

TEXTW    : 0111 1000B (78H)
P1       : 1111 1111B (0FFH)      ; TEXT PATTERNS
P2       : 1111 1110B (0FEH)
P3       : 1111 1100B (0FCH)
P4       : 1111 1000B (0F8H)
P5       : 1111 0000B (0F0H)
P6       : 1110 0000B (0E0H)
P7       : 1100 0000B (0C0H)
P8       : 1000 0000B (80H)
  
```

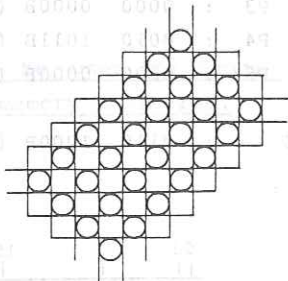
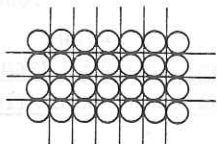
```

VECTW : 0100 1100B (4CH)
P1 : 0001 0000B (10H) ; TEXT, DIR=2
P2 : 0000 0111B (07H) ; DC=07
P3 : 0000 0000B (00H)
P4 : 0010 1011B (2BH) ; D=2BH
P5 : 0000 0000B (00H)
TEXTE : 0110 1000B (68H)
    
```



Note: In solid painting of a rectangular area, when the DIR value is even, solid painting is made as shown in (a) below; when the DIR value is odd, dots may or may not be painted out as shown in (b) below:

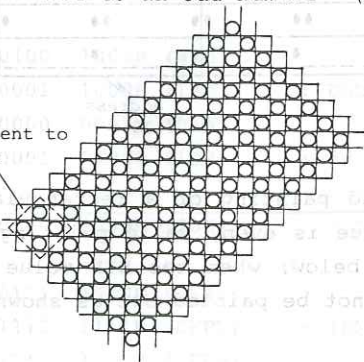
- (a) When the DIR value is even
- (b) When the DIR value is odd



If the enlargement factor is set, painting is done as shown in (c) below as in (b).

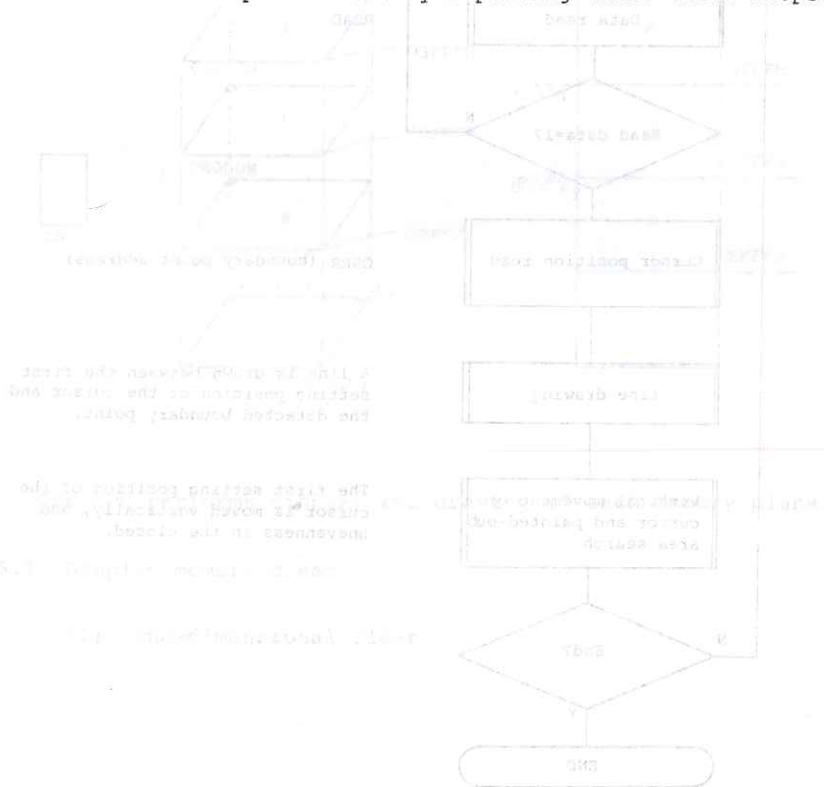
