

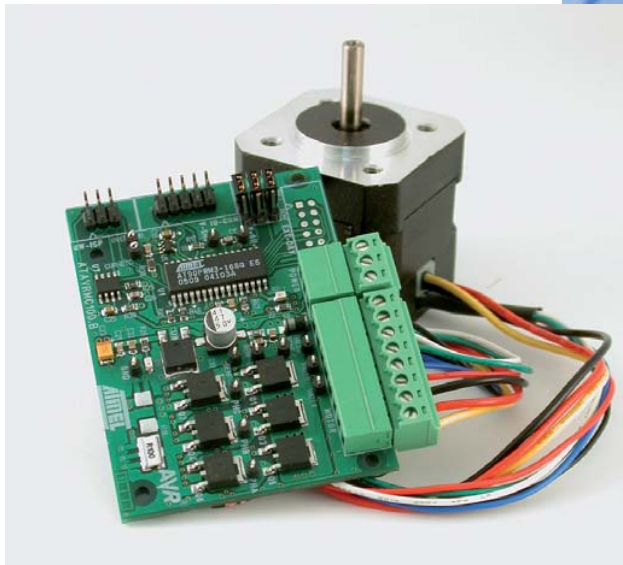
# AVR<sup>®</sup> Motor Control Evaluation Kit

## ATAVRMC100

### EVALUATE AND DESIGN BRUSHLESS DC MOTORS APPLICATIONS

The ATAVRMC100 is an evaluation kit dedicated to brushless DC motor control, for both Hall effect sensor control and sensorless control using Back ElectroMotive Force.

The kit includes an evaluation board, a 3-phase BLDC motor and a demonstration software. It allows users to quickly evaluate the capability of the AVR<sup>®</sup> microcontroller AT90PWM3B to control high speed brushless DC motor applications. The kit can also serve as a development platform. Low cost AVR development tools make debugging easier, and source codes, written in C, can be easily re-used by developers for their own motor control applications.



#### Key Features

- Evaluation Board with AT90PWM3B Microcontroller
- 3-phase BLDC Motor
- For both Hall Sensor and Sensorless Applications
- Supports In-System Programming and Chip Emulation
- CD-ROMs with Datasheets, Application Notes and Demonstration Software

#### Applications

- Air Conditioning (HVAC)
- Refrigerators, Fans, Pumps
- High Tech Industrial Constant Speed Applications
- Traction Elevator
- Medical Equipment



**Headquarters**

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

**International**

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

**Atmel Europe**

Le Krebs  
8, rue Jean-Pierre Timbaud  
BP 309 - 78054 St Quentin-en-  
Yvelines Cedex  
**France**  
Tel: (33) 1-30-60-70-00  
fax: (33) 1-30-60-71-11

**Atmel 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

**Literature Requests**

[www.atmel.com/literature](http://www.atmel.com/literature)

**Web Site**

[www.atmel.com](http://www.atmel.com)



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 SALES 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 AND 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 products 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, 2007. All rights reserved. Atmel, logo and combinations thereof, "Everywhere You Are", AVR and others are registered trademarks or trademarks of Atmel Corporation or its subsidiaries. Other terms and product names may be the trademarks of others. 4094B-AVR-12/07/

The ATAVRMC100 BLDC motor control kit is an evaluation tool and development board for the AT90PWM3B AVR microcontroller from Atmel.

The board includes power bridges for BLDC motors and can realize zero crossing voltage detection, hardware overcurrent detection and motor supply voltage measurement. An on board LIN transceiver allows to drive application through a LIN network. Programming of the code into the microcontroller's Flash memory can be performed with an AVRISP or a JTAGICE mkII through the dedicated connectors.

**Product Features**

- On board AT90PWM3B microcontroller in SO32 package (2.7-5.5V)
- Hall sensor or sensorless configuration
- Zero crossing voltage detection
- Hardware overcurrent detection
- Motor supply voltage and operating current measurement
- System clock: internal RC oscillator
- On board LIN transceiver Atmel ATA6661
- Expansion connector to be used with other AVR microcontrollers
- Many access points for test and debug
- Dimension: 75 mm x 55 mm

**Power Bridge for BLDC Motors**

- Any commutation schemes are possible.
- Recommended Voltage Operation from 8 to 16V DC (4A)

**BLDC Motor**

For a comprehensive and ready-to-use evaluation, a 3-phase BLDC motor is provided.

- Manufacturer: TecMotion
- Hall sensors included. Also usable as sensorless motor.
- Phases: 3 – Poles: 8
- Voltage: 12V
- Speed: 6200 RPM
- Peak Torque: 0.19 N.m

**Support**

All design hints are described. Any new design can use these examples as a starting point.

- ATAVRMC100 User Manual
- Hardware schematics and layout
- Self tutorials
- Application notes and software examples

**Development Tools**

Only low cost standard AVR tools are required for application development and debug.

- AVR Studio® software interface
- ISP connector for on-chip In System Programming
- ISP connector for debug wire

**Ordering Information**

- ATAVRMC100

The latest version of all softwares is available free of charge on Atmel web site: [www.atmel.com](http://www.atmel.com)

