

MICROPROCESSOR BASED POWER FACTOR TO VOLTAGE CONVERTER

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Abstract

In this paper, a microprocessor based elegant and intelligent power factor transducer has been developed. The converter is software dependent having the capability to detect the nature (leading, lagging and unity) of the power factor. In this strategy, difference in phase angles between the voltage and current waveforms has been counted by counting the interval between zero crossing instants of the system voltage and current signals. The simplified cosine series of the angle being used to calculate the power factor, error arising due to the approximation has been compensated by piece-wise linearization technique since the cosine series is non-linear in nature introducing non-linear error in power factor measurement. The scheme has been implemented through an intricate logic suitable for an 8-bit microcomputer in order to generate and transmit an analog electrical signal corresponding to numerical values of the power factor along with its nature for monitoring and control purpose.

Keywords: Microprocessor, Power factor, DAC.