- (c) When enlarged drawing is done with set to an odd number (ZW = 1)

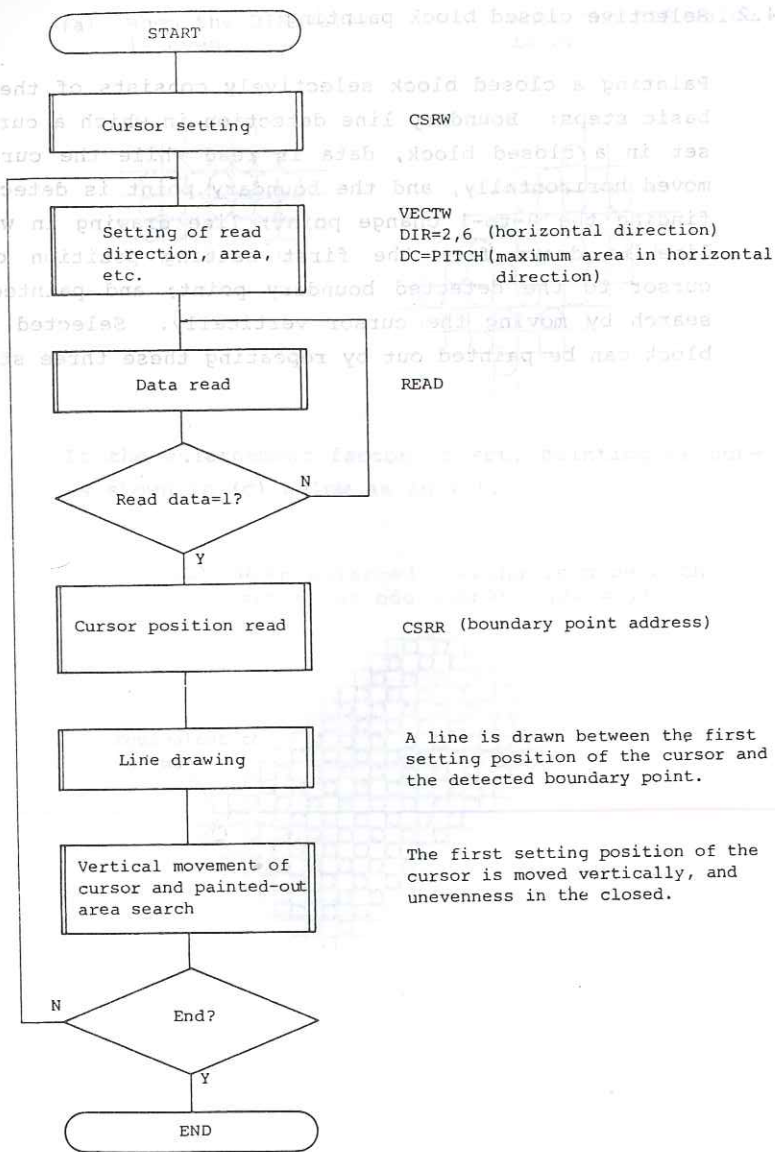
Equivalent to one dot



6.4.2 Selective closed block painting

Painting a closed block selectively consists of the three basic steps: Boundary line detection in which a cursor is set in a closed block, data is read while the cursor is moved horizontally, and the boundary point is detected by finding the 0-to-1 change point; line drawing in which a line is drawn from the first setting position of the cursor to the detected boundary point; and painted area search by moving the cursor vertically. Selected closed block can be painted out by repeating these three steps.

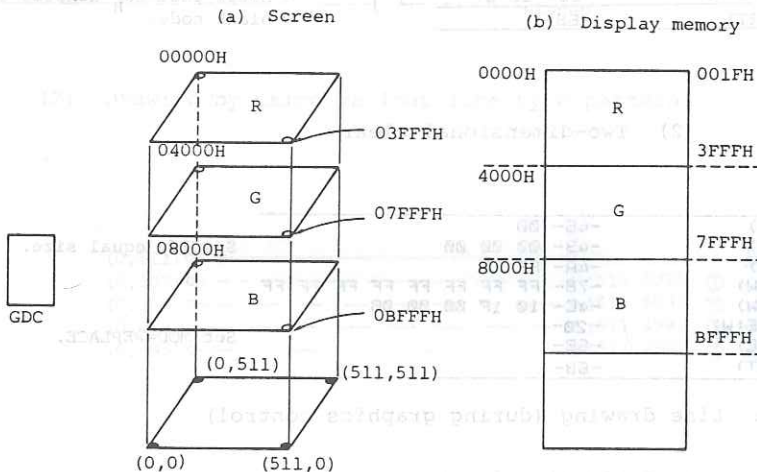




6.5 Actual Drawing Examples

This section gives actual examples of commands and parameters sent to the GDC when various drawings are made in a system having the following memory configuration:

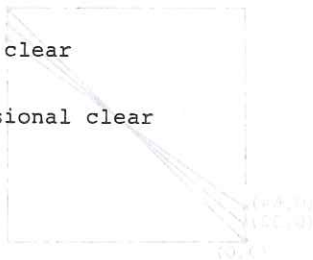
512 x 512 dots, seven colors



One GDC performs display and drawing of each memory plane.

