# 9. Interrupts

This section describes the specifics of the interrupt handling as performed in ATmega48P/88P/168P/328P. For a general explanation of the AVR interrupt handling, refer to ”Reset and Interrupt Handling” on page 14.

The interrupt vectors in ATmega48P, ATmega88P, ATmega168P, and ATmega328P are generally the same, with the following differences:

- Each Interrupt Vector occupies two instruction words in ATmega168P and ATmega328P, and one instruction word in ATmega48P and ATmega88P.
- ATmega48P does not have a separate Boot Loader Section. In ATmega88P, ATmega168P, and ATmega328P, the Reset Vector is affected by the BOOTRST fuse, and the Interrupt Vector start address is affected by the IVSEL bit in MCUCR.

## 9.1 Interrupt Vectors in ATmega48P

**Table 9-1.** Reset and Interrupt Vectors in ATmega48P

| Vector No. | Program Address | Source | Interrupt Definition |
|---|---|---|---|
| 1 | 0x000 | RESET | External Pin, Power-on Reset, Brown-out Reset and Watchdog System Reset |
| 2 | 0x001 | INT0 | External Interrupt Request 0 |
| 3 | 0x002 | INT1 | External Interrupt Request 1 |
| 4 | 0x003 | PCINT0 | Pin Change Interrupt Request 0 |
| 5 | 0x004 | PCINT1 | Pin Change Interrupt Request 1 |
| 6 | 0x005 | PCINT2 | Pin Change Interrupt Request 2 |
| 7 | 0x006 | WDT | Watchdog Time-out Interrupt |
| 8 | 0x007 | TIMER2 COMPA | Timer/Counter2 Compare Match A |
| 9 | 0x008 | TIMER2 COMPB | Timer/Counter2 Compare Match B |
| 10 | 0x009 | TIMER2 OVF | Timer/Counter2 Overflow |
| 11 | 0x00A | TIMER1 CAPT | Timer/Counter1 Capture Event |
| 12 | 0x00B | TIMER1 COMPA | Timer/Counter1 Compare Match A |
| 13 | 0x00C | TIMER1 COMPB | Timer/Coutner1 Compare Match B |
| 14 | 0x00D | TIMER1 OVF | Timer/Counter1 Overflow |
| 15 | 0x00E | TIMER0 COMPA | Timer/Counter0 Compare Match A |
| 16 | 0x00F | TIMER0 COMPB | Timer/Counter0 Compare Match B |
| 17 | 0x010 | TIMER0 OVF | Timer/Counter0 Overflow |
| 18 | 0x011 | SPI, STC | SPI Serial Transfer Complete |
| 19 | 0x012 | USART, RX | USART Rx Complete |
| 20 | 0x013 | USART, UDRE | USART, Data Register Empty |
| 21 | 0x014 | USART, TX | USART, Tx Complete |
| 22 | 0x015 | ADC | ADC Conversion Complete |
| 23 | 0x016 | EE READY | EEPROM Ready |