

Loop Back Branch Instructions with Interrupts Errata Sheet

Application

This errata sheet applies to code in the AVR Core V2 - avr05_cdk1.3.0.

Error Description

A branch or jump instruction (BRxxx, RJMP, JMP, IJMP) may loop back on itself (-1 length loop). If this loop is followed by a two-word instruction (LDS, STS, JMP, CALL), an interrupt cannot break the loop. In this case, the interrupt vector is never reached and the program loops continuously until the next reset.

Bad code examples follow:

- For **assembler programs**:

```
Wait_Label :<any branch or jump instruction to Wait_Label>  
            <any two word instruction>
```

- For **C programs** (using IAR C Compiler V1.0 and later):

```
for(;;)  
;
```

Workaround

- For **assembler programs**, avoid -1 length loops followed by a two-word instruction if interrupts are enabled, or replace with the following code:

```
Wait_Label :<any branch or jump instruction to Wait_Label>  
            nop  
            <any two word instruction>
```

- For **C programs** (using IAR C Compiler V1.0 and later), avoid the for(;;) instruction or replace with the following code:

```
while(1) ;  
or  
do {} while(1);
```

In addition, the user should avoid using the exit instruction in the main { } section. This generates a -1 length loop which cannot be broken later by interrupts if followed by a two-word instruction.



AVR[®]
Embedded RISC
Microcontroller
Core V2

Errata Sheet





Atmel Headquarters

Corporate Headquarters
2325 Orchard Parkway
San Jose, CA 95131
TEL (408) 441-0311
FAX (408) 487-2600

Europe

Atmel U.K., Ltd.
Coliseum Business Centre
Riverside Way
Camberley, Surrey GU15 3YL
England
TEL (44) 1276-686-677
FAX (44) 1276-686-697

Asia

Atmel Asia, Ltd.
Room 1219
Chinachem Golden Plaza
77 Mody Road Tsimhatsui
East Kowloon
Hong Kong
TEL (852) 2721-9778
FAX (852) 2722-1369

Japan

Atmel Japan K.K.
9F, Tonetsu Shinkawa Bldg.
1-24-8 Shinkawa
Chuo-ku, Tokyo 104-0033
Japan
TEL (81) 3-3523-3551
FAX (81) 3-3523-7581

Atmel Operations

Atmel Colorado Springs
1150 E. Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906
TEL (719) 576-3300
FAX (719) 540-1759

Atmel Rousset

Zone Industrielle
13106 Rousset Cedex
France
TEL (33) 4-4253-6000
FAX (33) 4-4253-6001

Fax-on-Demand

North America:
1-(800) 292-8635
International:
1-(408) 441-0732

e-mail

literature@atmel.com

Web Site

<http://www.atmel.com>

BBS

1-(408) 436-4309

© Atmel Corporation 2000.

Atmel Corporation makes no warranty for the use of its products, other than those expressly contained in the Company's standard warranty which is detailed in Atmel's Terms and Conditions located on the Company's web site. The Company assumes no responsibility for any errors which may appear in this document, reserves the right to change devices or specifications detailed herein at any time without notice, and does not make any commitment to update the information contained herein. No licenses to patents or other intellectual property of Atmel are granted by the Company in connection with the sale of Atmel products, expressly or by implication. Atmel's products are not authorized for use as critical components in life support devices or systems.

Marks bearing ® and/or ™ are registered trademarks and trademarks of Atmel Corporation.

Terms and product names in this document may be trademarks of others.



Printed on recycled paper.

1383A-06/00/xM