6.5.1 Display memory clear

- (1) One-dimensional clear



command	command code	parameter
(ZOOM)	-46-	00
(CSRW)	-49-	00 00 00
(MASK)	-4A-	FF FF
(VECTW)	-4C-	02 FF 3F
(WRITE:W)	-20-	20 07
(VECTW)	-4C-	02 FF 3F
(WRITE:W)	-20-	20 07
(VECTW)	-4C-	02 FF 3F
(WRITE:W)	-20-	20 07
(VECTW)	-4C-	02 FF 3F
(WRITE:W)	-20-	20 07
(START)	-6B-	

- o Specify MOD=REPLACE and WLH=word transfer.
- o Set low-order byte = 20H high-order byte = 07H in 64K words (16K words x 4).
- o ASCII code 20_H denotes a blank code.

(2) Two-dimensional clear

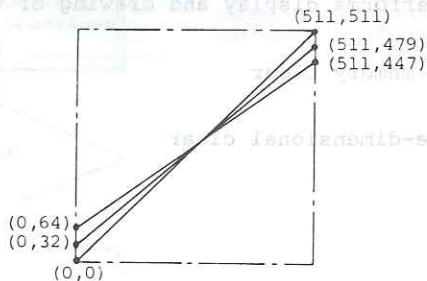
(ZOOM)	-46-	00
(CSRW)	-49-	00 00 00
(MASK)	-4A-	FF FF
(TEXTW)	-78-	FF FF FF FF FF FF FF FF
(VECTW)	-4C-	10 1F 00 00 08
(WRITE:W)	-20-	
(TEXT)	-68-	
(START)	-6B-	

Specify equal size.

Set MOD=REPLACE.

6.5.2 Line drawing (during graphics control)

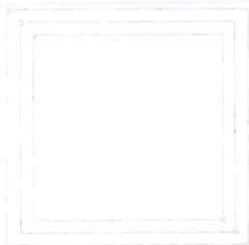
(1) Solid line drawing



(TEXTW)	-7B- FF FF	} Sold line specification MOD:COMPLEMENT
(WRITE:W)	-21-	
(CSRW)	-49- E0 3F 00	} Red (0,0) \rightarrow (511,511)
(VECTW)	-4C- 0B FF 01 FF 01 00 00 FE 03	
(VECTE)	-6C-	
(CSRW)	-49- E0 7B 00	} Green (0,32) \rightarrow (511,479)
(VECTW)	-4C- 0A FF 01 7F 01 80 FF 7E 03	
(VECTE)	-6C-	
(CSRW)	-49- E0 37 00	} Yellow (0,64) \rightarrow (511,447)
(VECTW)	-4C- 0A FF 01 FF 00 00 FF FE 02	
(VECTE)	-6C-	
(CSRW)	-49- E0 77 00	} The same drawing is made on each of the red and green planes.
(VECTW)	-4C- 0A FF 01 FF 00 00 FF FE 02	
(VECTE)	-6C-	

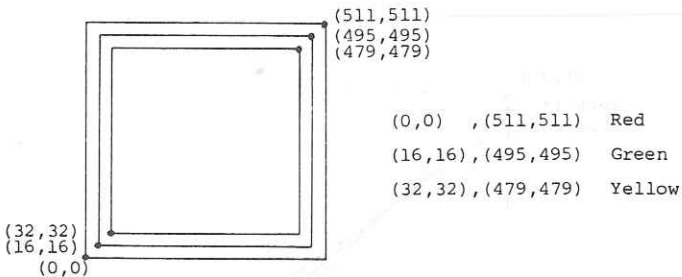
(2) Drawing by using various line type patterns

(0,511) o	—————	o (511,511)	Red
(0,507) o	-----	o (511,507)	① Green
(0,503) o	_____	o (511,503)	② Yellow
(0,499) o	_____	o (511,499)	③ Blue
(0,495) o	_____	o (511,495)	④ Magenta



(TEXTW)	-78-	FF	FF							Solid line specification MOD:REPLACE Red (0,511) \rightarrow (511,511)	
(WRITE:W)	-20-										
(CSRW)	-49-	00	00	00							
(VECTW)	-4C-	0A	FF	01	01	FE	02	FC	00		00
(VECTE)	-6C-										
(TEXTW)	-78-	55	55							Broken line specification ① Green (0,507) \rightarrow (511,507)	
(CSRW)	-49-	80	40	00							
(VECTW)	-4C-	0A	FF	01	01	FE	02	FC	00		00
(VECTE)	-6C-										
(TEXTW)	-78-	33	33							Broken line specification ② Yellow (0,503) \rightarrow (511,503)	
(CSRW)	-49-	00	01	00							
