



Power Control ICs for Industrial Applications

Type Descriptions and Applications

1. Type Description

Table 1-1. Phase Control (e.g., Motor Control, Light Dimming)

Type	Description	Features
U2008B	Phase control IC	Retrigger Soft-start OR current feedback
U2010B	Phase control IC	Current feedback Overload indication Overload protection (foldback) Soft-start Retrigger (disconnectable)
U209B	Phase control IC	Retrigger Soft-start Tacho regulation (f/V converter)
U211B	Phase control IC	Line locker Overload protection (foldback) Retrigger (disconnectable) Soft-start Tacho feedback (f/V converter) Tacho monitor

Table 1-2. Zero Crossing Switch (e.g., Heating Control)

Type	Description
T2117	Universal zero crossing switch

Table 1-3. Sensor Controlled Timer on AC-Line
(e.g., Motion Sensor, Light Barrier, Light Control, Irrigation Systems)

Type	Description
U2100B	Timer on AC line for triac or relay control Two- or three wire applications “Day switch off”- function for motion sensors
U2102B	Timer on AC line for IGBT or Power FET control Reverse phase control for dimmer functions Two- or three wire applications Electronic fuse for loads (no external fuse necessary)

**Power Control
ICs**

**Cross
Reference**



2. Applications

2.1 AC - Power Control (24V to 380V)

2.1.1 Phase Control

Table 2-1. Motor Control (Recommended Products: U2008B, U2010B, U211B), Universal Motors (Motors with Collector and Brushes)

Applications	Features	Part No.
Kitchen machine/mixer	Soft-start, speed control, speed regulation, overload protection, overload indication, line locker, food programs	U2008B U2010B
Lawn mower	Soft-start, max. speed limitation (noise reduction)	U2010B
Power tools such as drilling machines, grinders, circular saws, chain saws, belt sanders, sanders, routers, power hammers	Soft-start, speed control, speed regulation, overload protection, overload indication, line locker	U2008B U2010B U211B
Whirlpools	Quick-start, stepless air massage control	U2008B
Vacuum cleaner – standard – low cost	Soft-start, speed control, vacuum regulation, 70% full and total full indication; full switch off Soft-start, speed control, vacuum regulation	U2010B U2008B
Washing machines	Soft-start, speed control + regulation	U211B
Water pump	Soft-start, overload protection	U2010B

Table 2-2. Capacitance and Brushless 50/60 Hz AC Motors

Applications	Features	Part No.
Air conditioning systems	Speed control, automatic adjustment of speed related to temperature = less noise	U2010B
Fans ⁽¹⁾	Speed control, automatic adjustment of speed related to temperature (heating and cooling)	U2008B U2010B
Roomheater/artificial fireplaces	Heating fan speed control	U2008B

Note: 1. Ceiling fans may have a problem with phase control; sometimes the coils are so simple that noise is possible. It depends on the application.

Table 2-3. Other Phase Control (Recommended Products: U2010B, U2008B)

Applications	Features	Part No.
Charging of lead acid batteries, control on primary side of transformer	Only 10% to 20% of the control current, smaller heat sink, current control, voltage control	U2008B U2010B
Transformer control welding transformers	General applications, soft-start, power control	U2008B U2010B

2.1.2 Zero Crossing Switch

Table 2-4. Heating Control (Recommended Products: T2117)

Applications	Features	Part No.
Air conditioning systems	Stepless temperature control of heating wire, no noise heat control or regulation	T2117 U2010B
Aquarium heaters	Constant water temperature	T2117
Defrost applications	Switch on heater and controls temperature	T2117
Hair dryer/hood	Stepless temperature control of heating wire, no defects when hair blocks the air channel	T2117
Heat guns	Stepless heat control, no defect to overheated heat wires	T2117
Incubator	Precise temperature control	T2117
Pressing machines	Temperature control of heating cylinder	T2117
Soldering Irons	Temperature regulation	T2117
Sterilizer	Precise temperature control	T2117
Thermostats	Heating control	T2117
Waterbed	Temperature control, without noise ("click")	T2117

2.1.3 Combination of Phase Control and Zero Crossing Switch

Table 2-5. Light Control (Recommended Products: U2100B, U2102B, U211B)

Applications	Features	Part No.
Disco light	Noiseless light flasher	T2117
Halogen lamp transformer	Stepless brightness control, longer lifetime of halogen lamps (even when switched in parallel)	U2010B
Lamps	Stepless brightness control (dimmer) Dimmer without coil	U2008B U2102B
Light feedback control	Constant light on working places, even after sunset	U2010B
Motion sensors and lamps	Light is only switched on when motion has been detected. House lamp: after sunset 10% brightness, after motion detection: 100% brightness with timer NO FUSE in motion sensor necessary	U2100B
		U2102B
Timer	Switch off after time x, adjustable from 10 sec. - 1 h	U2100B



3. Order Form for Data Sheets and Application Info

REP..... LOCATION.....

NAME..... PHONE..... FAX.....

CUSTOMER NAME.....

ADDRESS.....

PHONE..... FAX..... CONTACT.....

PLEASE SEND FOLLOWING INFO:

PHASE CONTROL

BATTERY CHARGING

TIMER ON AC LINE

APPLICATIONS:.....

FOR PHASE CONTROL

POWER OF LOAD..... (Watt)

KIND OF LOAD..... (e.g. motor, bulb, etc.)

FOR TIMER ON AC LINE

KIND OF LOAD..... (e.g. relay, IGBT, triac)

FOR BATTERY CHARGING

BATTERY TYPE: NiCd..... NiMH..... OTHER.....

OF CELLS..... CAPACITY (Ah).....

CHARGING TIME..... CHARGING CURRENT.....

CURRENT METHOD BEING USED.....

Please send this form to

ATMEL Germany GmbH
Klaus Schweizer, Marketing Manager
P.O.B. 3535, 74025 Heilbronn, Germany
Tel./Fax: +49-7131-67-2554/2777
E-mail: Klaus.Schweizer@hno.atmel.com

Datasheets are available on our home page: <http://www.atmel.com>



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 Chantrerie
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 Datacom

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 2005. All rights reserved. Atmel®, logo and combinations thereof, Everywhere You Are® and others, are registered trademarks or trademarks of Atmel Corporation or its subsidiaries. Other terms and product names may be trademarks of others.



Printed on recycled paper.