

# Preface

The integration of Internet of Things technologies into power electronics for smart grids and industrial automation was reshaping how we manage and optimize energy systems. This chapter explores the pivotal role that power electronics play in enhancing the efficiency, flexibility, and reliability of IoT-enabled infrastructures. As the demand for smarter energy systems grows, the convergence of IoT and power electronics offers new avenues for real-time monitoring, predictive maintenance, and dynamic control of energy distribution. Smart grids equipped with IoT sensors enable decentralized energy management, while industrial automation systems benefit from improved process control and energy savings. By delving into the principles of power electronics, IoT integration, and their synergy, this chapter provides a comprehensive understanding of the technological advancements driving the future of sustainable and efficient energy systems. It highlights key applications, challenges, and potential solutions in leveraging power electronics for IoT-powered smart grids and industrial automation.