

Development of an ATtiny-Based Electric Fan Diagnostic Tool

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Abstract

This research presents the design and development of an ATtiny-based diagnostic tool for common AC electric fans in household settings. This system provides an affordable, user-friendly solution for real-time voltage, current, and temperature measurement, helping to overcome the challenges of manually identifying common fan issues, such as overheating and electrical inefficiencies. The diagnostic tool utilizes PZEM-004T and DS18B20 sensors, with an ATtiny85 microprocessor processing the data it collects.

Processed results are shown on the interactive Nextion Touchscreen interface. Diagnostics are made possible by the system's support for various electric fans, such as mini, stand, table, and ceiling fans. It detects problems in various components, including the switch, power cord, capacitors, and wiring, by comparing real-time sensor readings to preset threshold values. When abnormalities are found, the interface shows an indication. The green light indicator shows that the operation is in good condition, while the red light shows when a fault or abnormality is detected. Without the help of a technician, this signal allows instant condition assessment.

Keywords

Electric Fan, Sensor, Diagnostic Tool, Temperature, Voltage, Current, Fault Detection, Accessibility, ATtiny85.