

AT90PWM2/3

Programming Guide





Section 1

AT90PWM2/3 Programming Guide

1.1 Introduction

This document is intended for AT90PWM2/3 users, it focuses on fuse bit programming and configuration. It also provides information and synthesis about fuse bit configuration versus different Atmel hardware development kits using AT90PWM2/3.

For each hardware element referenced in this document please refer to the corresponding hardware user guide available on the Atmel web site.

1.2 General Remarks Concerning Fuse Bits

When DWEN fuse bit is enable there is no more ISP. The only way to disable this fuse is parallel programming or Debug wire using JTAGICE mkII (open project, start debugging session, then in JTAGICE mkII options there is a "Disable DebugWire" button).

When SPIEN fuse bit is disable there is no more ISP, the only way to enable it is parallel programming .

On AT90PWM2/3, When PSCxRB or PSCRV fuse are used, the parallel programming fails, ISP must be used to desativate these fuse bits or to program the part.

Warning: If SPIEN fuse is disable and PSCxRB used, the chip's firmware can be programmed using DebugWire only. The fuse bits cannot be changed any more.

Table 1-1. Fuse bit configuration vs effect on ATAVRMC100, ATAVRMC200, ATAVRFBKIT, STK500+STK520 used with AT90PWM2/3 Rev A

PSCxRB	RSTDISBLE	DWEN	SPIEN	ATAVRMC100, ATAVRMC200, ATAVRFBKIT	STK500 and STK520
☐	☐	☐	☐	AT90PWM2/3 is no more programmable, it must be unsoldered	AT90PWM2/3 can be programmed using parallel programming only
☐	☐	☐	☒	AT90PWM2/3 code can be programmed using ISP only.	AT90PWM2/3 code can be programmed using ISP and parallel programming.
☐	☐	☒	☐	AT90PWM2/3 code can be programmed using Debugwire only. Fuse bits are no more accessible.	AT90PWM2/3 code can be programmed using Debugwire and parallel programming only.
☐	☐	☒	☒	AT90PWM2/3 code can be programmed using Debugwire Fuse bits are accessible in ISP mode only.	AT90PWM2/3 code can be programmed using Debugwire and parallel programming.

Table 1-1. Fuse bit configuration vs effect on ATAVRMC100, ATAVRMC200, ATAVRFBKIT, STK500+STK520 used with AT90PWM2/3 Rev A (Continued)

PSCxRB	RSTDISBLE	DWEN	SPIEN	ATAVRMC100, ATAVRMC200, ATAVRFBKIT	STK500 and STK520
☐	☒	☐	☐	AT90PWM2/3 is no more programmable, it must be unsoldered	AT90PWM2/3 code can be programmed using parallel programming only.
☐	☒	☐	☒	AT90PWM2/3 is no more programmable, it must be unsoldered	AT90PWM2/3 code can be programmed using parallel programming only.
☐	☒	☒	☐	AT90PWM2/3 is no more programmable, it must be unsoldered	AT90PWM2/3 code can be programmed using parallel programming only.
☐	☒	☒	☒	AT90PWM2/3 is no more programmable, it must be unsoldered	AT90PWM2/3 code can be programmed using parallel programming only.
☒	☐	☐	☐	Part is no more accessible	Part is no more accessible
☒	☐	☐	☒	AT90PWM2/3 code can be programmed using ISP only.	AT90PWM2/3 code can be programmed using ISP only.
☒	☐	☒	☐	AT90PWM2/3 code can be programmed using Debugwire only. Fuse bits are no more accessible.	AT90PWM2/3 code can be programmed using Debugwire only. Fuse bits are no more accessible.
☒	☐	☒	☒	AT90PWM2/3 code can be programmed using Debugwire only. Fuse bits are accessible in ISP only.	AT90PWM2/3 code can be programmed using Debugwire only. Fuse bits are accessible in ISP only.
☒	☒	☐	☐	Part is no more accessible	Part is no more accessible
☒	☒	☐	☒	Part is no more accessible	Part is no more accessible
☒	☒	☒	☐	Part is no more accessible.	Part is no more accessible
☒	☒	☒	☒	Part is no more accessible	Part is no more accessible

Note: In Debugwire mode, fuse bit can not be accessed.

