MICROCONTROLLER BASED SOLAR PV SYSTEM UPS

Abstract

Uninterruptible Power Supply (UPS) systems are being popular and presently used in commercial, industrial and residential applications. Presently the UPS system has two major classifications, one is on line UPS and another one is off line UPS. In both the types the battery system inside the UPS is charged by the mains AC Supply. A by-pass mode of operation is also incorporated in the UPS during normal supply. This paper presents a novel technology to charge the battery using Renewable Energy Systems (RES) particularly of Solar PV power. Battery charging can mostly be done by the solar power whereas if the PV power is inadequate, then the UPS system i.e. the battery is discarded from the PV panel and automatically connected to EB mains. The inverter in the UPS system can also replaced by controlled Voltage Source Inverter (VSI). A prototype of 1-Ph, 1-kVA UPS system has been examined for the above work. Controlled inverter has been realized by a dedicated PIC 16F877 controller. The output of the inverter has been maintained as 230 V +/- 2% by using PWM technique, which is incorporated in the PIC controller

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