

# **Power Control ICs for Industrial Applications**

Type Description  
Applications

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## 1. Type Description

### 1.1 Phase Control

(e.g. motor control, light dimming)

Type	Description
U2008B	Phase control + Retrigger + Softstart OR current feedback
U2010B	Phase control + Current feedback + Overload indication + Overload protection (foldback) + Softstart + Retrigger (disconnectable)
U209B	Phase control + Retrigger + Softstart + Tacho regulation (f/V converter)
U211B	Phase control + Line locker + Overload protection (foldback) + Retrigger (disconnectable) + Softstart + Tacho feedback (f/V converter) + Tacho monitor
U490B	One-shot phase control for electric stapler devices Mains synchronized and phase-controlled thyristor ignition Repetition delay, switching identification with time delay

### 1.2 Zero Crossing Switch

(e.g. heating control)

Type	Description
T2117	Universal zero crossing switch

### 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)

## 1.4 Battery Charging

(e.g. NiMH, NiCd charger – 3 h – 24 h)

Type	Description
U2403B	Charge timer with current control for <b>low-cost systems</b> Smallest charge circuit available

## 1.5 DC Motor Control by PWM

(Motors with collector and brushes)

Type	Description
U2352B	DC motor control and light dimming in battery operated systems. Current detection without shunt !

## 2. Applications

### 2.1 AC Power Control

(24 V AC to 380 V AC)

#### 2.1.1 Phase Control

##### Motor Control

(pref. products: U2008B, U2010B, U211B2/3)

##### Universal Motors (motors with collector and brushes)

Application	Features	i.e. Part #
Kitchen machine/mixer	Softstart, speed control, speed regulation, overload protection, overload indication, line locker, food programs	U2008B U2010B
Lawn mower	Softstart, max. speed limitation (noise reduction)	U2010B
Power tools such as: drilling machines, grinders, circular saws, chain saws, belt sanders, sanders, routers, power hammers	Softstart, speed control, speed regulation, overload protection, overload indication, line locker	U2008B U2010B U211B
Whirlpools	Quickstart, steplless air massage control	U2008B
Vacuum cleaner, standard	Softstart, speed control, vacuum regulation, 70% full and total full indication; full switch off	U2010B
-- low cost	Softstart, speed control, vacuum regulation	U2008B
Washing machines	Softstart, speed control + regulation	U211B
Water pump	Softstart, overload protection	U2010B

## Capacitance and Brushless 50/60-Hz AC Motors

Application	Features	i.e. Part #
Air conditioning systems	Speed control, automatic adjustment of speed related to temperature = less noise	U2010B
Fans *	Speed control, automatic adjustment of speed related to temperature (heating <b>and</b> cooling)	U2008B U2010B
Room heater/artificial fireplaces	Heating fan speed control	U2008B

\* Ceiling fans may have a problem with phase control; sometimes the coils are so simple that noise is possible (depends on the application).

### Other Phase Control

(pref. products: U2010B, U2008B)

Application	Features	i.e. Part #
Charging of lead acid batteries -control on primary side of transformer	Only 10 - 20% of the control current, smaller heat sink, current control, voltage control	U2008B U2010B
Transformer control welding transformers	General applications, softstart, power control	U2008B U2010B
Electric staplers	Phase-controlled thyristor ignition Repetition delay	U490B

## 2.1.2. Zero Crossing Switch

### Heating Control

(pref. product: T2117)

Application	Features	i.e. Part #
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 temperature control	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 due 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

### Light Control

(pref. products: U2100B, U2102B, U211B)

Application	Features	i.e. Part #
Disco light	Noiseless light flasher	T2117
Halogen lamp transformer	Stepless brightness control, longer lifetime of halogen lamps (even when switched parallel)	U2008B 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 only when motion was 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 to 10 sec. – 1 h	U2100B

## 2.2. DC Power Control

### 2.2.1. Battery Charging

#### Wireless Applications

(pref. product: U2403B)

Application	Features	i.e. Part #
	Common feature for all parts: No overcharging, max. battery lifetime	
AA, AAA cells	Low cost charger	U2403B
Cellular phones	For second slot	U2403B
Cordless phones	NiCd or NiMH - battery charging	U2403B
Kitchen tools	NiCd or NiMH - battery charging	U2403B
Spotlights/ flashlight	NiCd or NiMH - battery charging	U2403B
Toys	4 – 12 h charge	U2403B

### 2.2.2 DC Motors with Collector and Brushes

(pref. product: U2352B)

Application	Features	i.e. Part #
All <b>battery-operated</b> motors or lights such as power tools, halogen lamps	Output control by PWM, monitoring of battery voltage and output current	U2352B



### 3. Order Form for Data Sheets and Applications

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 order form to

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Data sheets are also available at [www.atmel-wm.com](http://www.atmel-wm.com)