

THE V9958-REGISTERS

VDP()	REG	b7	b6	b5	b4	b3	b2	b1	b0
8	0	F	SD	C	S4	S3	S2	S1	S0
-1	1	0	0	I4	I3	I2	I1	I0	FH
-2	2	TR	VR	HR	BD	0	0	E0	CE
-3	3	X7	X6	X5	X4	X3	X2	X1	X0
-4	4	0	0	0	0	0	0	X9	X8
-5	5	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
-6	6	0	0	0	0	0	0	Y9	Y8
-7	7	C7	C6	C5	C4	C3	C2	C1	C0
-8	8	BX7	BX6	BX5	BX4	BX3	BX2	BX1	BX0
-9	9	0	0	0	0	0	0	BX9	BX8
0	0	0	DG	0	IE1	M5	M4	M3	0
1	1	0	BLK	IE0	M1	M2	0	SZ	MAG
2	2	0	A16	A15	A14	A13	A12	A11	A10
3	3	B13	B12	B11	B10	B9	B8	B7	B6
4	4	0	0	C16	C15	C14	C13	C12	C11
5	5	D14	D13	D12	D11	D10	D9	D8	D7
6	6	0	0	E16	E15	E14	E13	E12	E11
7	7	TC3	TC2	TC1	TC0	BDC3	BDC2	BDC1	BDC0
9	8	0	0	TP	CBD	VRS1	VRS0	SPD	B/W
10	9	LN	0	SYM1	SYM0	IL	E0	NTSC	DCD
11	10	0	0	0	0	0	B16	B15	B14
12	11	0	0	0	0	0	0	D16	D15
13	12	C3	C2	C1	C0	BC3	BC2	BC1	BC0
14	13	ON3	ON2	ON1	ON0	OF3	OF2	OF1	OF1
15	14	0	0	0	0	0	F16	F15	F14
16	15	0	0	0	0	RS3	RS2	RS1	RS0
17	16	0	0	0	0	C3	C2	C1	C0
18	17	AII	0	RC5	RC4	RC3	RC2	RC1	RC0
19	18	dV3	dV2	dV1	dV0	dH3	dH2	dH1	dH0
20	19	IL7	IL6	IL5	IL4	IL3	IL2	IL1	IL0
21	20	0	0	CBX5	CBX4	CBX3	CBX2	CBX1	CBX0
22	21	0	0	CBY5	CBY4	CBY3	CBY2	CBY1	CBY0
23	22	0	0	CBZ5	CBZ4	CBZ3	CBZ2	CBZ1	CBZ0
24	23	D07	D06	D05	D04	D03	D02	D01	D00
26	25	0	CMD	VDS	YAE	YJK	WTE	MSK	SP2
27	26	0	0	H8	H7	H6	H5	H4	H3
28	27	0	0	0	0	0	H0	H1	H2
33	32	SX7	SX6	SX5	SX4	SX3	SX2	SX1	SX0
34	33	0	0	0	0	0	0	0	SX8
35	34	SY7	SY6	SY5	SY4	SY3	SY2	SY1	SY0
36	35	0	0	0	0	0	0	SY9	SY8
37	36	DX7	DX6	DX5	DX4	DX3	DX2	DX1	DX0
38	37	0	0	0	0	0	0	0	DX8
39	38	DY7	DY6	DY5	DY4	DY3	DY2	DY1	DY0
40	39	0	0	0	0	0	0	DY9	DY8
41	40	NX7	NX6	NX5	NX4	NX3	NX2	NX1	NX0
42	41	0	0	0	0	0	0	NX9	NX8
43	42	NY7	NY6	NY5	NY4	NY3	NY2	NY1	NY0
44	43	0	0	0	0	0	0	NY9	NY8
45	44	CL7	CL6	CL5	CL4	CL3	CL2	CL1	CL0
46	45	0	MXC	MXD	MXS	DIY	DIX	EQ	MAJ
47	46	CM3	CM2	CM1	CM0	L03	L02	L01	L00

F - Vertical scanning interrupt flag (1: interrupt)
 SD - 5th or 9th sprite detected
 C - Sprite-collision detected
 S4/0 - Sprite-number of 5th or 9th sprite
 I4/0 - ID-number of the MSX-Video
 FH - Horizontal scanning interrupt flag (1: interrupt)
 TR - Transfer ready flag (1: ready)
 VR - Vertical scanning line timing flag (1: scanning)
 HR - Horizontal scanning line timing flag (1: scanning)
 BD - Boundary colour detect flag of search command (1: colour found)
 EO - Display field flag (0: display first field)
 CE - Command Executing flag (0: ready)
 X9/0 - X-coordinate of sprite-collision, mouse or lightpen
 Y9/0 - Y-coordinate of sprite-collision, mouse or lightpen
 C7/0 - Colour-read register of point command
 BX9/0 - Border X-coordinate of search command

DG - Digitize
 IE0 - Enable Vertical Retrace Interrupt
 IE1 - Enable Horizontal Retrace Interrupt
 D - External VDP-input
 M5/1 - Screen select
 00000 Screen 1
 00001 Screen 0 (WIDTH 40)
 00010 Screen 3
 00100 Screen 2
 01000 Screen 4
 01001 Screen 0 (WIDTH 80)
 01100 Screen 5
 10000 Screen 6
 10100 Screen 7
 11100 Screen 8

