Discrete Logic Replacement

Cosine Factor Controller

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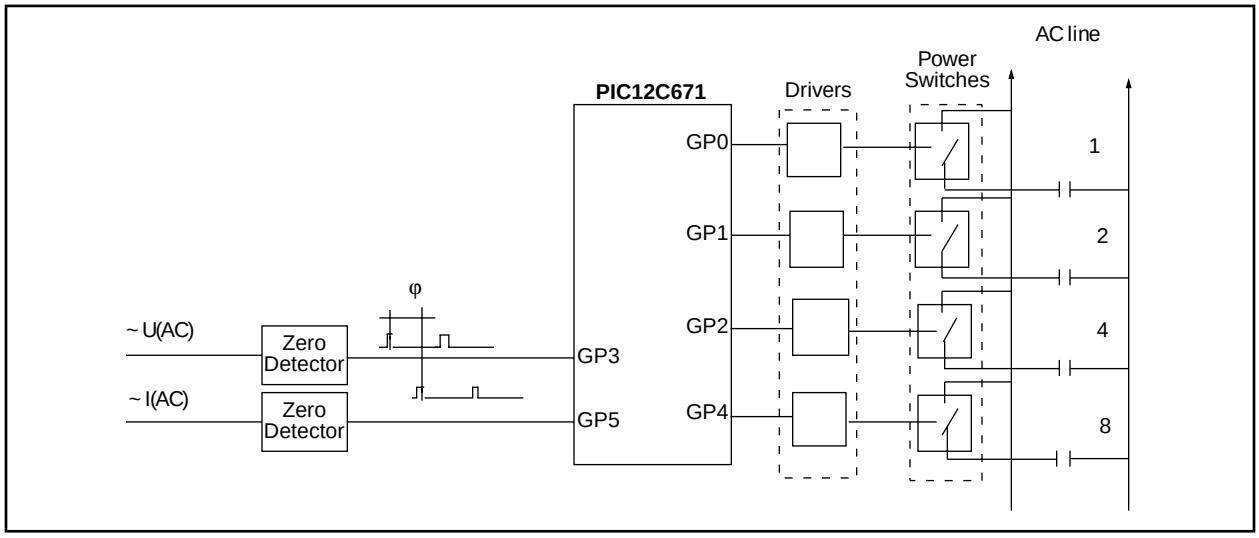
INTRODUCTION

The "cos$_\varphi$ "correction is particularly important in the control of AC power nets. This application note presents one cos$_\varphi$ correcting controller using the resources of the PIC12C671. The main idea is to replace the combination (decoding circuits) and sequencer (counters and latches) logic, as well as to realize cosinus computations for the factor cos$_\varphi$ by using a software look-up table method. The application is shown on Figure 1.

FIGURE 1:



Every cycle at the outputs of Zero Detection schemes generates a phase difference between the AC-voltage (⌊U) and AC current (⌊I). The phase is measured with the counter in the PICmicro™. The PICmicro builds a table containing the cos$_\varphi$-values corresponding to the measured phase$_\varphi$. To every cos-value corresponding to phase changes, the PICmicro replies with a binary value on the outputs, which switch the capacity batteries. In this way, the PICmicro compensates the phase's changes.

NOTES: