VIETNAM AVIATION ACADEMY

Department of Telecomunication - Electronics Engineering Technology

LOCATION IN HO CHI MINH CITY

PROJECT REPORT:

"Circuit Remote Controlled Using Infarred Light"

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PREAMBLE

In this day of advancement, we are indispensable remote control to control the devices we use every day as televisions, machines air conditioners, fan, etc. So how do remote controls work? Can control other objects in the distance? Few know that the first remote control available during World War II. Initially, people use RF technology (Radio Frequency) and then catch to start applying IR (Infarred Remote) technology to the remote control. In today's life, we use both types, however control remote use infarred in more often used. Let's see the principle operation and construction of this remote control.

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Chapter 1

Introduction

1.1 Preliminary introduce:

With the current trend of modernization and industrialization, many modern technology devices appear to help save time. We can mention as public technology of things connected through the internet (Internet of Things) etc. But with expensive fees are not suitable for the average consumer. From there, i founded simple solutions with the same purpose and low cost.

In parallel, to supplement, to supplement the knowledge not studied in school. From there, i selected "Remote Controlled Using Infarred" for the topic.

1.2 Objectives of the study:

To help reduce costs and supplement knowledge not researched at school.

1.3 Research Methods:

Find information on internet.
Test on software.
Construction circuit.

Chapter 2

Find out theoretical related to the research

2.1 Application of remote controlled using infarred

Remote controlled now is using broadly, it use to controlled all wireless device. Remotes and televisions are the best example for application of this recieve and transmitter circuit. Or more application of this circuit. Beside that, we can see that remote controlled can use with air conditioners, fans, or even use to turn on the lights in house...etc.

2.2 Define of Infarred (IR LED)

Infarred light (infarred ray) is the light we can't see it by our eyes, they have wavelength from 700nm to 1mm. The infarred light have transmittion speed is equal to lightspeed.

The infarred can transmit many signal channels. It is widely applied in industry.

The amount of information that it can gain is 3 megabit/s. The amount of information transmit with infarred light is many times larger compared to the electromagnetic waves people still use.

Infarred rays are easily absorbed, poor penetration. In the word control far by infarred, the beam emits a narrow, directed direction, so when recieve must be in the right direction to use it.

Infarred wave have characteristics such as light (focusing through the lens, focal distance...). Normal light and infarred light differ very clearly in light through the material.

Other than emitting invisible infarred light, IR Led look like a normal led and also works like a normal Led, it means it will consume 20mA and 3 Volts.

Besides that infarred is divided by wavelength into three main regions. However, follow the US classification is divided into 5 areas as follow:

Name	Acronym	Wavelength	Frequency	Photon Energy	Featured
Near Infarred	NIR	750nm to 1.4μm	214-400THz	886-1653 meV	Determined by the absorption of water.Used in fiber optic telecomunications.
Short waves infarred	SWIR	1.4-3μm	100-214THz	413-886meV	Absorbed domestic increase significantly as of 1.45μm. Range 1.53-1.56μm is spectral region currently in use much in the far informed long road.
Medium waves infarred	MWIR	3-8μm	37-100THz	155-413meV	This band is called is thermal infarred, but it only detects slightly higher temperatures than body temperatures.
Long waves infarred	LWIR	8-15μm	20-37THz	83-155meV	This region is call "thermal infarred".
Far infarred	FIR	15-1000μm	0.3-20THz	1.2-83meV	See far infarred and far infarred laser.

Table 2.1: Classify Common of Infarred

2.3 Infarred receiver eye (TSOP-17xx)

It is an excellent line of infarred sensors for remote control applications. These infarred sensors are designed to improve shielding electric interface. These devices are designed to receive infarred rays from the infarred diode from a remote handset.

TSOP 17xx is a part of the Photomodules family of infarred sensors modules miniature with PIN photodiode and preamplification stage are placed in the shell epoxy. Its output is low and gives +5V when off. Its output is demodulation to be able to decoded directly by the microprocessor. Functions important modules include internal filter for PCM frequency capability. Compatible with TTL and CMOS, low power consumption (5V and 5mA), immune to ambient light, anti-jamming, etc....

Number	Name	Description
1	Ground	Grounding
2	Vcc	Usually connect to +5V, maybe 6V
3	Signal	Output Signal

Table 2.2: Configuration of TSOP