



by
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Electric Relays: Principles and Applications

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Electric relays are ubiquitous. They are used in wide ranging technologies including automobiles, power distribution systems, consumer electronics, aircraft, and ships just to name a few. There is no single reference source that covers all aspects of relays because relays cover such a broad range of applications, and literature tends to focus on one specific area of relay technology. There are the common types of small switching relays, reed relays, vacuum contactors, high voltage relays, power contactors, micro miniature relays, solid state relays, and ground fault relays. The current and voltage can range from milliamps to thousands of amps and volts to hundreds of kilovolts. So, most references cover a specific type of relay.

This book covers a broad range of electric relays. The author has produced an illustrated encyclopedia of electrical relays. Each chapter covers a different type of relay. Beginning with a historical background that led to the relay as it is today giving the reader a good sense of the need

for the relay and why it is designed the way it is today.

The author uses a great number of illustrations to show the reader the inner workings of each relay design. The reason for using this book is that the author also points out many practical design considerations that went into the development of a particular relay. For example, in a high-frequency relay, the design of the contacts and the shape of the contact arm assemblies were done in order to reduce capacitance to increase switching speed. He also shows how the shapes of various types of contacts were developed for particular applications. There are not many books like this that reveal engineering design for electromechanical devices, making this book a valuable resource to relay design engineers. The author intentionally does not include any mathematical descriptions but has chosen to describe the practical engineering design aspects and show illustrations and photographs. This approach would lead to a greater understanding and appreciation of the relay design. But, if one wanted to design a relay, further references would be necessary, design equations, etc., for the actual relay design.

The author is to be complimented on providing such excellent engineering insight into these types of electromagnetic devices. He covers differences between ac and dc relays, contacts systems, the external design of relays (sockets, etc.) reed relays, high-voltage relays, electronic relays, time-based relays, thermal relays, protective current and voltage relays, differential relays, distance, frequency, and microprocessor based relays. There is also a chapter on miscellaneous relays that cover, for example, latching, rotary, and ground fault relays just to name a few examples. Missing are the latest developments in microelectromechanical (MEMS) switching devices. Engineers, students, technicians who use relays in their work or want to learn how relays

operate would find this an invaluable reference book that will be constantly used in their work.