

AVR089: Migrating between ATmega16 and ATmega32

Introduction

This application note is a guide to help current ATmega16 users convert existing designs to ATmega32. The information given will also help users migrating from ATmega32 to ATmega16. ATmega163 users should also read the application note “AVR083: Replacing ATmega163 by ATmega16”.

In addition to the differences described in this document, the electrical characteristics of the two devices are different. Check the data sheets for detailed information.

Memory Sizes

All the memories of the ATmega32 are bigger than those of the ATmega16. Table 1 is a comparison of the individual memories.

Table 1. Memory Sizes

	ATmega16	ATmega32
Flash	16k bytes	32k bytes
RAM	1k bytes	2k bytes
EEPROM	512 bytes	1k bytes

The Boot Loader area is also changed. The following must be considered:

- The No-Read-While-Write section starts at word address 0x3800 instead of 0x1C00.



8-bit **AVR**[®]
Microcontroller

**Application
Note**

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Interrupt Tables

The ATmega32 has a different interrupt table from ATmega16. Table 2 compares the interrupt tables of the two devices.

Table 2. Interrupt Table

Vector #	ATmega16	ATmega32
1	RESET	RESET
2	INT0	INT0
3	INT1	INT1
4	TIMER2 COMP	INT2
5	TIMER2 OVF	TIMER2 COMP
6	TIMER1 CAPT	TIMER2 OVF
7	TIMER1 COMPA	TIMER1 CAPT
8	TIMER1 COMPB	TIMER1 COMPA
9	TIMER1 OVF	TIMER1 COMPB
10	TIMER0 OVF	TIMER1 OVF
11	SPI, STC	TIMER0 COMP
12	USART, RXC	TIMER0 OVF
13	USART, UDRE	SPI, STC
14	USART, TXC	USART, RXC
15	ADC	USART, UDRE
16	EE_RDY	USART, TXC
17	ANA_COMP	ADC
18	TWI	EE_RDY
19	INT2	ANA_COMP
20	TIMER0 COMP	TWI
21	SPM_RDY	SPM_RDY

Miscellaneous

The following applies to ATmega32:

- In the MCUCR Register, the SM2 and SE bits are swapped, i.e., SM2 is bit 7 and SE is bit 6.



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