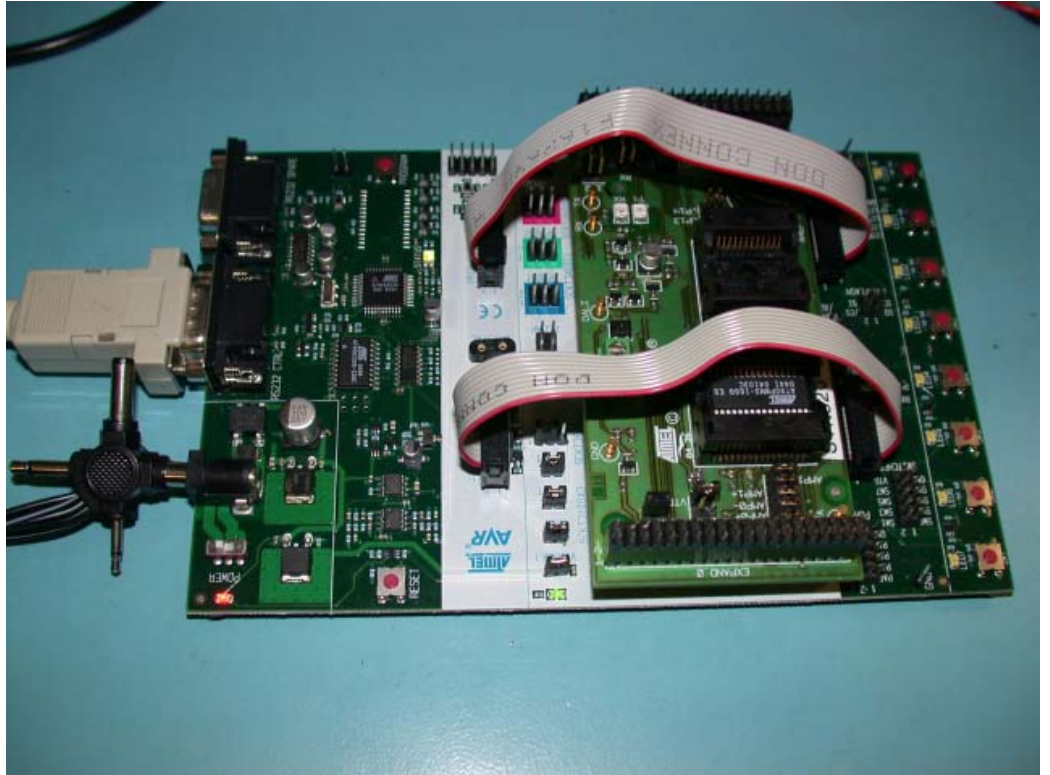
☒ programmed

☐ Unprogrammed

 Warning this configuration must be verified before programming it may completely lock the part



Figure 1-1. Annexe 1 : STK500, STK520 Parallel programming configuration



1.2.1 Connections

- RS232 cable from PC to RS232 CTRL connector
- 10 wire cable from PROG CTRL to PORTD
- 10 wire cable from PROG DATA to PORTB

1.2.2 Jumpers:

- VTARGET, AREF, RESET, XTAL1 and BSEL2 are selected
- OSCSEL is selecting on board oscillator
- PJUMP jumpers are removed

1.3 STK520 Jumper Configuration for Parallel Programming

Jumper	Position	Function	Description
JP1	On	XT1	Connect STK500 XT1 circuit to AVR PE1
JP2	On	XT2	Connect STK500 XT2 circuit to AVR PE2
JP3	On	RESET	Connect STK500 RESET circuit to AVR PE0
JP4	Off	RX	Connect Rx D DALI to Rx D Input of the AVR
JP5	Off	TX	Connect Tx D DALI to Tx D Output of the AVR
JP6	Off	VTG	Useful to measure the VCC and AVCC current
JP7	On	ANA REF	Connect STK500 REF circuit to AVR AREF
JP8	On	D2A	Isolate D2A output
JP9	On	AMP0+	Isolate AMP0+ input
JP10	On	AMP0-	Isolate AMP0- input
JP11	On	AMP1+	Isolate AMP1+ input
JP12	On	AMP1-	Isolate AMP1- input
JP13	Off		Potentiometer supply from Analog V Ref
JP14	Off		Potentiometer output to ADC0 input



Atmel Corporation

2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 487-2600

Regional Headquarters

Europe

Atmel Sarl
Route des Arsenaux 41
Case Postale 80
CH-1705 Fribourg
Switzerland
Tel: (41) 26-426-5555
Fax: (41) 26-426-5500

Asia

Room 1219
Chinachem Golden Plaza
77 Mody Road Tsimshatsui
East Kowloon
Hong Kong
Tel: (852) 2721-9778
Fax: (852) 2722-1369

Japan

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

Memory

2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

Microcontrollers

2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

La Chantretrie
BP 70602
44306 Nantes Cedex 3, France
Tel: (33) 2-40-18-18-18
Fax: (33) 2-40-18-19-60

ASIC/ASSP/Smart Cards

Zone Industrielle
13106 Rousset Cedex, France
Tel: (33) 4-42-53-60-00
Fax: (33) 4-42-53-60-01

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906, USA
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Scottish Enterprise Technology Park
Maxwell Building
East Kilbride G75 0QR, Scotland
Tel: (44) 1355-803-000
Fax: (44) 1355-242-743

RF/Automotive

Theresienstrasse 2
Postfach 3535
74025 Heilbronn, Germany
Tel: (49) 71-31-67-0
Fax: (49) 71-31-67-2340

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906, USA
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Biometrics/Imaging/Hi-Rel MPU/ High Speed Converters/RF Data- com

Avenue de Rochepleine
BP 123
38521 Saint-Egreve Cedex, France
Tel: (33) 4-76-58-30-00
Fax: (33) 4-76-58-34-80

Literature Requests

www.atmel.com/literature

Disclaimer: The information in this document is provided in connection with Atmel products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of Atmel products. **EXCEPT AS SET FORTH IN ATMEL'S TERMS AND CONDITIONS OF SALE LOCATED ON ATMEL'S WEB SITE, ATMEL ASSUMES NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL ATMEL BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION, OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF ATMEL HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.** Atmel makes no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Atmel does not make any commitment to update the information contained herein. Unless specifically provided otherwise, Atmel products are not suitable for, and shall not be used in, automotive applications. Atmel's products are not intended, authorized, or warranted for use as components in applications intended to support or sustain life.

© Atmel Corporation 2006. All rights reserved. Atmel®, logo and combinations thereof, are registered trademarks, and Everywhere You Are® are the trademarks of Atmel Corporation or its subsidiaries. Other terms and product names may be trademarks of others.



Printed on recycled paper.