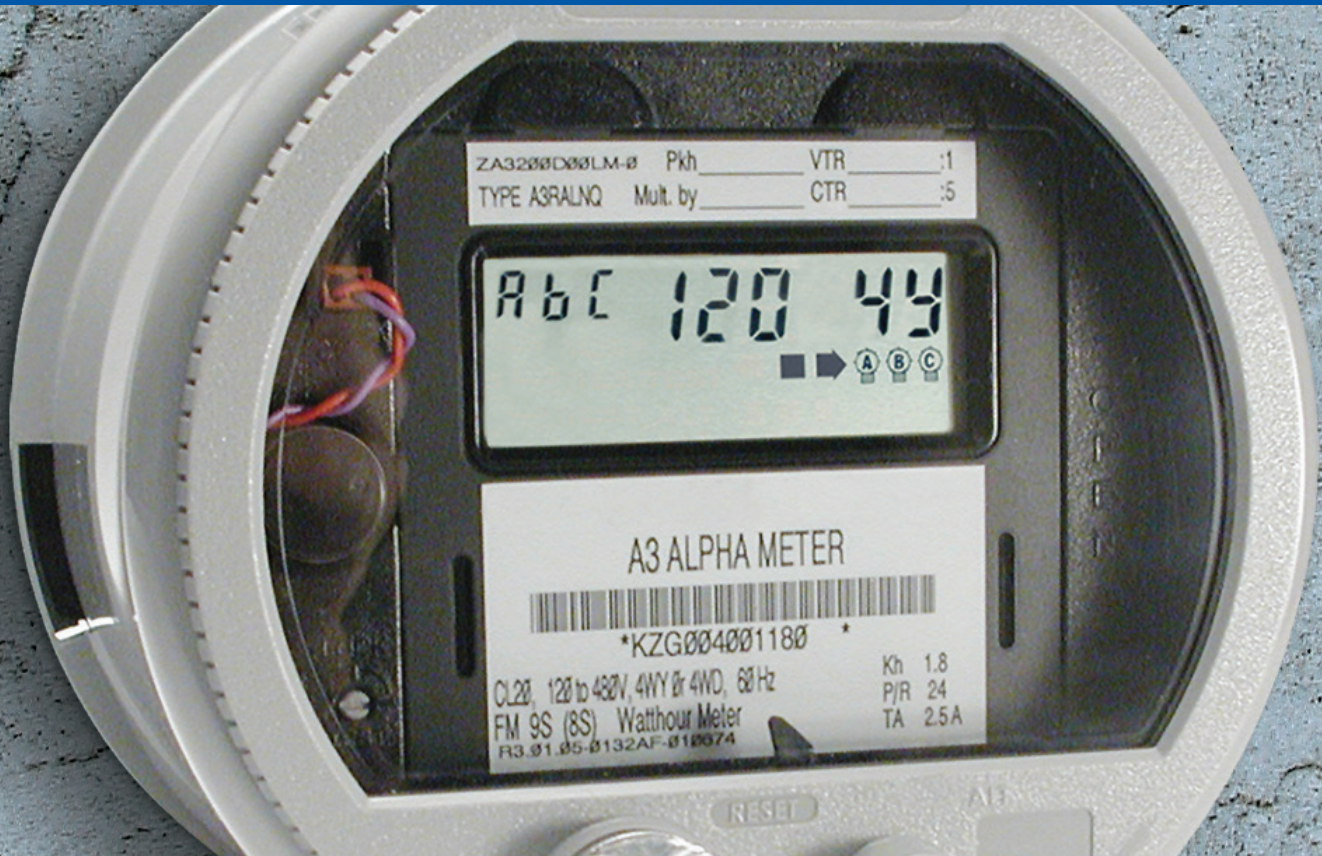
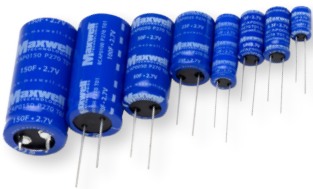


AUTOMATIC METER READING (AMR) APPLICATION BRIEF



Keep meter data flowing. Even when power isn't. The demand for ultra precise metering has never been greater than in today's deregulated energy market. Under constant scrutiny to collect timely, accurate data from an ever-increasing number of service locations, utility providers need meters and meter-reading methods that they can rely on without question.

