Introduction to PLCs

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SECOND EDITION

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Preface

This book is intended for the people working on and doing the day to day troubleshooting on the factory floor, and those interested in learning how PLCs work. The material in this book is presented in a format so that someone with no prior knowledge of PLCs (just some motor control, electronic, or computer exposure) can be successful in developing a good understanding of the issues and concepts involved in the workings of PLCs.

Although the examples use AB type numbering, the text is oriented to a middle of the road approach to understanding PLCs, regardless of the specific type of PLC that you use.

This book grew out of a course designed to get people from a wide variety of educational backgrounds (machine fixers and electricians through engineers) up to speed on PLCs. Almost any large or expensive piece of equipment these days comes into the workplace with a PLC attached. Close to 100% of ads for maintenance mechanics, control electricians, and manufacturing engineers require PLC knowledge.

While some generalizations have been made in the text, they are for the purpose of enhancing the overall understanding of the PLC material presented.

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Foreword

This introductory book on PLCs is oriented to the line mechanic and the electrician working on the factory floor. It is directed to their world view (series and parallel). However, I have included logic circuit equivalents from the computer world and the electronic world (AND, OR, NOT, NOR NAND, etc.) in an Appendix for Chapter 4.

The book does not go into the design of PLCs or the design of PLC systems as this would be beyond the scope of an introductory book.

The material presented would be most useful as a text for community college courses (both curriculum and continuing education) for electrical programs, industrial systems programs, or industrial maintenance programs. It would also be highly useful as a lab manual for four year college or university electrical, electronic, or systems courses.

Trouble shooting of PLC programs and problems is usually accomplished in labs. Software glitches are usually handled on a vendor specific basis and hardware glitches (using volt-ohm meters, etc.) is usually covered in a prerequisite course such as motor controls or during on the job training.

The various aspects of this approach have been thoroughly tested over a wide range of audiences over the past dozen years.

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