DEVELOPING A MPPT CHARGE CONTROLLER FOR SOLAR PHOTOVOLTAIC SYSTEM WITH IMPROVED PERTURB AND OBSERVE ALGORITHM

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

DEVELOPING A MPPT CHARGE CONTROLLER FOR SOLAR PHOTOVOLTAIC SYTEM WITH IMPROVED PERTURB AND OBSERVE ALGORITHM

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The purpose of this thesis is to design and develop a MPPT charge controller using ZETA converter with improved perturb and observe algorithm for solar photovoltaic system. The measurements of the parameters will be sent to a website.

This thesis project is focusing on the performance of MPPT charge controller by using ZETA converter which is not a common converter and with improved perturb and observe algorithm that is capable of wireless monitoring and controlling of solar photovoltaic system. The ZETA converter is used to regulate the voltage input from the solar PV module to a voltage level that is needed by the load with minimum loss. The voltage is regulated by switching of the MOSFET dynamically depending on the state of the battery with maximum peak power point at that moment. The improved perturb and observe algorithm produced the maximum power that can be generated from the solar photovoltaic cell to charge the battery with faster response time.

Keywords: MPPT, PWM, Solar PV Modules, Efficiency, ZETA Converter, P&O, Perturb and Observe

DEDICATION

I dedicate this thesis solely for the research and development in renewable energy in Indonesia.

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