

IA-32 architecture

FP/MMX/3DNow!

FP/MMX/3DNow! registers															
7 9	7 8		6 4	6 3											0
S i g n i f i c a n d B i t s	ST(0) Exponent				ST(0) Significand or MM0										
	ST(1) Exponent				ST(1) Significand or MM1										
	ST(2) Exponent				ST(2) Significand or MM2										
	ST(3) Exponent				ST(3) Significand or MM3										
	ST(4) Exponent				ST(4) Significand or MM4										
	ST(5) Exponent				ST(5) Significand or MM5										
	ST(6) Exponent				ST(6) Significand or MM6										
	ST(7) Exponent				ST(7) Significand or MM7										

FP/MMX control registers																
register	1 5	1 4	1 3	1 2	1 1	1 0	9	8	7	6	5	4	3	2	1	0
CW (control word)	0	0	0	X	RC		PC		0	1	P M	U M	O M	Z M	D M	I M
SW (status word)	B	C 3	TOP			C 2	C 1	C 0	E S	S F	P E	U E	O E	Z E	D E	I E
TW (tag word)	TAG 7		TAG 6		TAG 5		TAG 4		TAG 3		TAG 2		TAG 1		TAG 0	
FP opcode bits						OPC1 bit2..0				OPC2 bit7..0						
	1 5				0	3 1										0
FP instruction pointer	FP_CS					FP_IP (instruction pointer)										
FP																

data pointer																FP_DS				FP_DP (data pointer)															
16bit real mode format																offset	16bit protected mode format																		
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0			
CW																+0000h	CW																		
SW																+0002h	SW																		
TW																+0004h	TW																		
FP_IP.15..0																+0006h	FP_IP																		
IP.19..16					0	FP_OPC										+0008h	FP_CS																		
FP_DP.15..0																+000Ah	FP_DP																		
DP.19..16					0	0	0	0	0	0	0	0	0	0	0	0	+000Ch	FP_DS																	

32bit real mode format																																															
3	3	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9	8	7	6	5	4	3	2	1	0	offset											
1	0	9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0																										
reserved																CW																+0000h															
reserved																SW																+0004h															
reserved																TW																+0008h															
reserved																FP_IP.15..0																+000Ch															
0	0	0	0	FP_IP.31..16																0	FP_OPC																+0010h										
reserved																FP_DP.15..0																+0014h															
0	0	0	0	FP DP.31..16																0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+0018h											

32bit protected mode format																																						
3	3	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	0	9	8	7	6	5	4	3	2	1	0	offset			
1	0	9	8	7	6	5	4	3	2	1	0	9	8	7	6	5	4	3	2	1	0																	
reserved																CW																+0000h						
reserved																SW																+0004h						
reserved																TW																+0008h						
FP_IP																																+000Ch						
0	0	0	0	0	0	FP_OPC																FP_CS																+0010h
FP_DP																																+0014h						

