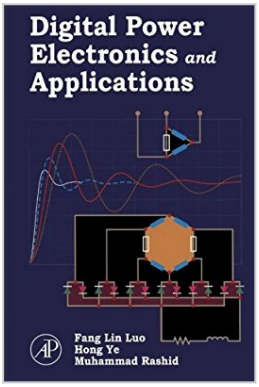

Digital Power Electronics and Applications

By Fang Lin Luo, Hong Ye, Muhammad H. Rashid

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The purpose of this book is to describe the theory of Digital Power Electronics and its applications. The authors apply digital control theory to power electronics in a manner thoroughly different from the traditional, analog control scheme. In order to apply digital control theory to power electronics, the authors define a number of new parameters, including the energy factor, pumping energy, stored energy, time constant, and damping time constant. These parameters differ from traditional parameters such as the power factor, power transfer efficiency, ripple factor, and total harmonic distortion. These new parameters result in the definition of new mathematical modeling:

• A zero-order-hold (ZOH) is used to simulate all AC/DC rectifiers.
• A first-order-hold (FOH) is used to simulate all DC/AC inverters.
• A second-order-hold (SOH) is used to simulate all DC/DC converters.
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* Presents most up-to-date methods of analysis and control algorithms for developing
power electronic converters and power switching circuits
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power supplies, control systems for motor drives, active filters, etc.
* Presents methods of analysis not available in other books.

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Editorial Review

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About the Author
Dr. Rashid is an internationally recognized teacher, author, and researcher in Power and Energy. He is a registered professional engineer in Canada, a Fellow of the IEE, and has won the IEEE Outstanding Engineer award. Rashid is also a member of the U.S. engineering accreditation team, ABET.

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