

## 22.3 Register Description

### 22.3.1 ADCSRB – ADC Control and Status Register B

Bit	7	6	5	4	3	2	1	0	
(0x7B)	–	ACME	–	–	–	ADTS2	ADTS1	ADTS0	ADCSRB
Read/Write	R	R/W	R	R	R	R/W	R/W	R/W	
Initial Value	0	0	0	0	0	0	0	0	

- **Bit 6 – ACME: Analog Comparator Multiplexer Enable**

When this bit is written logic one and the ADC is switched off (ADEN in ADCSRA is zero), the ADC multiplexer selects the negative input to the Analog Comparator. When this bit is written logic zero, AIN1 is applied to the negative input of the Analog Comparator. For a detailed description of this bit, see [Section 22.2 “Analog Comparator Multiplexed Input” on page 202](#).

### 22.3.2 ACSR – Analog Comparator Control and Status Register

Bit	7	6	5	4	3	2	1	0	
0x30 (0x50)	ACD	ACBG	ACO	ACI	ACIE	ACIC	ACIS1	ACIS0	ACSR
Read/Write	R/W	R/W	R	R/W	R/W	R/W	R/W	R/W	
Initial Value	0	0	N/A	0	0	0	0	0	

- **Bit 7 – ACD: Analog Comparator Disable**

When this bit is written logic one, the power to the analog comparator is switched off. This bit can be set at any time to turn off the analog comparator. This will reduce power consumption in active and idle mode. When changing the ACD bit, the analog comparator interrupt must be disabled by clearing the ACIE bit in ACSR. Otherwise an interrupt can occur when the bit is changed.

- **Bit 6 – ADBG: Analog Comparator Bandgap Select**

When this bit is set, a fixed bandgap reference voltage replaces the positive input to the analog comparator. When this bit is cleared, AIN0 is applied to the positive input of the analog comparator. When the bandgap reference is used as input to the analog comparator, it will take a certain time for the voltage to stabilize. If not stabilized, the first conversion may give a wrong value. See [Section 10.7 “Internal Voltage Reference” on page 43](#)

- **Bit 5 – ACO: Analog Comparator Output**

The output of the analog comparator is synchronized and then directly connected to ACO. The synchronization introduces a delay of 1 - 2 clock cycles.

- **Bit 4 – ACI: Analog Comparator Interrupt Flag**

This bit is set by hardware when a comparator output event triggers the interrupt mode defined by ACIS1 and ACIS0. The analog comparator interrupt routine is executed if the ACIE bit is set and the I-bit in SREG is set. ACI is cleared by hardware when executing the corresponding interrupt handling vector. Alternatively, ACI is cleared by writing a logic one to the flag.

- **Bit 3 – ACIE: Analog Comparator Interrupt Enable**

When the ACIE bit is written logic one and the I-bit in the status register is set, the analog comparator interrupt is activated. When written logic zero, the interrupt is disabled.