

# Automatic Power Factor Correction using Microcontroller

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**Abstract:** Power quality is a key factor in all industrial and many more applications. An industry need to maintain certain power quality standard during day-to-day work for variety of applications. Power quality of electricity provided by utilities is also vital aspect. The best power quality helps to increase the overall production and gets rid of any sort of technical problems reducing cost of energy. The mains power factor is one of the important parameter which decides the quality of power. When the need of reactive power becomes more, power factor decreases, reducing the efficiency of power system. Therefore, there is need to add capacitance of required value when power factor goes below the specified value, preferably 0.92. Addition of required capacitors reduces the losses improving power factor. The paper proposes digitally controlled topology for performing Automatic Power Factor Correction to improve power quality. The design and simulation of Automatic Power Factor Correction system using microcontroller (AT89S52/C51) has been presented in the paper. The system power factor has been monitored using power factor transducer followed by Arduino microcontroller which control the switching of capacitor banks in order to compensate reactive power and bring power factor near to unity enhancing power quality. The simulation results are also presented in the paper.

**Keywords:** Power Factor, Power Factor Transducer, Power Quality, microcontroller (AT89S52/C51), Capacitors

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