BLK - Enable Display
 SZ - Set sprite size 16 x 16
 MAG - Magnify sprites
 A16/10 - Pattern name table base address
 B16/6 - Color table base address
 C16/11 - Pattern generator table base address
 D16/7 - Sprite attribute table base address
 E16/11 - Sprite pattern generator table base address
 TC3/0 - Text Colour
 BCD3/0 - Back Drop Colour
 TP - Non-transparent mode
 CBD - Set Color Bus to input mode
 VRS1/0 - Video RAM Select
 00 - 1*16 KB
 01 - 4*16 KB
 10 - 1*64 KB
 11 - 64 KB High Speed

SPD - Disable sprite display
 B/W - Set black and white in 32 tones
 LN - Set screen height to 212 (0 = 192)
 SYM1/0 - Synchronization mode
 00 - Intern
 01 - Mix
 10 - Extern (=> Digitize)
 11 - None

IL - Interlace
 EO - Even or Odd Display (0: one page; 1: two pages)
 NTSC - TV mode select (0: NTSC; 1: PAL)
 DCD - Dot Clock Direction (0: output)
 C3/0 - Colour
 BC3/0 - Back Colour

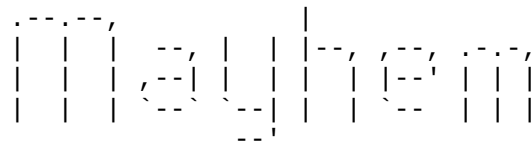
ON3/0 - Blink on (1 period = 0.20 s)
 OF3/0 - Blink off (1 period = 0.20 s)
 F16/14 - VRAM access base address
 RS3/0 - Status-register number
 C3/0 - Color code
 AII - Auto increment (0: on; 1:inhibit)
 RC5/0 - Control-register number
 dV3/0 - Vertical adjust display
 dH3/0 - Horizontal adjust display
 IL7/0 - Interrupt line
 CBX5/0 - Color burst value of phase 0 (Preset: 00000000b)
 CBY5/0 - Color burst value of phase 1/3 (Preset: 00111011b)
 CBZ5/0 - Color busrt value of phase 2/3 (Preset: 00000101b)
 D07/0 - Display offset
 CMD - Command mode (0: normal; 1: screen 2-4 as screen 8)
 VDS - ???
 YAE - Colour palette RGB output
 YJK - YJK system
 WTE - Send a wait-signal to the CPU
 MSK - Mask 8 pixels at edges
 SP2 - Screen width for hor. scroll (0: one page; 1: two pages)
 H8-0 - Scroll screen horizontall

SX8/0 - Source x-coordinate
 SY9/0 - Source y-coordinate
 DX8/0 - Destination x-coordinate
 DY9/0 - Destination y-coordinate
 NX9/0 - Number of x-dots
 NY9/0 - Number of y-dots
 CL7/0 - Colour code
 MXC - Select access memory
 0: Video RAM
 1: Expansion RAM
 MXD - Select destination memory
 0: Video RAM
 1: Expansion RAM
 MXS - Select source memory
 0: Video RAM
 1: Expansion RAM
 DIX - Direction for NX from X-coordinate
 0: Right
 1: Left
 DIY - Direction for NY from y-coordinate
 0: Down
 1: Up
 EQ - Select execution stop for search command
 0: Stop if another colour is found
 1: Stop if colour is found
 MAJ - Direction for long-side for line command
 0: Along x-axis
 1: Along y-axis

CM3/0	- Command	SR	DS	NM	CL	MD	MS	DI	LO
1111	HMMC - High-speed move CPU to VRAM	-	*	*	*	*	-	*	-
1110	YMMM - High-speed move VRAM to VRAM	Y	*	Y	-	*	-	*	-
1101	HMMM - High-speed move VRAM to VRAM	*	*	*	-	*	*	*	-
1100	HMMV - High-speed move VDP to VRAM	-	*	*	*	*	-	*	-
1011	LMMC - Logical move CPU to VRAM	-	*	*	*	*	-	*	*
1010	LMCM - Logical move VRAM to CPU	*	-	*	-	*	-	*	-
1001	LMMM - Logical move VRAM to VRAM	*	*	*	-	*	*	*	*
1000	LMMV - Logical move VDP to VRAM	-	*	*	*	*	-	*	*
0111	LINE - Draws a line	-	*	*	*	*	MA	*	*
0110	SRCH - Searches for a colour	*	-	-	*	*	EQ	X	-
0101	PSET - Draws a dot	-	*	-	*	*	-	-	*
0100	PINT - Returns the colour of a dot	*	-	-	-	-	*	-	-
0000	STOP - Aborts any command	-	-	-	-	-	-	-	-
L03/1	- Logical operation								
0000	IMP			1000	TIMP				
0001	AND			1001	TAND				
0010	OR			1010	TOR				
0011	XOR			1011	TXOR				
0100	NOT			1100	TNOT				

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- mastering chaos -
