

Design of Control Circuit Using PIC Microcontroller for Automatic Power Factor Correction

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Abstract: *The power quality of AC systems has been a key issue in recent years because to the ever-increasing quantity of electronics equipment, power electronic equipment, and high voltage power systems. The majority of industrial installations in countries have substantial inductive electrical loads, resulting in a lagging power factor that has serious effects for energy users. As a result, reactive power compensation must be performed in the proper manner. Hence, we worked on this project and created Automatic Power Factor Correction (APFC) system using the PIC18f4520 microcontroller. APFC device measures the power factor, line voltage, and line current. The power factor is calculated using the system's voltage and current, and if it falls below a specified value defined by the utility provider, the device immediately activates capacitor banks to compensate for the reactive power. The phase angle and corresponding power factor are calibrated at that time. The mother board calculates the required compensation and activates the appropriate capacitor banks. This strategy can be used to increase the system's stability and efficiency in both industries and homes.*

Keywords: Power Factor, Microcontroller PIC18F4520, Capacitor Bank, Relay, Load

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