Errata

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12. Incorrect Channel Changes in Free Running Mode

If the ADC operates in Free Running Mode and channels are changed by writing to ADMUX shortly after the ADC Interrupt Flag (ADIF in ADCSR) is set, the new setting in ADMUX may affect the ongoing conversion.

Problem Fix/Workaround

Use Single Conversion Mode when scanning channels, or avoid changing ADMUX until at least 0.5 ADC clock cycles after ADIF goes high.

11. 32 kHz Oscillator may Fail at Higher Voltages

When using an external 32 kHz crystal as asynchronous clock source for Timer2, the timer may count incorrectly at voltages above 4.0V.

Problem Fix/Workaround

Keep the supply voltage below 4.0V when clocking Timer2 from an external crystal.

10. Incorrect Start-up Time

When the FSTRT fuse is programmed, the start-up time from reset may still be 16 ms instead of 1 ms.

Problem Fix/Workaround

Leave the FSTRT fuse unprogrammed and design the system to allow a start-up time of 16 ms.

9. Lock Bits at High V_{CC} and Temperature

On some devices, the lock bits will not erase at high V_{CC} and temperature. In this situation, it will not be possible to reprogram the devices when the lock bits are set.

Problem Fix/Workaround

Lower V_{CC} below 4.0V at room temperature before you perform a chip-erase. Then the device will unlock, and it will be possible to reprogram the device at any V_{CC}.

8. Error in Half Carry Flag

The half carry flag is undefined after executing the commands "ror", "asr" and "lsr".

Problem Fix/Workaround

Do not use the half carry flag value after executing the above instructions.
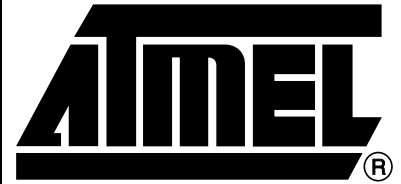
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7. Error in Writing Reset Status Bits
The EXTRF flag in MCUSR will be cleared when clearing the PORF-flag. The flag does not get cleared by writing a "0" to it.

Problem Fix/Workaround
Finish the test of both flags before clearing any of them. Clear both flags simultaneously by writing "0" to both PORF and EXTRF in MCUCR.

6. Wake-up from Sleep Executes Instructions before the Interrupt is Serviced
When waking up from power save, some instructions are executed before the interrupt is called. If the device is woken up by an external interrupt, 2 instruction cycles are executed. If it is woken up by the asynchronous timer, 3 instructions are executed before the interrupt.

Problem Fix/Workaround
Make sure that the first two or three instructions following sleep are not dependent on the executed interrupt.

5. The SPI can Send Wrong Byte
If the SPI is in Master mode, it will restart the old transfer if new data is written on the same clock edge as the previous transfer is finished.

Problem Fix/Workaround
When writing to the SPI, first wait until it is ready, then write the byte to transmit.

4. Output Compare Output Value Corrupted by Writing to Port
When writing to the PORTD I/O location, the OC1A and OC1B output compare values will assume the values written to bits 5 and 4, respectively. This means that even when writing to another bit in the same port register (such as a read-modify-write to another pin in the same port), the output compare values will be affected. Effectively, if the output compare function is used, the other pins in the same port cannot be changed, unless the intention is to write the output compare values simultaneously.

Problem Fix/Workaround
Avoid updating the other port bits when using the output compare function.

3. Serial Programming at Voltages below 3.0V
At voltages below 3.0V, serial programming might fail.

Problem Fix/Workaround
Keep V_{CC} at 3.0V or higher during In-System Programming.

2. Wake-up from Power Save without Global Interrupt Enabled
When an asynchronous timer interrupt is used to wake up the part from power save, the part will wake up even if global interrupts are disabled.

Problem Fix/Workaround
No workaround necessary.

1. UART Loses Synchronization if RXD Line is Low when UART Receive is Disabled

The UART will detect a UART start bit and start reception even if the UART is not enabled. If this occurs, the first byte after re-enabling the UART will be corrupted.

Problem Fix/Workaround
Make sure that the RX line is high at start-up and when the UART is disabled. An external RS232-level converter keeps the line high during start-up.

Errata Sheet

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