

**KEYWORDS:****MEMORY, SRAM, REGISTERS, SLEEP, RESET****#006**

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## AVR Memory Contents After Sleep and Reset

### Introduction

The AVR contains volatile memories like SRAM, IO Registers and the Register File with 32 general purpose registers.

What happens to the contents in these volatile memories during a Power-up Reset, an External Reset, after a Watchdog Reset, or when waking up from sleep?

The following text will describe what contents you can expect to find there.

### Memory Contents after Waking From Any Sleep Mode

- IO Registers will be unchanged.
- SRAM contents will be unchanged.
- 32 general purpose register file will be unchanged.

### Memory Contents after a Watchdog Reset

- The IO Registers will be set to their initial value according to the datasheet.
- The SRAM will be unchanged.
- The 32 general purpose registers will be unchanged.

### Memory Contents after a Power-on Reset (Cold Reset)

- The IO Registers will be set to their initial value according to the datasheet.
- The SRAM will be un-initialized.
- The 32 general purpose registers will be un-initialized.

### Memory Contents after an External Reset (Warm Reset)

- The IO Registers will be set to their initial value according to the datasheet.
- The SRAM will be unchanged.
- The 32 general purpose registers will be unchanged.

The above statements are true for all future AVR devices.

The above statements are true for all existing devices with the following exceptions:

**Exception 1: AT90S1200,  
AT90S4414 and AT90S8515**

The SRAM content is not guaranteed to be unchanged after any reset condition.

The 32 general purpose registers are not guaranteed to be unchanged after any Reset condition.

Both SRAM and 32 general purpose registers are guaranteed to be unchanged when waking up from any sleep mode.

**Exception 2: ATmega103(L)**

The SRAM contents are guaranteed to be unchanged after any reset condition.

The 32 general purpose registers are not guaranteed to be unchanged after any reset condition.

Both SRAM and 32 GP registers are guaranteed to be unchanged when waking up from any sleep mode.