These industry demands are rapidly driving the development of new automatic meter reading (AMR) technologies, including outage-proof, meter-energy subsystems based on dependable Maxwell ultracapacitors. Maxwell's economical, low maintenance solutions enables functionality such as data delivery capability, even when power is lost. For water or gas meters, ultracapacitors can:



Maxwell's compact, UL-recognized HC Series ultracapacitors are ideal for use in automatic meter reading power-supply applications.

- Eliminate the power pulses that greatly reduce battery life
- Keep critical information and functions accessible during dips/sags and power losses by extending power availability
- Reduce or eliminate battery maintenance and replacement costs
- Offer long life and reliable operation in temperatures ranging from -40°C to $+65^{\circ}\text{C}$

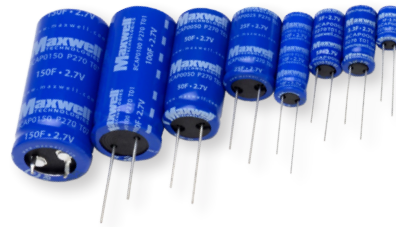
AUTOMATIC METER READING (AMR) APPLICATION BRIEF

Ultracapacitors

Ultracapacitors are energy storage devices that provide burst power for applications requiring high power functions. Unlike batteries, which store energy via chemical reaction, ultracapacitors store energy by electrostatically (physically) separating positive and negative charges. The ultracapacitor's electrostatic energy storage permits the device to be rapidly charged and discharged for hundreds of thousands of cycles,* as compared to batteries, which typically perform only hundreds or thousands of charge/discharge cycles. Ultracapacitors are a reliable, energy-efficient and cost-effective solution for storing energy.

Background

Maxwell Technologies is the global leader in ultracapacitor technology and is changing the way energy is used and stored. Our ultracapacitor products offer power and efficiency to a variety of applications, including consumer electronics, hybrid vehicles and renewable energy sources. Our proprietary electrode technology and global manufacturing facilities allow us to deliver unsurpassed value to our customers, while tailoring performance to specific applications.



Specifications

	HC Series
Capacitance	1 - 150 F
Voltage	2.70 V
ESR _{DC}	14 - 700 mohm
Leakage Current	0.006 - 0.500 mA
E _{max}	0.9 - 4.7 Wh/kg
P _{max}	2,400 - 7,000 W/kg

Product sizes not to scale.

*Results may vary. Additional terms and conditions, including the limited warranty, apply at the time of purchase. See the warranty details and datasheet for applicable operating and use requirements.

Product dimensions are for reference only unless otherwise identified. Product dimensions and specifications may change without notice.

Please contact Maxwell Technologies directly for any technical specifications critical to application. All products featured on this datasheet are covered by the following U.S. patents and their respective foreign counterparts: 6525924, 6643119, 7295423, 7342770, 7352558, 7384433, 7492571, 7508651, 7791860, 7791861, 7883553, 7935155, 8072734, 8279580, and patents pending.



Maxwell Technologies, Inc.
Global Headquarters
 3888 Calle Fortunada
 San Diego, CA 92123
 USA
 Tel: +1 (858) 503-3300
 Fax: +1 (858) 503-3301



Maxwell Technologies SA
 Route de Montena 65
 CH-1728 Rossens
 Switzerland
 Tel: +41 (0)26 411 85 00
 Fax: +41 (0)26 411 85 05



Maxwell Technologies, GmbH
 Leopoldstrasse 244
 80807 München
 Germany
 Tel: +49 (0)89 4161403 0
 Fax: +49 (0)89 4161403 99



**Maxwell Technologies
 Shanghai Trading Co., Ltd**
 Unit A2BC, 12th Floor
 Huarun Times Square
 500 Zhangyang Road, Pudong
 Shanghai 200122, P.R. China
 Phone: +86 21 3852 4000
 Fax: +86 21 3852 4099



Maxwell Technologies Korea Co., Ltd
 Room 1524, D-Cube City Office Tower, 15F
 #662 Gyeongin-Ro, Guro-Gu,
 Seoul, Korea 152-706
 Phone: +82 10 4518 9829

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