(VECTW)	-4C-	0A	FF	01	01	FE	02	FC	00		00
(VECTE)	-6C-										
(CSRW)	-49-	00	41	00							
(VECTW)	-4C-	0A	FF	01	01	FE	02	FC	00	00	
(VECTE)	-6C-										
(TEXTW)	-78-	77	77							Broken line specification ③ Blue (0,499) \rightarrow (511,499)	
(CSRW)	-49-	80	81	00							
(VECTW)	-4C-	0A	FF	01	01	FE	02	FC	00		00
(VECTE)	-6C-										
(TEXTW)	-78-	0F	0F							Broken line specification ④ Magenta (0,495) \rightarrow (511,495)	
(CSRW)	-49-	00	02	00							
(VECTW)	-4C-	0A	FF	01	01	FE	02	FC	00		00
(VECTE)	-6C-										
(CSRW)	-49-	00	82	00							
(VECTW)	-4C-	0A	FF	01	01	FE	02	FC	00	00	
(VECTE)	-6C-										

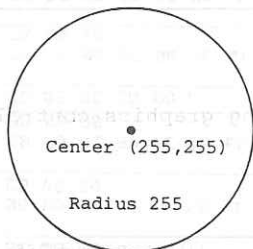
6.5.3 Rectangle drawing (during graphics control)



(TEXTW)	-78-	FF	FF						
(WRITE:W)	-21-								
(CSRW)	-49-	E0	3F	00					
(VECTW)	-4C-	42	03	00	FF	01	FF	01	FF
(VECTE)	-6C-								
(CSRW)	-49-	E1	7D	00					
(VECTW)	-4C-	42	03	00	DF	01	DF	01	FF
(VECTE)	-6C-								
(CSRW)	-49-	E2	3B	00					
(VECTW)	-4C-	42	03	00	BF	01	BF	01	FF
(VECTE)	-6C-								
(CSRW)	-49-	E2	7B	00					
(VECTW)	-4C-	42	03	00	BF	01	BF	01	FF
(VECTE)	-6C-								

Solid line
specification
MOD:COMPLEMENT
Red
(0,0), (511,511)
Green
(16,16), (495,495)
Yellow
(32,32), (479,479)

6.5.4 Circle drawing (during graphics control)



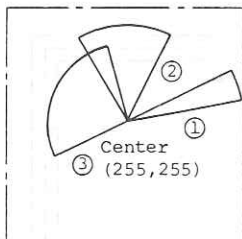
Red



Solid line specification
MOD: REPLACE

(TEXTW)	-78-	FF	FF
(WRITE:W)	-20-		
(CSRW)	-49-	1F	20 E0
(VECTW)	-4C-	27 B4 00	FE 00 FC 01 FF FF 00 00
(VECTE)	-6C-		
(CSRW)	-49-	1F	20 E0
(VECTW)	-4C-	24 B4 00	FE 00 FC 01 FF FF 00 00
(VECTE)	-6C-		
(CSRW)	-49-	2F	00 F0
(VECTW)	-4C-	21 B4 00	FE 00 FC 01 FF FF 00 00
(VECTE)	-6C-		
(CSRW)	-49-	2F	00 F0
(VECTW)	-4C-	26 B4 00	FE 00 FC 01 FF FF 00 00
(VECTE)	-6C-		
(CSRW)	-49-	00	20 00
(VECTW)	-4C-	23 B4 00	FE 00 FC 01 FF FF 00 00
(VECTE)	-6C-		
(CSRW)	-49-	00	20 00
(VECTW)	-4C-	20 B4 00	FE 00 FC 01 FF FF 00 00
(VECTE)	-6C-		
(CSRW)	-49-	EF	3F F0
(VECTW)	-4C-	25 B4 00	FE 00 FC 01 FF FF 00 00
(VECTE)	-6C-		
(CSRW)	-49-	EF	3F F0
(VECTW)	-4C-	22 B4 00	FE 00 FC 01 FF FF 00 00
(VECTE)	-6C-		

6.5.5 Sector drawing (during graphics control)



- ① : Radius 255
Start angle: 0.2 radian
End angle: 0.5 radian
Red
- ② : Radius 233
Start angle: 1.0 radian
End angle: 2.1 radian
Green
- ③ : Radius 191
Start angle: 1.8 radian
End angle: 3.7 radian
Yellow

		Solid line specification
(TEXTW)	-78- FF FF	MOD:REPLACE
(WRITE:W)	-20-	
(CSRW)	-49- 1F 20 E0	} Arc(Note) (mask)
(VECTW)	-4C- 24 31 00 FE 00 FC 01 FF FF 32 00	
(VECTE)	-6C-	
(CSRW)	-E0- (BF 19 00 00 02)*	} Line
(CSRW)	-49- 0F 20 F0	
(VECTW)	-4C- 0A FA 00 6C FF 72 FE 66 00	
(VECTE)	-6C-	} Arc
(CSRW)	-49- 1F 20 E0	
(VECTW)	-4C- 24 7A 00 FE 00 FC 01 FF FF 32 00	
(VECTE)	-6C-	} Line
(CSRW)	-49- 0F 20 F0	
(VECTW)	-4C- 0A DF 00 17 00 3B FF F6 00	
(VECTE)	-6C-	} Arc
(CSRW)	-49- 2F 44 F0	
(VECTW)	-4C- 21 D0 FF DE 00 BC 01 FF FF 00 00	
(VECTE)	-6C-	} Line
(CSRW)	-E0- (B7 48 00 00 01)*	
(CSRW)	-49- 0F 60 F0	
(VECTW)	-4C- 0B BB 00 37 00 7C FF F2 00	} Arc
(VECTE)	-6C-	
(CSRW)	-49- 2F 44 F0	
(VECTW)	-4C- 26 70 00 DE 00 BC 01 FF FF 00 00	} Line
(VECTE)	-6C-	
(CSRW)	-49- 08 48 00	
(VECTW)	-4C- 08 C0 00 24 00 64 FF E4 00	} Arc** (mask)
(VECTE)	-6C-	
(CSRW)	-49- 2F 08 F0	
(VECTW)	-4C- 26 29 00 BE 00 7C 01 FF FF 2B 00	} Line**
(VECTE)	-6C-	
(CSRW)	-49- CD 08 50	
(VECTW)	-4C- 08 BA 00 9A FF E0 FE 54 00	} Arc**
(VECTE)	-6C-	
(CSRW)	-49- CD 48 50	
(VECTW)	-4C- 08 BA 00 9A FF E0 FE 54 00	} Arc**
(VECTE)	-6C-	
(CSRW)	-49- 2F 08 F0	
(VECTW)	-4C- 26 87 00 BE 00 7C 01 FF FF 2B 00	} Arc**
(VECTE)	-6C-	
(CSRW)	-49- 2F 48 F0	
(VECTW)	-4C- 26 87 00 BE 00 7C 01 FF FF 2B 00	} Arc**
(VECTE)	-6C-	
(CSRW)	-49- 04 20 00	
(VECTW)	-4C- 23 87 00 BE 00 7C 01 FF FF 00 00	} Arc**
(VECTE)	-6C-	
(CSRW)	-49- 04 60 00	
(VECTW)	-4C- 23 87 00 BE 00 7C 01 FF FF 00 00	} Arc**
(VECTE)	-6C-	
(CSRW)	-49- 04 20 00	
(VECTW)	-4C- 20 65 00 BE 00 7C 01 FF FF 00 00	} Arc**
(VECTE)	-6C-	
(CSRW)	-49- 04 60 00	
(VECTW)	-4C- 20 65 00 BE 00 7C 01 FF FF 00 00	} Line**
(VECTE)	-6C-	
(CSRW)	-E0- (C5 6C 00 00 40)*	
(CSRW)	-49- C5 2C E0	} Line**
(VECTW)	-4C- 0A A1 00 2B 00 8A FF CC 00	
(VECTE)	-6C-	
(CSRW)	-49- C5 6C E0	} Line**
(VECTW)	-4C- 0A A1 00 2B 00 8A FF CC 00	
(VECTE)	-6C-	

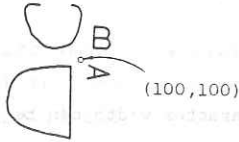
* Read address data is enclosed in parentheses following the CSRR command

** : R plane (red) : G plane (green)

Note: The arc (mask) is drawn (but not actually drawn because of mask) to obtain the coordinate data to write one line of a sector (drawing start angle side).

LINE	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F
LINE	20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F	30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F
LINE	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F
LINE	60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F	70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F
LINE	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F
LINE	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F
LINE	20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F	30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F
LINE	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F
LINE	60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F	70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F
LINE	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F
LINE	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F
LINE	20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F	30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F
LINE	40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F
LINE	60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F	70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F
LINE	80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F	90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F

(2) Enlarged graphics character drawing



- A: DIR=0 ZW=0 Red
- B: DIR=2 ZW=1 Green
- C: DIR=4 ZW=2 Yellow
- D: DIR=6 ZW=3 Blue

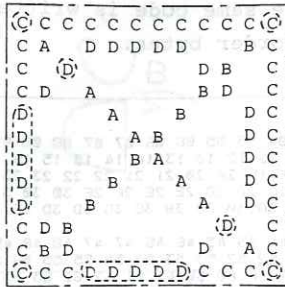
(ZOOM)	-46- 00	A	Equal size COMPLEMENT mode
(WRITE:W)	-21-		
(TEXTW)	-78- 00 38 44 82 82 FE 82 82		
(CSRW)	-49- 66 33 40		
(VECTW)	-4C- 10 07 00		
(TEXTE)	-68-		
(ZOOM)	-46- 01	B	Double
(TEXTW)	-78- 00 7E 82 82 7E 82 82 7E		
(CSRW)	-49- 66 73 40		
(VECTW)	-4C- 12 07 00		
(TEXTE)	-68-		
(ZOOM)	-46- 02	C	Threefold
(TEXTW)	-78- 00 7C 82 02 02 02 82 7C		
(CSRW)	-49- 66 33 40		
(VECTW)	-4C- 14 07 00		
(TEXTE)	-68-		
(ZOOM)	-46- 03	D	Fourfold
(TEXTW)	-78- 00 3E 42 82 82 82 42 3E		
(CSRW)	-49- 66 B3 40		
(VECTW)	-4C- 16 07 00		
(TEXTE)	-68-		

6.5.7 Character code write (during character control)

Codes 00 to FF are written. The same code is written into each of the high-order and low-order bytes.

(VECTW)	-4C- 02
(MASK)	-4A- FF FF
(WRITE:W)	-20- 00 00 01 01 02 02 03 03 04 04 05 05 06 06 07 07 08 08 09 09 0A 0A 0B 0B 0C 0C 0D 0D 0E 0E 0F 0F 10 10 11 11 12 12 13 13 14 14 15 15 16 16 17 17 18 18 19 19 1A 1A 1B 1B 1C 1C 1D 1D 1E 1E 1F 1F 20 20 21 21 22 22 23 23 2 4 24 25 25 26 26 27 27 28 28 29 29 2A 2A 2B 2B 2C 2C 2D 2D 2E 2E 2F 2F 30 30 31 31 32 32 33 33 34 34 35 35 36 36 37 37 38 38 39 39 3A 3A 3B 3B 3C 3C 3D 3D 3E 3E 3F 3F
(WRITE:W)	-20- 40 40 41 41 42 42 43 43 44 44 45 45 46 46 47 47 48 48 49 49 4A 4A 4B 4B 4C 4C 4D 4D 4E 4E 4F 4F 50 50 51 51 52 52 53 53 54 54 55 55 56 56 57 57 58 58 59 59 5A 5A 5B 5B 5C 5C 5D 5D 5E 5E 5F 5F 60 60 61 61 62 62 63 63 6 4 64 65 65 66 66 67 67 68 68 69 69 6A 6A 6B 6B 6C 6C 6D 6D 6E 6E 6F 6F 70 70 71 71 72 72 73 73 74 74 75 75 76 76 77 77 78 78 79 79 7A 7A 7B 7B 7C 7C 7D 7D 7E 7E 7F 7F
(WRITE:W)	-20- 80 80 81 81 82 82 83 83 84 84 85 85 86 86 87 87 88 88 89 89 8A 8A 8B 8B 8C 8C 8D 8D 8E 8E 8F 8F 90 90 91 91 92 92 93 93 94 94 95 95 96 96 97 97 98 98 99 99 9A 9A 9B 9B 9C 9C 9D 9D 9E 9E 9F 9F A0 A0 A1 A1 A2 A2 A3 A3 A 4 A4 A5 A5 A6 A6 A7 A7 A8 A8 A9 A9 AA AA AB AB AC AC AD AD AE AE AF AF B0 B0 B1 B1 B2 B2 B3 B3 B4 B4 B5 B5 B6 B6 B7 B7 B8 B8 B9 B9 BA BA BB BB BC BC BD BD BE BE BF BF
(WRITE:W)	-20- C0 C0 C1 C1 C2 C2 C3 C3 C4 C4 C5 C5 C6 C6 C7 C7 C8 C8 C9 C9 CA CA CB CB CC CC CD CD CE CE CF CF D0 D0 D1 D1 D2 D2 D3 D3 D4 D4 D5 D5 D6 D6 D7 D7 D8 D8 D9 D9 DA DA DB DB DC DC DD DD DE DE DF DF E0 E0 E1 E1 E2 E2 E3 E3 E 4 E4 E5 E5 E6 E6 E7 E7 E8 E8 E9 E9 EA EA EB EB EC EC ED ED EE EE EF EF F0 F0 F1 F1 F2 F2 F3 F3 F4 F4 F5 F5 F6 F6 F7 F7 F8 F8 F9 F9 FA FA FB FB FC FC FD FD FE FE FF FF

6.5.8 Line, rectangle, and circle drawing by using character codes (during character control)



Lines by using A and B characters

Rectangle by using C characters

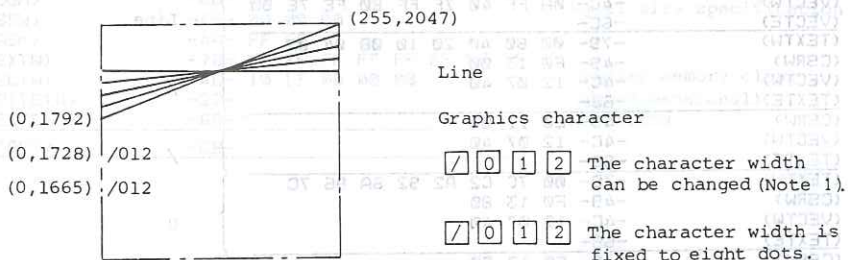
Circle by using D characters

: Where the character is changed by the later written code

(CSRW)	-49- 00 00	} Line of A
(VECTW)	-4C- 08 1F 00 1F 00 00 00 3E 00	
(MASK)	-4A- FF FF	} 41: ASCII code A 01: Attribute
(WRITE:W)	-20- 41 01	
(CSRW)	-49- E0 03	} Line of B
(VECTW)	-4C- 0B 1F 00 1F 00 00 00 3E 00	
(WRITE:W)	-20- 42 02	} 42: ASCII code B 02: Attribute
(CSRW)	-49- E0 03	
(VECTW)	-4C- 42 03 00 1F 00 1F 00 FF FF 1F 00	} Rectangle of C
(WRITE:W)	-20- 43 03	
(CSRW)	-49- 1E 02	} 43: ASCII code C 03: Attribute
(VECTW)	-4C- 24 0A 00 0E 00 1C 00 FF FF 00 00	
(WRITE:W)	-20- 44 04	} 44: ASCII code D 04: Attribute
(CSRW)	-49- 2F 00	
(VECTW)	-4C- 21 0A 00 0E 00 1C 00 FF FF 00 00	} Circle of D
(WRITE:W)	-20- 44 04	
(CSRW)	-49- 2F 00	} 44: ASCII code D 04: Attribute
(VECTW)	-4C- 26 0A 00 0E 00 1C 00 FF FF 00 00	
(WRITE:W)	-20- 44 04	} 43: ASCII code C 03: Attribute
(CSRW)	-49- 00 02	
(VECTW)	-4C- 23 0A 00 0E 00 1C 00 FF FF 00 00	} Circle of D
(WRITE:W)	-20- 44 04	
(CSRW)	-49- 00 02	} 44: ASCII code D 04: Attribute
(VECTW)	-4C- 20 0A 00 0E 00 1C 00 FF FF 00 00	
(WRITE:W)	-20- 44 04	} 43: ASCII code C 03: Attribute
(CSRW)	-49- EF 03	
(VECTW)	-4C- 25 0A 00 0E 00 1C 00 FF FF 00 00	} Circle of D
(WRITE:W)	-20- 44 04	
(CSRW)	-49- EF 03	} 44: ASCII code D 04: Attribute
(VECTW)	-4C- 22 0A 00 0E 00 1C 00 FF FF 00 00	
(WRITE:W)	-20- 44 04	} 43: ASCII code C 03: Attribute
(CSRW)	-49- 1E 02	
(VECTW)	-4C- 27 0A 00 0E 00 1C 00 FF FF 00 00	} Circle of D
(WRITE:W)	-20- 44 04	

6.5.9 Graphics drawing (in character and graphics mix mode)

For graphics drawing in the character and graphics mix mode, the VECTW command DGD bit must be set to 1. Set a value twice the normal value in PITCH. For graphics display, set the SCROLL command IM bit to 1.



Note 1: Although the character widths differ, an 8x8 dot area is written by overlapping the drawing start point using the CSRW command, making character widths very equivalently.

(TEXTW)	-78-	FF	FF
(CSRW)	-49-	F0	0F 00
(VECTW)	-4C-	0A	FF 40 FF 00 00 00 FE 01
(VECTE)	-6C-		
(CSRW)	-49-	F0	0D 00
(VECTW)	-4C-	0A	FF 40 7F 00 80 FF 7E 01
(VECTE)	-6C-		
(CSRW)	-49-	F0	0B 00
(VECTW)	-4C-	0A	FF 40 FF FF 00 FF FE 00
(VECTE)	-6C-		
(CSRW)	-49-	F0	09 00
(VECTW)	-4C-	0A	FF 40 7F FF 80 FE 7E 00
(VECTE)	-6C-		
(TEXTW)	-78-	00 80 40 20 10 08 04 02	
(CSRW)	-49-	F0	13 00
(VECTW)	-4C-	12	07 40
(TEXTE)	-68-		
(CSRW)	-49-	E0	17 00
(VECTW)	-4C-	12	07 40
(TEXTE)	-68-		
(TEXTW)	-78-	00 7C C2 A2 92 8A 86 7C	
(CSRW)	-49-	F0	13 80
(VECTW)	-4C-	12	07 40
(TEXTE)	-68-		
(CSRW)	-49-	E0	17 80
(VECTW)	-4C-	12	07 40
(TEXTE)	-68-		
(TEXTW)	-78-	00 04 06 04 04 04 04 0E	
(CSRW)	-49-	F1	13 00
(VECTW)	-4C-	12	07 40
(TEXTE)	-68-		
(CSRW)	-49-	E1	17 00
(VECTW)	-4C-	12	07 40
(TEXTE)	-68-		
(TEXTW)	-78-	00 7C 82 80 70 08 04 FE	
(CSRW)	-49-	F1	13 40
(VECTW)	-4C-	12	07 40
(TEXTE)	-68-		
(CSRW)	-49-	E1	17 80
(VECTW)	-4C-	12	07 40
(TEXTE)	-68-		

} Line
 } Line
 } Line
 } Line
 } /
 } /
 } 0
 } 0
 } 1
 } 1
 } 2
 } 2

(TEXTW) -78- FF FF
 (CSRW) -49- F0 0F 00
 (VECTW) -4C- 0A FF 40 FF 00 00 00 FE 01
 (VECTE) -6C-
 (CSRW) -49- F0 0D 00
 (VECTW) -4C- 0A FF 40 7F 00 80 FF 7E 01
 (VECTE) -6C-
 (CSRW) -49- F0 0B 00
 (VECTW) -4C- 0A FF 40 FF FF 00 FF FE 00
 (VECTE) -6C-
 (CSRW) -49- F0 09 00
 (VECTW) -4C- 0A FF 40 7F FF 80 FE 7E 00
 (VECTE) -6C-
 (TEXTW) -78- 00 80 40 20 10 08 04 02
 (CSRW) -49- F0 13 00
 (VECTW) -4C- 12 07 40
 (TEXTE) -68-
 (CSRW) -49- E0 17 00
 (VECTW) -4C- 12 07 40
 (TEXTE) -68-
 (TEXTW) -78- 00 7C C2 A2 92 8A 86 7C
 (CSRW) -49- F0 13 80
 (VECTW) -4C- 12 07 40
 (TEXTE) -68-
 (CSRW) -49- E0 17 80
 (VECTW) -4C- 12 07 40
 (TEXTE) -68-
 (TEXTW) -78- 00 04 06 04 04 04 04 0E
 (CSRW) -49- F1 13 00
 (VECTW) -4C- 12 07 40
 (TEXTE) -68-
 (CSRW) -49- E1 17 00
 (VECTW) -4C- 12 07 40
 (TEXTE) -68-
 (TEXTW) -78- 00 7C 82 80 70 08 04 FE
 (CSRW) -49- F1 13 40
 (VECTW) -4C- 12 07 40
 (TEXTE) -68-
 (CSRW) -49- E1 17 80
 (VECTW) -4C- 12 07 40
 (TEXTE) -68-

6.5.10 Initialization

(RESET)	-00-	Master specification
(MASTER/SLAVE)	-6F-	
(SYNC)	-0E- 0E 1E A2 08 03 0F 00 92	
(CSRFORM)	-4B- 00 40 00	
(PITCH)	-47- 20	
(SCROLL)	-70- 00 00 10 20	Equal size specification
(SCROLL)	-74- 00 00 00 20	
(ZOOM)	-4E- 00	Display memory clear (two-dimensional) MOD: CLEAR
(CSRW)	-49- 00 00 00	
(MASK)	-4A- FF FF	
(TEXTW)	-78- FF FF FF FF FF FF FF	
(VECTW)	-4C- 10 1F 00 00 08	
(WRITE:W)	-22-	
(TEXTE)	-6B-	
(START)	-EB-	

7.1 CPU Interface

Since the 80C does not have a dedicated address bus, the signal is combined with the data bus signals by using an external circuit.

The input/output (I/O) and data bus (DB) are connected to a CPU controller such as the 80C20. The CPU controller is used to transmit data between the display memory and main memory in the CPU. The CPU controller is not used, make the CPU work.