



# **DC Power Supplies: Power Management and Surge Protection for Power Electronic Systems**

*Nihal Kularatna*

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As we increasingly use electronic devices to direct our daily lives, so grows our dependence on reliable energy sources to power them. Because modern electronic systems demand steady, efficient, reliable DC voltage sources—often at a sub-1V level—commercial AC lines, batteries, and other common resources no longer suffice. New technologies also require intricate techniques to protect against natural and manmade disasters. Still, despite its importance, practical information on this critical subject remains hard to find.

Using simple, accessible language to balance coverage of theoretical and practical aspects, **DC Power Supplies, Power Management and Surge Protection** details the essentials of power electronics circuits applicable to low-power systems, including modern portable devices. A summary of underlying principles and essential design points, it compares academic research and industry publications and reviews DC power supply fundamentals, including linear and low-dropout regulators. Content also addresses common switching regulator topologies, exploring resonant conversion approaches.

Coverage includes other important topics such as:

- Control aspects and control theory
- Digital control and control ICs used in switching regulators
- Power management and energy efficiency
- Overall power conversion stage and basic protection strategies for higher reliability
- Battery management and comparison of battery chemistries and charge/discharge management
- Surge and transient protection of circuits designed with modern semiconductors based on submicron dimension transistors

This specialized design resource explores applicable fundamental elements of power sources, with numerous cited references and discussion of commercial components and manufacturers. Regardless of their previous experience level, this information will greatly aid designers, researchers, and academics who, study, design, and produce the viable new power sources needed to propel our modern electronic world.

## CRC Press Authors Speak

Nihal Kularatna introduces his book. Watch the video

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