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Photovoltaic powered uninterruptible power supply using microcontroller PIC16F628-I/P

Abstract

Uninterruptible power supply (UPS) sits between a power supply such as wall outlet and devices to prevent undesired feature that can occur within the power source such as outages, sags, surges and bad harmonics from the supply to avoid a negative impact on the devices. This paper presents a photovoltaic (PV) powered UPS using microcontroller PIC16F628A-I/P. It is a standby UPS whereas if the main power source fails to supply power to loads, a battery powered inverter turns on to continue supplying power. The battery is charged by the PV using solar charger and transfer switch controlled by the microcontroller. The UPS was tested to a load of 240 V, 20 W AC aquarium water pump. The test result shows that the UPS perform well, when the main power source fails, the battery could power inverter and the microcontroller controls the transfer switch of the UPS inverter and the main power source.

Keywords; Micro-Controller, Photovoltaic (PV), Uninterruptible Power Supply