

Table 6-1 Exception Vector Assignments

Vector Number	Vector Offset			Assignment
	Dec	Hex	Space	
0	0	000	SP	Reset: Initial Stack Pointer
1	4	004	SP	Reset: Initial Program Counter
2	8	008	SD	Bus Error
3	12	00C	SD	Address Error
4	16	010	SD	Illegal Instruction
5	20	014	SD	Zero Division
6	24	018	SD	CHK, CHK2 Instructions
7	28	01C	SD	TRAPcc, TRAPV Instructions
8	32	020	SD	Privilege Violation
9	36	024	SD	Trace
10	40	028	SD	Line 1010 Emulator
11	44	02C	SD	Line 1111 Emulator
12	48	030	SD	Hardware Breakpoint
13	52	034	SD	(Reserved, Coprocessor Protocol Violation)
14	56	038	SD	Format Error and Uninitialized Interrupt
15	60	03C	SD	Format Error and Uninitialized Interrupt
16–23	64 92	040 05C	SD	(Unassigned, Reserved)
24	96	060	SD	Spurious Interrupt
25	100	064	SD	Level 1 Interrupt Autovector
26	104	068	SD	Level 2 Interrupt Autovector
27	108	06C	SD	Level 3 Interrupt Autovector
28	112	070	SD	Level 4 Interrupt Autovector
29	116	074	SD	Level 5 Interrupt Autovector
30	120	078	SD	Level 6 Interrupt Autovector
31	124	07C	SD	Level 7 Interrupt Autovector
32–47	128 188	080 0BC	SD	Trap Instruction Vectors (0–15)
48–58	192 232	0C0 0E8	SD	(Reserved, Coprocessor)
59–63	236 252	0EC 0FC	SD	(Unassigned, Reserved)
64–255	256 1020	100 3FC	SD	User Defined Vectors (192)

Each vector is assigned an 8-bit number. Vector numbers for some exceptions are obtained from an external device; others are supplied by the processor. The processor multiplies the vector number by four to calculate vector offset, then adds the offset to the contents of the VBR. The sum is the memory address of the vector.

6.1.2 Types of Exceptions

An exception can be caused by internal or external events.

An internal exception can be generated by an instruction or by an error. The TRAP, TRAPcc, TRAPV, BKPT, CHK, CHK2, RTE, and DIV instructions can cause exceptions during normal execution. Illegal instructions, instruction fetches from odd addresses, word or long-word operand accesses from odd addresses, and privilege violations also cause internal exceptions.