

SINGLE PHASE INVERTER/CHARGER CONVERTER

MOHD NOOR HAFIZ BIN ZOOL

**FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
MALAYSIA**

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ABSTRACT

This study presents a development of a Single-Phase Inverter/Charger Converter. The controller is developed using Peripheral Interface Controller (PIC). This system utilises Power Mosfet as a main power switching devices. The Single Phase Inverter/Charger Converter convert DC-AC and charge or discharge the battery simultaneously. The inverter/charger has two types of input DC voltage to supply the inverter which are photovoltaic modules and battery . These two types of DC supplies are used at certain time depend on the value of the voltage of the photovoltaic modules and battery. The modes of operation for the inverter/charger converter are controlled by corresponding PWM applied to the gate of Power Mosfet. The simulation of the inverter/charger converter using PSIM are presented to verify the circuit operation. The laboratory model of the converter is developed and tested. The experimental result is presented.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The bi-directional inverter/charger are increasingly used in battery-backup stand-alone inverter systems and alternative energy systems such as wind power and photovoltaic applications [1].

The simplified block diagram of such a system connected to the Single-Phase Inverter/Charger Converter is shown in Figure 1.1. The input voltage supply of the inverter/charger converter have two types of DC voltage which are the photovoltaic application and battery [2]. When the input voltage supply is received from PV modules, the battery will charge until the battery fully charged. The battery will supply the input voltage to the inverter if battery is fully charged [3].

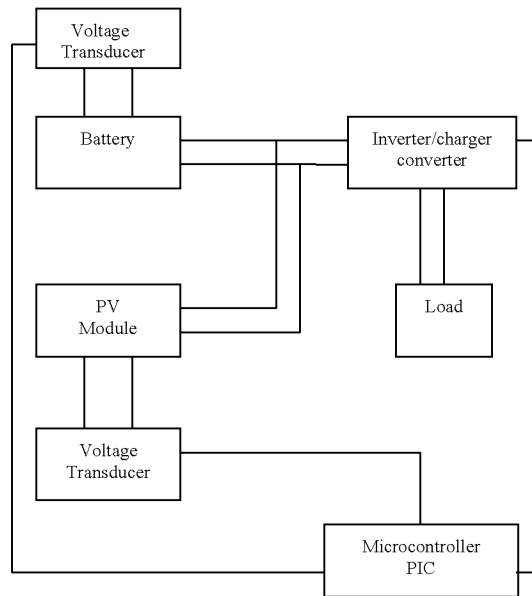


Figure 1.1: The simplified block diagram of such a system connected to the Single-Phase Inverter/Charger Converter.

The modes operations will continue by exchange the condition of charging or discharging for the battery charger [4].