REMOTE STARTER KIT FOR MOTORBIKE

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This project is dedicate to my mother and all my family. Also to my friends, escpecially my housemate and supervisor Mrs. Zarina Bt Baharudin Zamani.

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ABSTRACT

This Remote Starter for Motorbike is a device that can start and cut-off the engine of motorbike remotely. The Radio Frequency (RF) transmitter and receiver circuit is the main circuit in this system. The RF transmitter circuit has the coded transmitter and the transmitter module to send the signal to the RF receiver circuit. The RF receiver circuit has a receiver module to receive the signal and the coded receiver to convert the signal into address and send it to the output. The RF receiver circuit is combine with the latching circuit and security circuit. All of this circuit is the control circuit that mounted at the motorbike. This control circuit has a physical connection with the ignition, voltage supply and relay of the motorbike. The advantage of using this device is the ability of the signal to pass through objects and walls and low cost.

ABSTRAK

Alat kawalan ini adalah alat yang digunakan untuk menghidupkan dan mematikan enjin motosikal. Litar pemancar dan penerima Frekuensi Radio (RF) adalah litar utama dalam sistem ini . Litar pemancar RF mempunyai pemancar berkod dan modul pemancar untuk menghantar isyarat ke litar penerima RF. Litar penerima RF mempunyai satu modul penerima untuk menerima isyarat dan penerima berkod untuk menukar isyarat ke dalam alamat dan menghantarnya kepada keluaran. Litar penerima RF di gabungkan dengan litar selak dan litar keselamatan. Semua litar ini adalah litar kawalan yang di letakkan di dalam motorsikal. Litar kawalan ini mempunyai hubungan dengan nyalaan, bekalan kuasa dan geganti motorsikal. Kelebihan menggunakan alat ini ialah kemampuannya menghantar isyarat menembusi objek dan dinding dan juga kos rendah.

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CHAPTER I

INTRODUCTION

1.1 Overview

Remote control systems are increasing popular and the introduction of pre-tuned radio modules and their steadily falling prices has made radio a viable alternative to infra-red control. The advantages of radio are the ability of the signal to pass through objects and walls. It range also impress 100 meters or more being typical. [1]

Nowadays, the application by using remote have be use widely even for motorbike. This project is to design and fabricate Remote Starter Kit for Motorbike which the machine control using RF remote control. This project consists of RF transmitter act as remote control and the RF receiver as control circuit. The RF receiver has the physical connection with the original motor starter. The remote starting system, itself, includes a remote starting activation switch that transmits a radio frequency signal to a remote starter module to initiate starting of an engine within the motorbike. The remote starter module receives the radio frequency signal from the remote starting activation switch and, in response to receiving the radio frequency signal, initiates closure of a switch interposed between a battery and a starter motor, thereby causing the starter motor to crank and start the engine of the motorbike. The control circuit

is mounted in a motorbike having an internal combustion engine started by a starter motor.

Users will be able to start and cut-off the motorbike remotely without touching the machine. This invention is very useful for motor riders especially to warm up. By using this system, people also can save their energy because users just start the engine of the motorbike using remote control. This application can be used only at the motorbikes that have an electric starter.

1.2 Objective

The objectives of this project are:

- To study the connection of RF transmitter in the remote with RF receiver in the control circuit.
- To design the control circuit that connect to the relay of motorbike.
- To connect the control circuit with the relay of motorbike.
- To create the security system in the control circuit.
- To start and cut-off the engine of motorbike remotely.

1.3 Problem Statement

Nowadays the technology of electronic for vehicle has been improved, day by day it increasingly to the high level of the technology. For example, the car can parking automatically without driver but use the button or remote control to control it. Then, the car can start remotely by users. But, this all technology or invention more to the vehicle that have four wheel like car.

For the motorbike riders, there is no new invention or technology of electronic and security system for the motorbike. Then, the electronic technology of motorbike is just the electric starter only. The problem is in the morning, the motorbike should be warm up, so the motorbike riders have to

start the engine of motorbike at least 15 minutes before ride the motorbike. The motorbike riders also have to touch the switch to start the engine.

The other problem is when the thief wants to stole the motorbike, they just use the master key to stole the motorbike. To solve this problem, this Remote Starter Kit has a simple and sophisticated security in the control circuit. If the user seen the thief, the users can cut-off the engine of motorbike remotely.

1.4 Scope of Project

The scopes of project are:

- The frequency for Remote Control can transmit the signal to the Control circuit is 315MHz – 350MHz.
- The Remote Control can transmit the signal to the Control circuit is about 50 meter radius.
- The high of the antenna for the transmitter module and the receiver about 18 – 24 cm.

1.5 Project Methodology

To design a Remote Starter Kit for Motorbike, ones must have a very good understanding the theory of the Radio Frequency. The connection between RF transmitter and RF receiver also need to understand.

Before the project start, some studies and readings must be done in order to get the correct view of RF theory. Later, some literature review will take place to compare this project with previous experiments and projects related to this title. The review will take journals, reports and books as its main reference.

Furthermore, the RF transmitter and RF receiver circuit will construct use the Protel 2004 software. Then, the circuit can update to the PCB layout. After that, the RF transmitter and RF receiver circuit will be constructed on printed circuit board (PCB) so it will proved that the circuit able to transmit the signal from RF transmitter to the RF receiver. Then, this circuit must be applying at the motorbike, so the connection on the motorbike in order to start the motorbike need to understand. To connect this circuit to the motorbike, the latching circuit must be design to maintain the output. This is because the output for this circuit is just momentary. After that, all the circuit can be connected to the motorbike.

