
Preface

The electrical industry is constantly changing. It used to be that electricians could get by on their experience or what they knew before, but not today. As the electrical industry changes, so must we. To stay at the top of our trade, we must build on experience, knowledge, and theory. If we rely solely on experience, we will only be able to install what we are familiar with. With experience, knowledge, and theory, we can build on what we know with new technology and, more importantly, be able to understand what we are installing and why. Instead of merely hooking up a contactor and a motor, we may be called upon to install and program a variable-speed drive for the motor. Fire alarm systems were fairly simple once—10 smoke detectors per zone, pull stations, pressure switches, and tamper switches and that was it. Now, we have smart detectors that communicate with the panel and can tell the panel what's going on. With inputs and outputs (I/O ports), valves can be closed or opened, doors shut, elevators recalled and locked, and alarms, both visual and audio, activated, all automatically through the fire alarm panel. Security is another growing concern that requires knowledge and experience. Local area networks (LANs) are tying several electrical components to a computer to monitor a wide variety of electrical equipment. Without the fundamentals of how these systems work, we electricians will be hard pressed to install these devices, let alone troubleshoot them.

This book is intended to help the practicing electrician review the basic calculations needed for the job, to supplement the continuing education required in most states, and to aid in preparing for the tests that we sometimes need to take before working in another state. As our electrical trade changes and becomes more sophisticated, so must we. Opportunities can be missed because an electrician doesn't understand sophisticated product instructions and/or wiring diagrams. More importantly, damage to equipment could result from wrong wiring.

Our trade is already too broad for an individual to know everything, even after a lifetime of working with electricity. It should give

X Preface

the reader some consolation that the basics of electricity stay the same, even though more sophisticated applications are being used every day.

I firmly believe that electricians should help each other. I was trained by older electricians and have benefited from their experience. Over the course of the years, I have met many electricians who have helped me as I was helping them. It is important that the older electricians help pass on this honorable trade to a new generation of eager and talented young people, so that they can carry on the business of electrical installation and troubleshooting. If they build on the formal training they receive and benefit from the experience of older electricians, as well as keep up with the fundamentals, we will be leaving the electrical trade in good and capable hands. If this book helps in accomplishing that goal, then I will have done my job. For those who need help in math as it relate to electricians, Chapter 11 should be reviewed.

NICK FOWLER