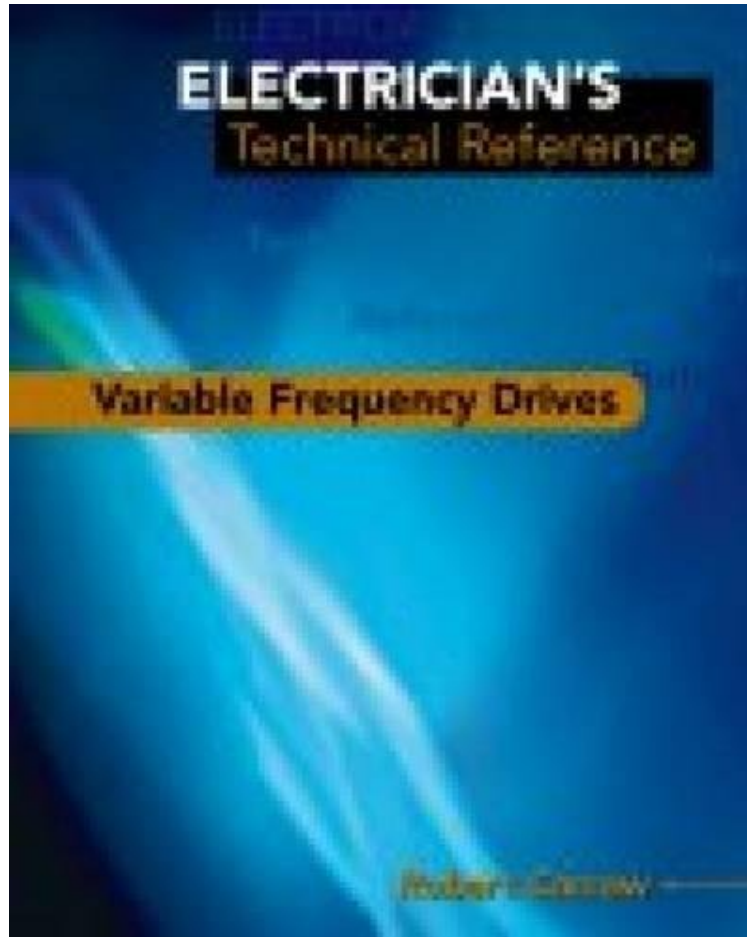


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Electrician's Technical Reference: Variable Frequency Drives

Robert Carrow

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Robert Carrow : Electrician's Technical Reference: Variable Frequency Drives before purchasing it in order to gauge whether or not it would be worth my time, and all praised Electrician's Technical Reference: Variable Frequency Drives:

0 of 1 people found the following review helpful. Highly recommended. By RD Lawrence Packed with info gained from practical experience. Non-mathematical treatment. In a class of its own. Highly recommended.

The variable frequency drive industry is growing rapidly, and it is now more important than ever for technicians and maintenance personnel to keep VFD installations running smoothly! Part of the Electrician's Technical Reference Series, this field guide is ideal for gaining access to information about variable frequency drives, including how they work, how to apply them, and how to troubleshoot them. A hands-on reference, Variable Frequency Drives contains sufficient information for a technician to troubleshoot any AC variable frequency drive, virtually eliminating the need for manufacturer-specific manuals! Both industrial and commercial variable frequency drive applications are

addressed, with discussion of installation issues, troubleshooting, metering, sizing and selection, energy savings with variable frequency drives, and more. A final chapter preps readers for future developments in variable frequency drive technology, while appendices feature addresses of relevant organizations and a bibliography of suggested readings.

Dedication. Introduction. Chapter 1- Variable Speed Drive Types: Speed Control, Pressure, Temperature, and Flow Control, Process Control and Automation, Traditional Variable Speed Systems, Solid State Variable Speed Controllers. Chapter 2- Electrical and Power transmission Basics: Electricity and Power Transmission, Speed, Torque, Horsepower, Power Factor, Capacitors, Inductors, Semiconductors, Frequency Bands. Chapter 3- AC Induction motor and Variable Frequency Drive Basics: AC Induction Motor Theory, AC Motor Construction, Inverter Duty Motor - NEMA MG-31, Using Nameplate and Motor Data, VFD Theory of Operation, Pulse Width Modulation, Volts Per Hertz, VFD Types: Variable Voltage (VVI), Voltage Source (VSI), Current Source (CSI), Flux Vector, Sensorless Vector, Direct Torque Control, Field Oriented Control. Chapter 4- Installation Issues Concerning Variable Frequency Drives: Control and power Wiring Methods, Harmonic Distortion/Power Quality, Overvoltage Reflection, Shaft Voltage"s and Bearing Currents, Carrier Frequency, EMI and RFI, Heat Dissipation and Enclosures. Chapter 5- Troubleshooting of Variable Frequency Drives: Proper Setup, Fault Handling, Diagnostics, troubleshooting Trees, Maintenance. Chapter 6- Metering of VFD"s: Input Waveforms, Harmonic Analysis, DC Bus, Output Voltage, Output Waveform, Power Module Testing. Chapter 7- Sizing and Selection of VFD"s: Ambient Conditions, Constant vs. Variable Torque, High Starting Torque, Multiple Motors, Closed Loop and High Performance. Chapter 8- Industrial and Commercial VFD Applications: HVAC Systems: Return and Supply Fans, Boilers, Chiller Pumps, Setpoint (PID) Control. Process Control, Automated Systems, Machines. Chapter 9- Energy Savings with Variable Frequency Drives: Efficiency, Affinity Laws, EPACT, Fan and Pump Curves. Chapter 10- Future Variable Frequency Drives: Faster Switching Transistors, 12 and 24 Pulse systems, New Technologies, Applications. Appendices: Useful Formulas, Organization Addresses, Applications. Bibliography and Suggested Further Reading. Index.