When the Remote control can start and cut-off the engine of motorbike, this project can be fabricate as a prototype.

1.6 Report Structure

Overall of this report is divided into 5 chapters. Below is the summary of each chapter:

- Chapter 1: INTRODUCTION

  This chapter will includes the background, objective, problem statement, all the necessary scope of work regarding the project and briefly describe about the project methodology.

- Chapter 2: LITERATURE REVIEW

  This chapter will explain and discuss about the project and the component that use in this project.

- Chapter 3: METHODOLOGY

  This chapter will explain about the approach taken in order to achieve the objectives of the project and a closer look on how the project is implemented.

- Chapter 4: RESULT AND ANALYSIS

  This chapter describes the final outcome of this project and analysis that have been done to justify its function and to make sure it meets the objectives of project.

- Chapter 5: CONCLUSION AND SUGGESTION

  This chapter will conclude the project and how it can be improved for further development.

CHAPTER II

LITERATURE REVIEW

2.1 Overview

This chapter explains the research related to the wireless communication system and how this knowledge can be manipulated to develop the remote starter kit for motorbike. Next, the basic information about component parts will be discussed briefly. This chapter will increase deeper understanding about basic wireless communication system and component parts.

2.2 Current Study of Motorbike

A motorcycle or motorbike is a single-track, two-wheeled motor vehicle powered by an engine. Styles of motorcycles vary depending on the task for which they are designed, such as long distance travel, navigating congested urban traffic, cruising, sport and racing, or off-road conditions. In many parts of the world, motorcycles are among the least expensive and most widespread forms of motorized transport. [9]

There is 2 option to start the motorbike, kick starter and electric starter. The kick starter assist system of the present invention addresses the aforementioned concerns in the art. The kick starter assist system works with a

motorcycle's electric starting system such that the use of the motorcycle's kick starter activates the electric starting system in order to start the motorcycle. The system requires that only a small force be used with the kick starter relative to a standard kick starter in order to start the motorcycle. The kick starter assist system can be effectively used by most riders including riders that are not very large, and female riders of all sizes. The kick starter assist system allows a rider to enjoy the fun and prestige of kick starting a motorcycle of any size without the need to have substantial body size and strength. The system reduces the amperage draw on the battery of the motorcycle when staring the motorcycle, allowing for a relatively smaller battery to be employed on the motorcycle. The system is of relatively simple design and operation and is easy to use.

The kick starter assist system is used for an electrical starter of a motorcycle engine having an electrical source and an ignition coil, the assist system comprises a controller electrically coupled to the electrical starter and a sensor for sensing engine rotation. Upon sensing engine rotation, the sensor sends a signal to the controller, wherein the controller sends a signal to the electrical starter for activating the electrical starter for starting the engine. A switch is disposed between the electrical source and the controller for turning the system on and off. The electrical starter comprises a starter relay, a starter solenoid electrically coupled to the starter relay, and a starter motor mechanically coupled to the starter solenoid and to the engine. Upon receipt of a signal from the controller, the starter relay activates the starter solenoid, which activates the starter motor, which activates the engine. The sensor can comprise a Hall effect transducer that is electrically coupled to an ignition coil of the engine and that detects a potential change on a negative lead of the ignition coil and upon such potential change, sends the signal to the controller, an optical sensor that is optically coupled or a magnetic sensor that is magnetically coupled to the kick starter subassembly to detect engine rotation occasioned by kick starter use, and upon sensing of engine rotation sends a signal to the controller, etc. The engine rotation is occasioned by a kick starter. The controller is connected to the neutral indicator switch of the motorcycle for added safety.[10]

2.3 Historic of Wireless Communication

Wireless signals proved effective in communication for rescue work when a sea disaster occurred. Effective communication was able to exist between ships and ship to shore points. A number of ocean liners installed wireless equipment. In 1899 the United States Army established wireless communications with a lightship off Fire Island, New York. Two years later the Navy adopted a wireless system. Up to then, the Navy had been using visual signaling and homing pigeons for communication.

In 1901, radiotelegraph service was instituted between five Hawaiian Islands. By 1903, a Marconi station located in Wellfleet, Massachusetts, carried an exchange or greetings between President Theodore Roosevelt and King Edward VII. In 1905 the naval battle of Port Arthur in the Russo-Japanese war was reported by wireless, and in 1906 the U.S. Weather Bureau experimented with radiotelegraphy to speed notice of weather conditions.

In 1909, Robert E. Peary, arctic explorer, radio telegraphed: "I found the Pole". In 1910 Marconi opened regular American-European radiotelegraph service, which several months later, enabled an escaped British murderer to be apprehended on the high seas. In 1912, the first transpacific radiotelegraph service linked San Francisco with Hawaii.

Overseas radiotelegraph service developed slowly, primarily because the initial radiotelegraph set discharged electricity within the circuit and between the electrodes was unstable causing a high amount of interference. The Alexanderson high-frequency alternator and the De Forest tube resolved many of these early technical problems. The Navy made major use of radio transmitters, especially Alexanderson alternators, the only reliable long-distance wireless transmitters, for the duration.

During World War I, governments began using radiotelegraph to be alert of events and to instruct the movement of troops and supplies. World War II demonstrated the value of radio and spurred its development and later